

KRAMBLE INDUSTRIES INC.

Remote Control Trailer Chute Opener

Series IV

Installation and Operating Manual



Features

- Simplicity of design and quality of engineering
- User selectable security code
- Power On/Off switch on Receiver
- LED Indicator lights
- 9V Transmitter Battery
- Ease of installation/removal when not in use
- All controls can be by either Manual Switch or Remote Control
- Multiple Transmitters can operate a single Receiver/Drive
- Multiple Receiver/Drives can be operated by a single Transmitter
- Receiver/Drives are "Channel selectable"

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Table of Contents

Specifications	1
FCC	3
Industry Canada	3
Installation Instructions	4
Mechanical Installation	4
Limit Sensor	7
Setting the Close and Open Limits	7
Electrical Installation	11
Drive Cabling	11
General Operation	12
Receiver	12
Transmitter	14
Limited Warranty	15

Table of Figures

Figure 1	4
Figure 2	5
Figure 3	5
Figure 4	6
Figure 5	6
Figure 6 Trailer Chute Opener Receiver Box	7
Figure 7 Learn/Erase Diagram	13

Specifications

Transmitter:

Power:	9 Volt DC Battery
Frequency:	916 MHz
Modulation:	FM
Indicators:	Power/Transmit Red LED
Case Size:	2.6" x 4.1" x .9"
Weight:	.25lb
Range:	300' + (depending on environment)
Antenna:	1.3" Fixed Mini Tuned
Security Code:	Unique in each Transmitter
Safety:	3 ⁸ Selections
Functions:	2 to 9 Button (depending on model)

Receiver:

Power in:	12 VDC
Power out:	12 VDC @ 100 amps max
Standby:	40mA
Power Input:	2/4 ga. 2 conductor wire with plug n'lock connectors
Indicators	Power On Red LED Receive RF Data Yellow LED Channel Active Green LED Limit Sensor Encountered dual Yellow LEDs
Options	Multi-Channel Operation (1-4) Main Power On/Off Pushbutton Manual Open/Close Pushbutton Control Programmable Limit Sensor
Antenna	3.1" Flexible Tuned

Electric Motor Drive:

Electrical	12VDC 1/2HP
Torque	Nominal 62.3lb-ft, Start/Stall: 268lb-ft
Speed	Nominal: 16.6 rpm
Output Shaft	3/4" keyed and drilled
Gearbox Reduction	120:1
Duty Cycle	5%
Overall Size	14" x 4" x 4"
Weight	13lbs

Think Safety!

Do no install or operate where damage to persons or property may occur

FCC

This equipment has been 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 frequency energy, 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 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.

Industry Canada

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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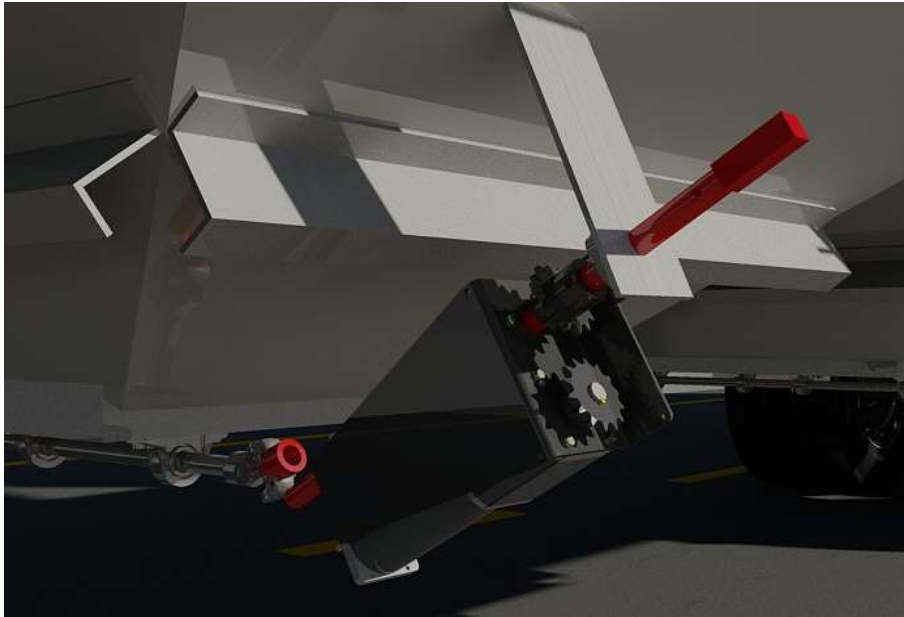
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Installation Instructions

