



Thunder Power Tarp Kit Operation

Dual Arm – Curb Side Stowing
Single Arm – Curb Side Stowing

In this booklet you will find:

OPERATING INSTRUCTIONS.....	3
Powering up or down the system.....	3
One Touch Operation.....	3
Incremental Operation.....	3
Press and Hold operation.....	4
OPTIONAL ARM ADJUSTMENT.....	4
REMOTE FUNCTIONS SETUP.....	5
THUNDER TARP RF PROGRAMMING.....	6
MAINTENANCE INFORMATION.....	8
FIELD TROUBLESHOOTING GUIDE.....	8
ERROR CODES.....	9
TROUBLE SHOOTING GUIDE.....	10
MANUAL OPERATION.....	11
REPAIR PARTS.....	13
NOTES.....	14

USE THE PROCEDURES BELOW TO OPERATE THE TARP SYSTEM

Powering up or down the system

- To turn the system on or off, locate the **Open** and **Close** buttons on the RF control module on the front of the trailer. Push and hold both buttons simultaneously for approximately 3 – 5 seconds. The top light and the two large buttons will illuminate when power is on and ready for operation.
- You can also press and hold buttons “**On/Open**” and “**OFF/CLOSE**” on the flip style remote transmitter for 3 – 5 seconds to power the system on or off.

One Touch Operation

The one touch function is fully automated. The system will stop when fully opened or closed.

- To uncover the load, push and hold the button labeled “**Open**” on the relay module or “**On/Open**” on the flip style remote transmitter for 1 to 2 1/2 seconds then release. The Gear motor will wrap the tarp around the tarp axle causing the axle to move from the closed position to the open position. This tarp system can be opened part way and stopped. (See the *incremental operation* section for more instructions on how to start and stop the system.) It will not hurt the tarp system to stop part way through the opening/closing cycle. When the system shuts down automatically, the tarp will be set to the recommended tarp tension.
- **Never travel with the tarp in a partially covered position. The trailer should always be covered when traveling.**
- To cover the load, push and hold the button labeled “**CLOSE**” on the relay module or “**OFF/CLOSE**” on the flip style remote transmitter for 1 to 2 1/2 seconds then release. The springs in the arm will move the tarp from the stowed position and across the trailer to the closed position. When the system shuts down automatically, the tarp will be set to the recommended tarp tension.

Incremental Operation

- To inch the tarp in either direction, press the “**OPEN**” or “**CLOSE**” buttons on the relay module or remote for 1 to 2 1/2 seconds then release. When you want to stop the tarp just press the “**OPEN**” or “**CLOSE**” buttons on the relay module or remote again. This will stop

the motion of the tarp system. To restart the system, press the “**OPEN**” or “**CLOSE**” buttons on the relay module or remote for 1 to 2 1/2 seconds then release to move the tarp in the desired direction. This can be done when the tarp system is in automatic operation.

Press and Hold operation

- To uncover the load using the press and hold feature, push and hold the button labeled “**OPEN**” on the relay module or “**ON/OPEN**” on the RF transmitter. The Gear motor will wrap the tarp around the tarp axle causing the axle to move from the closed position to the stowed position. Release the button when the system shuts down automatically. This tarp system can be opened part way and stopped. Anytime you release the switch the tarp system will stop. It will not hurt the tarp system to stop part way through the opening/closing cycle.
- ***Never travel with the tarp in a partially covered position. The trailer should always be covered when traveling.***
- To cover the load using the press and hold feature, push and hold the “**CLOSE**” button on the relay module or “**OFF/CLOSE**” on the RF transmitter for greater than 2 ½ seconds. The springs in the arm will move the tarp from the stowed position and across the trailer to the closed position. Release the switch when desired during operation or when the system shuts down automatically.