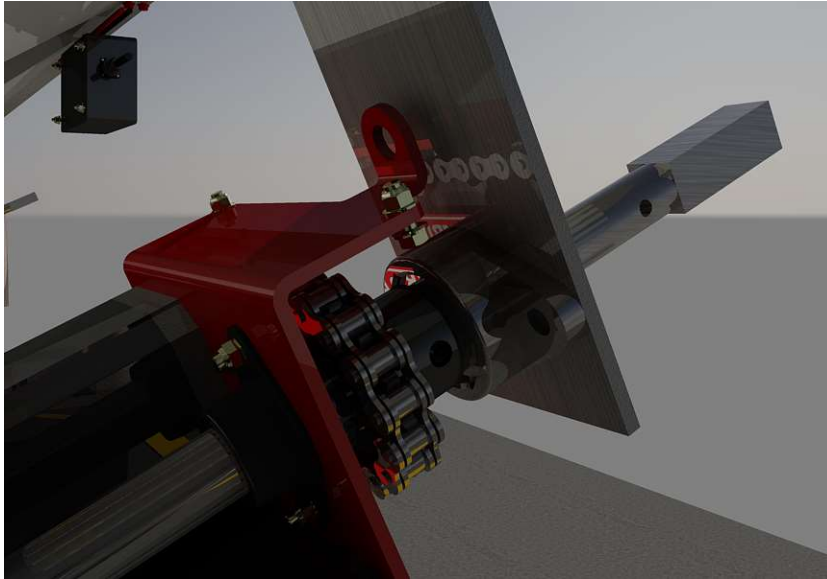
Mechanical Installation

Disconnect the existing handle shaft from the universal joint (shown in red) and clear the shaft of scale and debris to the back of the bearing. Slide the quick release sprocket and drive assembly onto the drive shaft and reconnect the drive shaft into the universal joint and tighten.

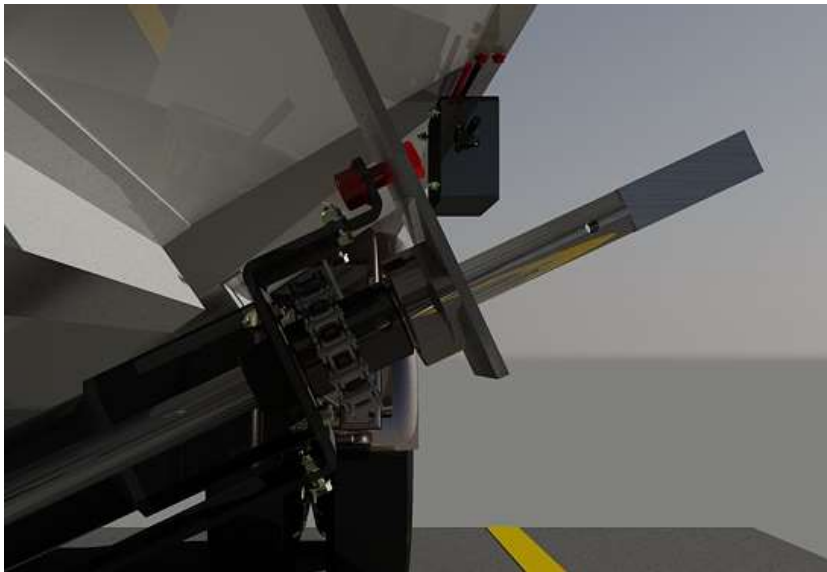
Figure 1



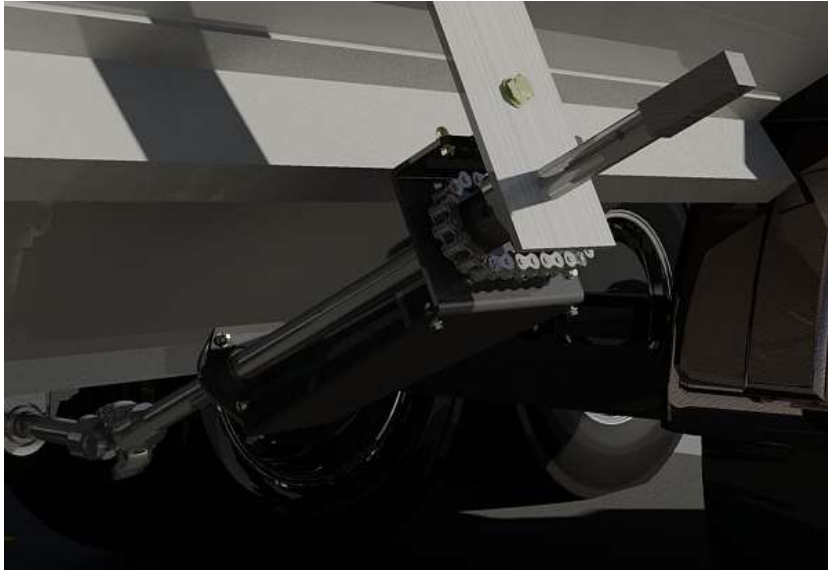
Slide the quick release sprocket and drive assembly up until they are behind the existing drive shaft bearing. Be sure to allow 1/16" between the drive shaft bearing and quick release sprocket and 1/8" between the drive assembly and the quick release sprocket. Rotate the drive assembly counter clockwise 90 degrees and mark the location for the counter rotation hole (See figure 2). Note: Existing locking mechanism may need removing or the drive can be positioned at another angle from 90 degrees if necessary.

Figure 2

Install the counter rotation bolt to secure the drive assembly. Washer spacers can be used to take up any gap between the drive assembly and drive shaft bearing mount plate. The teeth on the quick release sprocket and drive sprocket must be in line with one another (see figure 3). Turn the quick release sprocket so allow drilling through the locking pin hole from both sides. Drill 7/16" diameter hole approximately half the diameter of the drive shaft, then place the retaining pin in the partially drilled hole to prevent the sprocket from turning and drill the drive shaft from the other side. Note: this should keep the hole in line with the sprocket retaining hole.

Figure 3

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Figure 4

Install the quick release pin. Note: the hole can be re-aligned with the manual handle. Install the safety chain guard.

Figure 5

Repeat these steps for each drive.

The receiver assembly can be mounted along the aide rail of the trailer between the chutes. The bolt, shown in red, illustrate the intended connection. Follow the Electrical Installation instructions for proper wiring.

Figure 6 Trailer Chute Opener Receiver Box



Limit Sensor

The Trailer Chute Opener Limit Sensor adds greater flexibility to the Trailer Chute Systems by allowing the operator to open and close the chute to any preset limit with confidence. The included drive motor contains a built-in Hall Effect sensor that is used to count the rotations of the motor. Once the chute reaches either limit, the corresponding yellow Limit LEDs will illuminate and the chute will stop.

- Avoid powering off the system while it's operating as this may cause the limit sensor to lose count, requiring you to reset the chute limits.

Setting the Close and Open Limits

From the Receiver/Drive keypad with the power "On".

NOTE: Setting the CLOSE limit will preserve the distance between the open and close limit, while setting the OPEN limit will change its position relative to the CLOSE limit. If you intend to set both limits, set the CLOSE limit first. Only one limit may be set in the same operation sequence.



Press and release the SET LIMIT button. The Set Limit light then turns on.

Step 1: Press and release the SET LIMIT button. The Set Limit Light will then turn on, indicating that the chutes can be moved in either direction to any extent.



Move chute to Closed position

Step 2: Use the chute's OPEN and CLOSE buttons to move the chute to the Closed position. **WARNING:** The chutes will not automatically stop at their mechanical limits in this mode. Exercise caution to avoid damaging the chutes.