Optional arm adjustment

- As shipped from the factory, the front and rear arms are set to allow the axle to rest lightly on the end caps while following the contour as it moves across the trailer.
- Different types of loads and conditions may require your tarp to operate differently. For this reason the system has been designed to be very versatile. Please see the steps below to adjust your arm if need be.
- To make the arms carry the axle over heaped loads: Increase the knuckle pressure on the front and rear arms by moving the spring pin up to the middle hole. If even more lift is desired, move the spring pin to the top hole.

To increase arm control in windy conditions:

- Increase the base pivot pressure on the front and rear arms by moving the spring pin up to the middle hole. If even more control is desired, move the spring pin to the top hole.

Setting Functions on Remote:

Setting function allows functions to be blocked if not required /not going to be used.

1. Open transmitter. Observe flashing light.
2. Press and hold **"MODE"** button for 10 - 12 seconds until the top light stays lit.
3. Press the **"ON/OPEN"** button if this function will be used. Select and press the **"OFF/CLOSE"** button if you want this function to be skipped.

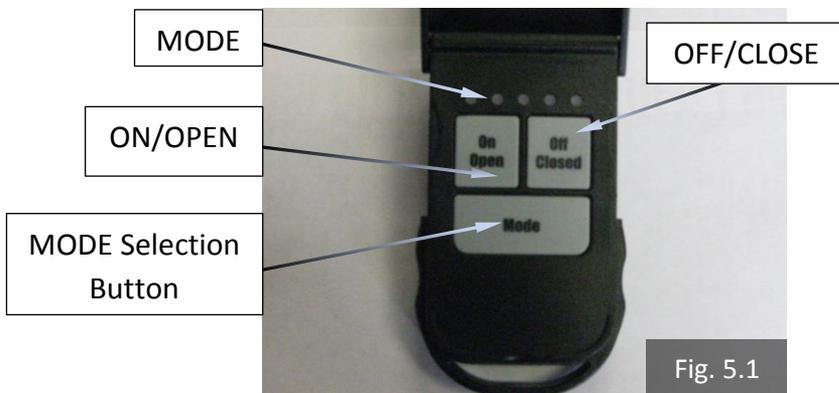


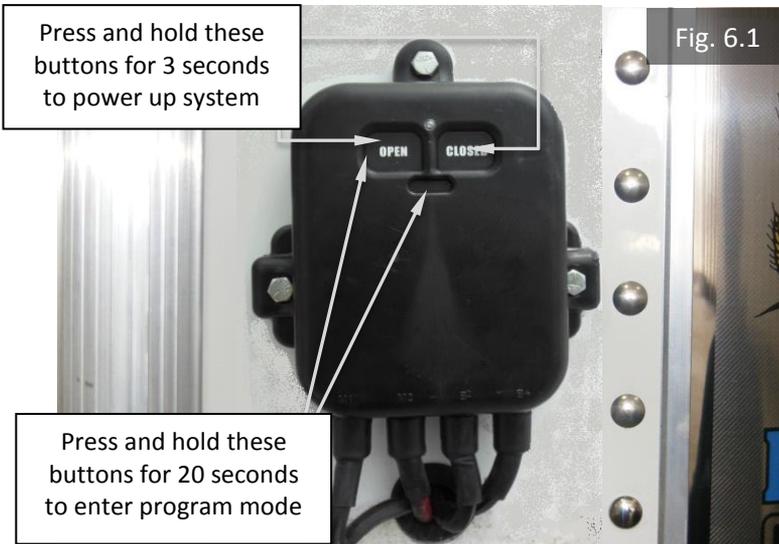
Fig. 5.1

4. Repeat Step 3 for all five functions.

a. 1 LIGHT	-	TARP SYSTEM
b. 2 LIGHTS	-	FRONT HOPPER
c. 3 LIGHTS	-	REAR HOPPER
d. 4 LIGHTS	-	AUXILIARY
e. 5 LIGHTS	-	AUXILIARY
5. When the last function has been selected, the light on the first mode function will stay lit for approximately 3 seconds to indicate active and return to flashing when process is complete.

PROGRAMING THE REMOTE TO THE RF TRANSMITTER

1. Four transmitters can be programmed to each control module so four inputs are required. Have all of the remote control units that you wish to program ready. If you have a flip style remote control, open the lid and make sure the remote is set to channel one (the first light is flashing).
2. Turn RF control module on. Press and hold the two large buttons (**Open** and **Close**) for approximately 3 seconds – the top light and the two large buttons will illuminate when power is on.
3. Push and hold the slotted button and the large **Open** button (See Figure 1 below) simultaneously and hold for approximately 10 seconds. The top light will flash blue rapidly and will continue to flash for approximately 10 seconds. If the light on the control box stops, flashing before all the remotes are programmed you will need to restart and reprogram all the remotes.



The control box resets the list of remotes it remembers every time you enter the programming mode to program a remote. Remotes that were previously programmed are removed from the control box memory and will no longer be able to control the system. This is why all remotes need to be programmed at the same time.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada licence-exempt RSS-xxx standard. 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.

Flip style remote. (Figure 2.1)

Press the **On/Open** button on the flip style for the first remote control to be programmed for 1 second (see Figure 7.1 below). The blue light on the control box will stop flashing for a moment and then start flashing again. Repeat this for all the remote controls that need to be programmed while the light on the control box is still flashing. If one transmitter is being programmed, the “**ON/OPEN**” button will be pushed four times. If two transmitters are being programmed then the “**ON/OPEN**” button of the second transmitter will be pushed three times. If three transmitters are being programmed then the “**ON/OPEN**” button of the third transmitter will be pushed two times. When four transmitters are programmed press the “**ON/OPEN**” button of each transmitter once. The light on the control module will stop flashing when the four inputs have been received.

Press for 1 second



Recommended maintenance:

- All electrical connections should be checked regularly for corrosion. If any connections are found with corrosion, clean the connection and apply dielectric grease before reconnecting. Electrical connections can be found at all motors, switches, contactors, limit switches, control boxes and batteries. Motor mounting bolts should be checked periodically to ensure a minimum torque of 70 in-lbs. (5.8 ft.-lbs.). All mounting hardware should be checked to insure all system components are securely fastened. Visually inspect all moving parts for abnormal or excessive wear.

Field Troubleshooting Guide:

1. Check main circuit breaker at battery to make sure it is not tripped. If tripped, reset.
2. Check all connections to make sure they are properly secured. Check connections at the terminal connection and where the terminal is crimped to the wire. Locations to check: battery connection, circuit breaker near battery, male and female plugs, relay connections, motor connection.
3. Ensure relay is powered up. If the RF module is on, the LED will be solid blue. If the LED is not on, power the module up by pushing both large buttons simultaneously for 3 – 5 seconds until LED turns on. If RF module will not power up, remove and replace. If module will power up but system will not function, proceed to step 4.
4. Disconnect power leads from motor. Check for motor operation in both directions. To do so, use a set of jumper cables to go direct from battery to motor terminals (+lead to + terminal, - lead to - terminal). To reverse direction, remove the jumper cables from terminals and swap the leads to the opposite terminals (+lead to - terminal, - lead to + terminal). If motor does not operate in one or both directions, replace motor. If motor operates in both directions, proceed to step 5.
5. Reconnect input wires to motor and check for operation.
6. Check for input power at relay using a voltmeter. If using voltmeter, input voltage should be a minimum of 12V. If voltage is good, proceed to step 6. If no or low voltage, proceed to step 7.
7. Check voltage at relay output. To do so, connect tester leads to output terminals. Activate in one direction, check voltage, activate in opposite direction, and confirm voltage. If no or low voltage, relay must be replaced. If good proceed to step 8.
8. Check voltage at output circuit breaker located near battery. If no voltage or low voltage, replace circuit breaker.
9. Use chart on next page for error codes to help diagnose problems with the control module.