1. Hold SET LIMIT button
2. Press CLOSE button
3. Release both

Step 3: When the chute is positioned at the desired close limit, press and hold the SET LIMIT button. While holding the SET LIMIT Button, press and release the chute's CLOSE button. Release the SET LIMIT button.

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Close light blinks, indicating limit has been set

Opener goes back to normal operation

Step 4: The Close Limit Lights will flash for a few seconds, indicating that the limit has been set. The Set Limit Light will turn off and the opener will return to normal operation.



Press and Release the SET LIMIT button. The Set Limit light then turns on.

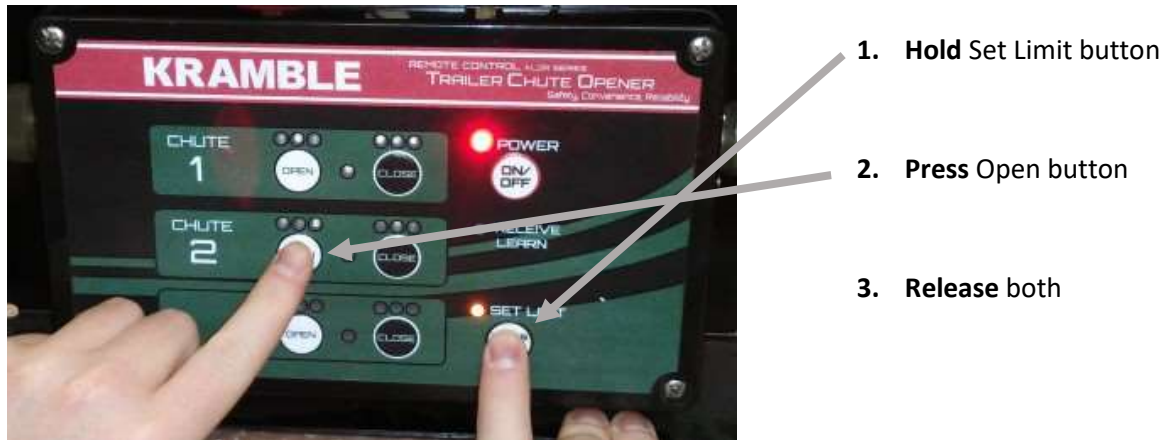
Step 5: To set the open limit, press the SET LIMIT button and release it. The Set Limit Light will be on, indicating that the chutes can be moved in either direction to any extent.



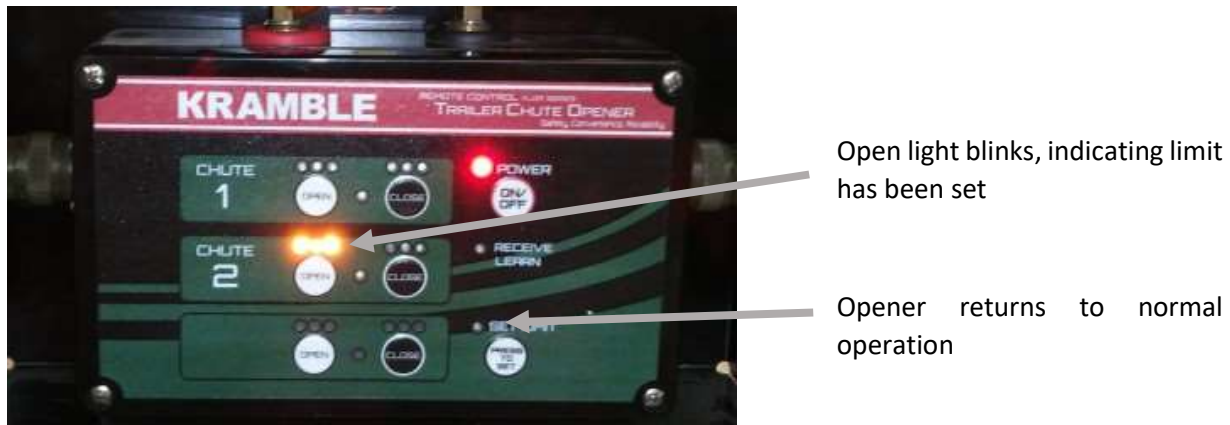
Move chute to desired Opened position

Step 6: Use the chute's OPEN and CLOSE buttons to move the chute to the desired Opened position. **WARNING:** The chutes will not automatically stop at their mechanical limits in this mode. Exercise caution to avoid damaging the chutes.

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Step 7: When the chute is positioned at the desired open limit, press and hold the SET LIMIT button. While holding the SET LIMIT Button, press and release the chute's OPEN button. Release the SET LIMIT button.



Step 8: The Open Limit Lights will flash for a few seconds, indicating that the limit has been set. The Set Limit Light will turn off and the opener will return to normal operation.

After setting the limits, be sure to test the limits by cycling the chute back and forth, making sure it automatically stops at the desired positions

To set only the closed limit, perform steps 1-4 above. Note that when the closed limit is moved, the open limit moves along with it, preserving the distance between the limits.

To set only the opened limit, perform steps 5-8 above. Note that setting only the opened limit will not affect the position of the closed limit.

To test the limit settings, close the chute part way and then open until the chute stops automatically at the preset position. The chute will slow as it approaches the limit setting and stop at the preset position, and the Open Limit LEDs will illuminate. Then operate to the Close limit. Similarly, the chute will slow as it approaches the Close limit setting and stop at the preset position, and the Close Limit LEDs will illuminate.

To disable limit sensing for a given chute, set its Open and Close limits to the same position (i.e. Set close limit, then set open limit without moving). Limit sensing is also disabled for an output if no limit sensor is connected. Disabled limit sensing is indicated by the Open and Close limit LEDs flashing alternately while the output is operating.

Electrical Installation

The Trailer Chute Opener is provided with pre-wired connectors and terminals. The polarity **must** be correct as follows: **+12V on the RED STRIPE wire**. A supplied 40A circuit protector is to be installed on the tractor battery to protect against a wiring “short”.

The Wiring Harness is supplied with disconnects at the Tractor/Trailer hitch and at each Receiver/Drive. Once the cables are routed, connect the Receiver/Drives to the harness and connect the Trailer Cable to the Tractor Power Cable. When the Power On/Off button on the Receiver/Drive is pressed the Red LED indicator will illuminate indicating normal operation.

WARNING: Do not attempt to power the console or drive from a battery charger alone as damage may occur. Connect to a properly maintained battery system only.

To Reverse the Direction of Operation:

If the Trailer Chute Opener drive is running in the wrong direction when operated, reverse the **White and Black wires on the terminals connecting to the motor case.**

To Change the Transmitter Channel Control: Refer to Channel Select instruction.

Drive Cabling

The Trailer Chute System is supplied with 4 gauge power cables and Heavy-Duty Twist-Lock Connectors for “plug-and play” installation.

CAUTION: The 40Amp Circuit Fuse Assembly provided MUST BE connected directly to the +12VDC Terminal of the battery to protect against an electrical short in the wiring.

NOTE: ENSURE CORRECT POLARITY! The RED STRIPE/MARKED wire must be connected to +12 VDC.

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General Operation

Receiver

The Receiver is equipped with a Power On/Off button on the outside of the case. When the button is pressed, the Red LED will light indicating normal operation. The Trailer Chute Opener may be operated using the manual pushbuttons on the drive case, or by remote control. Press the Power On/Off button again to turn power off.

The Trailer Chute Opener drives can be operated using the Transmitter, or alternatively, by operating the OPEN/CLOSE momentary pushbutton switches on the Receiver. Whenever a Trailer Chute Opener drive is operated, a Green LED indicating output power to that device will be lit. When input is received from the Transmitter, the Yellow Receive LED will light as well.