Control Module LED Codes

LED Activity	LED Description	LED Activity Duration
Off	Ready to run	While at rest
Solid on	Motor is running normally	While running
2 flashes	Programmed stall current: Indicates proper tarp tension at end of cycle.	Repeats twice then resets
3 flashes	Module over current protection	Repeats for 10 seconds then resets
4 flashes	Motor overheat protection	Repeats for 10 seconds then resets
5 flashes	Over voltage (>15.5 volts)	Will repeat continuously until voltage drops below 15.5 volts then reset after 10 sec. During 10 sec reset, unit will function normally.
6 flashes	Under voltage (<7.5 volts)	Will repeat continuously until voltage is above 7.5 volts then reset after 10 sec. During 10 sec reset, unit will function normally.
7 flashes	Wiring fault: no load attached, motor leads improperly connected, motor lead shorted to ground.	Will continue to repeat until fault is corrected; unplug power to reset the system.

Notes

- The unit will not function while the LED is flashing, except as noted above.
- Wiring incorrectly or shorting across the terminals while wiring could damage the module. See Troubleshooting Guide below for more information.

Troubleshooting Guide

Problem	Problem Description
No Operation No LED	<ul style="list-style-type: none"> ▪ Make sure the system is turned on, press the open and close button and hold for 3 – 5 second to turn the power on. ▪ If attempting to operate the module and there is no LED activity, check the power supply (dead battery, severed connection to battery, circuit breaker tripped, etc.). ▪ No operation could also mean that the + and – wires are backwards/swapped.
2 flashes	<ul style="list-style-type: none"> ▪ If flashing this code before end of cycle, there is likely a problem with the tarp system. Check the system for obstructions or damage that would cause added difficulty to roll the tarp. Repair issue and try running system again.
3 flashes	<ul style="list-style-type: none"> ▪ Solution is the same as above.
4 flashes	<ul style="list-style-type: none"> ▪ This code is caused by excessive cycling without allowing the motor to cool down. Allow the motor to cool down and try operating the system again. (longer cool down time = longer allowable operation time).
5 flashes	<ul style="list-style-type: none"> ▪ Check battery voltage and alternator voltage. Repair any issue and try running system again.
6 flashes	<ul style="list-style-type: none"> ▪ Check battery voltage. If okay then check for poor connection between battery and module (loose or corroded terminal, damaged wire, damaged circuit breaker), etc.
7 flashes	<ul style="list-style-type: none"> ▪ There are multiple reasons for this code: ▪ There is a bad connection between module and motor. Check for loose or corroded connections or bad motor (example: worn out brushes). ▪ Motor lead shorted to ground. Check for bare or pinched wires between module and motor. ▪ The module is damaged. This can occur if the module is wired or connected improperly or if arcing occurs across the terminals. To check for a damaged module, leave power and ground connected, completely disconnect the motor wires, and use a metal wrench or screwdriver to short across the M1 & M2 terminals on the module. If the module still blinks this code, it will need to be replaced. ▪ Module is wired incorrectly. Check for battery wires connected to the motor output terminals and the motor wires connected to the + and – input terminals.
One way operation	<ul style="list-style-type: none"> ▪ Check for disconnected or loose input wire. Check for moisture or contamination between the module spade terminals. Clean and add dielectric grease. Also check output from switch/RF.
Motor instantly on when power is connected	<ul style="list-style-type: none"> ▪ Module is wired incorrectly. Check for battery wires connected to the motor output terminals and motor wires connected to the + and – input terminals.

Thunder Electric Tarp System, Manual Operations:

Your Thunder Electric Tarp System should operate smoothly and provide years of service. In the unlikely event that an issue arises with the electric drive motor for the system, please follow these instructions to manually open and close the tarp system.