Diagnostic Indicators:

There are four ways that the Receiver may use to indicate to the operator that a problem has been encountered:

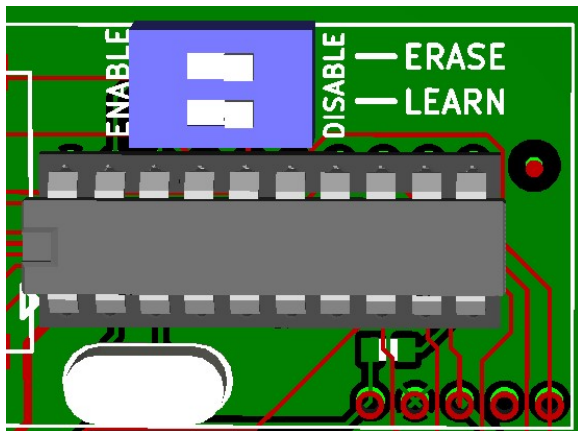
1. **LOW VOLTAGE:** If “low voltage” supply occurs to the drive, the drive will continue to operate but will reduce speed automatically to maintain maximum torque. The Operating chute’s green activity LED will blink slowly (approximately once per second) to indicate this condition. “Low voltage” is defined as less than 10 volts supply. The “blinking” status will remain until the supply voltage returns to proper level or the unit is turned off. Check the battery condition and clean/inspect all electrical connections if this condition arises.
2. **HIGH TEMPERATURE:** If the temperature of the motor controller becomes too high, the green activity LED will flash rapidly (approximately three times per second) to indicate this condition. The high temperature indication will remain and the drive will not operate until the motor controller has cooled. Check to ensure the chute moves freely or otherwise determine the source of the excess load that the drive is working to overcome.
3. **LIMIT SENSOR SELF CHECK:** The system monitors the limit sensor state to ensure that it is operating properly. If the limit sensor does not pass the self-check, limit sensing is disabled and the corresponding chute’s limit LEDs will flash alternately to indicate this. This flashing may also indicate that limit sensing has been manually disabled by the operator.
4. **MOTOR STALL:** The Trailer Chute Opener system utilizes the motor’s built-in position sensor to determine whether or not it is moving. If the controller does not see any indication of motor movement for more than two seconds, the controller will shut off its output in order to prevent damage to the motor and will rapidly flash both limit LEDs for that chute. This protection is unavailable if the motor’s position sensor is disconnected or inoperable.
5. **CURRENT OVERLOAD PROTECTION:** If a “current overload” status occurs, the Trailer Chute Opener drives are protected by a 40 Amp auto-resetting thermal breaker (fuse) installed at the tractor battery which disconnects the cabling and drives. This fuse trips

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with an audible “click” and the drives will not operate until the fuse cools and resets (generally about 15 seconds).

The Receiver is matched to a Transmitter by “learning” the transmitter’s unique security code so that the receiver will accept commands from that transmitter. The security code is provided to prevent unwanted operation of the Receiver by other devices. When the transmitter and receiver are matched and the transmitter “talks” to the Receiver, the yellow “RECEIVE” light will come on. A newly-purchased system already has its transmitter matched to the receiver. It is also possible to erase all stored security codes if desired. The Receiver is equipped with a two-position switch to enable or disable the learn and erase functions. To enable or disable a function, open the case and locate the switch as illustrated below. The switches and their positions are labeled on the circuit board. Newly-purchased systems are set by default so that the learn function is enabled and the erase function is disabled.

Figure 7 Learn/Erase Diagram



To match a transmitter to a receiver:

1. Turn the receiver power switch OFF.
2. Hold the Chute 1 OPEN button on the receiver and turn the receiver power ON, then release all buttons. The Receive/LEARN light is then lit to indicate that the receiver is waiting for a signal from the transmitter to be learned.
3. Press any button on the transmitter to send a signal and the receiver will read the transmitter’s security code and store it in memory. The Receive/LEARN light will flash three times to indicate that the transmitter has been successfully learned, and the receiver will then enter normal operating mode.

Up to eight transmitters can be learned by a receiver. If eight transmitters have already been learned by a receiver and it is instructed to learn another transmitter, the oldest-learned transmitter’s security code will be overwritten and forgotten.

To erase all stored security codes, turn the receiver power ON while holding the LEARN button, and continue holding the button until the Receive/LEARN light begins to rapidly flash. Release the button, and the light will flash more slowly for three seconds, then turn off to indicate that

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the erase operation has succeeded. If the LEARN button is pressed while the Receive/LEARN light is slowly flashing, the erase operation is aborted and the receiver retains the stored transmitter security codes.

A Trailer Chute Opener system may have up to two receivers; therefore, multi-drive systems must have each receiver matched to the same transmitter to be operated by that same transmitter.

In a system with two receivers, one receiver must be set to operate channels 1 and 2 while the other must be set to operate channel 3 and if present, channel 4. In each receiver this is determined by a switch located near the ribbon cable connector on the main circuit board. If position 1 on the switch is set to OFF, that receiver will respond to channels 1 and 2. If position 1 on the switch is set to ON, that receiver will respond to channels 3 and 4.

The Trailer Chute Opener has one automatically resetting fuse, intended to protect the RF receiver and data circuitry, this fuse will automatically reset when cooled.

The Receiver power should be turned Off when not in use to prevent undesired operation.

Transmitter

The Transmitter is powered by a 9V battery which, when installed, should light the red "power" light when the OFF/STANDBY switch is in the STANDBY position and a function switch is pressed. If the battery does not exceed 7 volts the Power light will not light, indicating battery replacement is required.

Each transmitter contains a unique identifying security code that is transmitted to the receiver during RF operation. Up to eight Transmitters can communicate with the same Receiver as long as the receiver has learned the transmitters' security codes.

The OFF/STANDBY switch (if equipped) must be in the STANDBY position before the Transmitter can be activated to prevent unintentional operation of the Receiver. The OFF/STANDBY switch does not control the Red led but the RED Led will NOT turn on when a transmitter function button is pressed if the switch is in the OFF position. To control the Receiver, slide the OFF/STANDBY switch to STANDBY, then press the desired channel function buttons. Slide the switch to OFF when no control is desired. The transmitter does not use any battery power with the switch in the STANDBY position unless a channel function control button is also pressed.

Limited Warranty

Customer satisfaction is a fundamental policy at Kramble Industries Inc. All customers can rely upon and expect to receive prompt, efficient and courteous service on all Kramble Industries Inc. manufactured equipment from each and every employee of the organization.

Kramble Industries Inc. with its office at 20-3924 Brodsky Avenue, Saskatoon, SK warrants:

To the Original Purchaser/User, each product manufactured by Kramble Industries Inc. to be free from defective material and workmanship, under normal use and service, for a period of 12 months subject to conditions outlined below. The obligation under this warranty is limited to repair, or replacement with a similar genuine company part, for any part of the product of the company's manufacture that is found to be defective.

Warranty period begins the day of purchase. During the first (1st) through the twelfth (12th) month, Kramble will furnish without charge, F.O.B. its plant, a similar genuine part to replace any part of a product of the company's manufacture which proves to be defective, in normal use and service, during this time. Labor to install or repair such parts will be absorbed by Kramble Industries Inc. If this work is to be done other than Kramble personnel, prior approval must be given by Kramble Industries Inc. as to rate and time.

This warranty shall bind the company only as follows:

The warranty shall be limited to the repair or replacement of defective parts, all other damage, loss, cost or obligation and claim whatsoever, statutory or otherwise, are hereby waived by the original purchaser\user, and again, the warranty hereby given covers only those labor charges specifically authorized by the company in advance.

- The warranty shall not apply to any failure, or damage incurred through neglect, lack of maintenance, misuse, abuse, accident, improper installation, re-designing of assemblies, ignorance, or through any other cause beyond the control of the company.
- The warranty does not cover products of other manufacturers beyond such warranty as may be made by such manufacturer.
- The warranty shall not apply to normal maintenance services, or to deterioration of appearance of items due to normal use and exposure.
- The warranty shall not apply when the original purchaser/user has allowed repair and/or service work to be conducted on the product without authorization from the company.

IMPORTANT NOTE:

Before any warranty work is done, contact Kramble Industries Inc. for authorization. Failure to do so may result in denial of warranty.

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