1. Remove the motor shaft drive nut and bolt assembly from the nose of the trailer (see picture below:

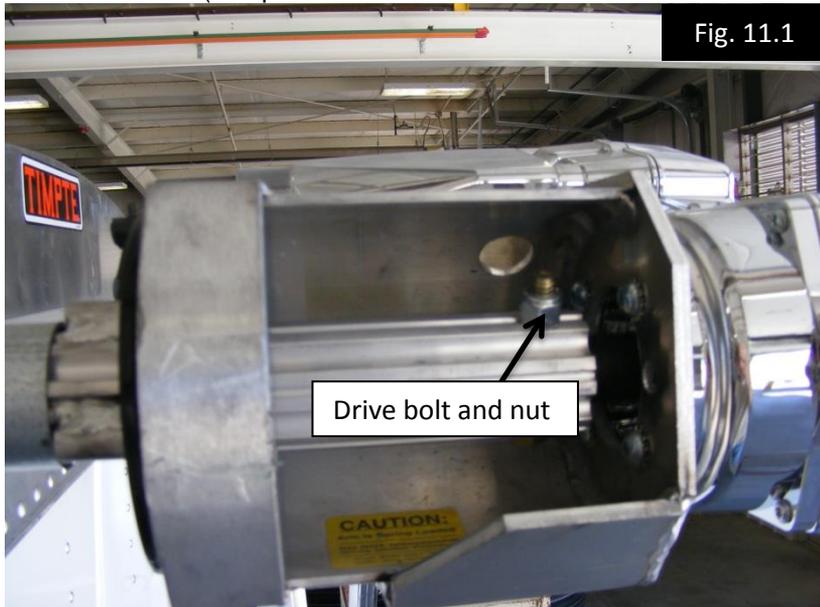


Fig. 11.1

Note: Save the nut and bolt as the fasteners will be re-used for the new motor.

2. Remove the Manual Tarp Crank Handle from the Wall-Side Spring Retaining Clips. Use the crank handle to operate the tarp system manually.



Fig. 11.2

3. Locate the universal joint and roll tube spline on the tarp roll rube, rear of the trailer.



Fig. 12.1

4. Slide the Tarp Crank Handle universal joint and roll tube drive spline together (rear of trailer) by pushing the universal in-place until fully engaged with the roll tube spline.

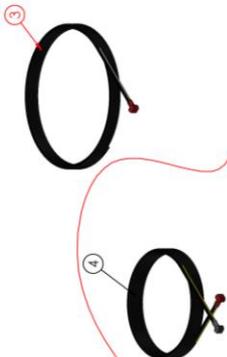
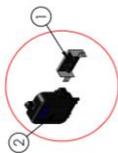
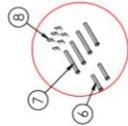


Fig. 12.2

5. Roll the tarp open and closed with the crank handle.
6. When finished, return the handle to the Wall-Side Tarp Crank Handle Retainers for storage and/or transport.

CAUTION:

1. The front and rear arms are spring loaded and can shift when the bolts are removed.
2. Use an OSHA approved work platform when performing any maintenance on the motor or arms.



ITEM NO.	PART NUMBERS	QTY.	DESCRIPTION
1	100096	1	Relay, Rifle Touch Amp Sensing Board
2	100094	1	Moisture Resistant R/F Control Unit
3	031-53345	1	Wire, 60" Dual Conductor 6 Ga one end terminated w/ Shrink tube
4	031-53346	1	Wire Assembly Red/Black 8ga Terminated on Both Ends
5	032-52595	1	U-Bolt 3/8" x 6-1/2"
6	032-53347	1	Pin, 1/2" x 2-3/4"
7	032-53348	1	Pin, 1/2" x 4-1/8"
8	032-53349	1	Coffer Pin, 1/8"
9	034-52590	1	Bushing, Axel Stabilizer, Motor End
10	100469	1	Bushing, One Piece Rear Upper Arm Busting
12	035-52487	1	Arm, Base Pivot
13	035-52488	1	Knuckle Pin W/Stop Plate
14	035-52589	1	Arm, Upper Pivot Front
15	035-52591	1	Pin, Pivot S-Spring
16	035-52592	1	Spring, Spiral Torsion Sp 1 1/4"
17	100480	1	Arm, Upper Pivot Rear
18	043-52596	1	Adapter, 2" Axle to 1" Motor Shaft
19	035-51995	1	Gear Motor, Lamp Stretcher



Notes: