

Installation Manual for the



⚠ WARNING! ⚠

This equipment is similar to other gate or door equipment and meets or exceeds Underwriters Laboratory Standard 325 (UL 325). However, gate equipment has hazards associated with its use and therefore by installing this product the installer and user accept full responsibility for following and noting the installation and safety instructions. Failure to follow installation and safety instructions can result in hazards developing due to improper assembly. You agree to properly install this product and that if you fail to do so GTO, Inc. shall in no event be liable for direct, indirect, incidental, special or consequential damages or loss of profits whether based in contract tort or any other legal theory during the course of the warranty or at any time thereafter. The installer and/or user agree to assume responsibility for all liability and use of this product releasing GTO, Inc. from any and all liability. If you are not in agreement with this disclaimer or do not feel capable of properly following all installation and safety instructions you may return this product for full replacement value.

READ ALL INSTRUCTIONS CAREFULLY AND COMPLETELY before attempting to install and use this automatic gate opener. This gate opener produces a high level of force. Stay clear of the unit while it is operating and exercise caution at all times.

All automatic gate openers are intended for use on vehicular gates only.

This product meets and exceeds the requirements of UL 325, the standard which regulates gate opener safety, as established and made effective March 1, 2000, by Underwriters Laboratories Inc.



For more information on Mighty Mule's full line of Automatic Gate Openers and Access Controls visit our website at www.mightymule.com

GTO Sales: (800) 543-GATE (4283) or (850) 575-0176 • Fax (850) 575-8912 or
GTO Technical Service (800) 543-1236 or (850) 575-4144

For 24 hour/day, 7 day/week Technical Service visit <http://support.gtoinc.com/support/troubleshooter.aspx>

The Mighty Mule® Gate Opener is intended for use with vehicular swing gates. The opener can be used in Class I, Class II and Class III applications.

VEHICULAR GATE OPENER CLASS CATEGORIES

Residential Vehicular Gate Opener-Class I: A vehicular gate opener (or system) intended for use in a home of one-to-four single family dwelling, or a garage or parking area associated therewith.

Commercial/General Access Vehicular Gate Opener-Class II: A vehicular gate opener (or system) intended for use in a commercial location or building such as a multifamily housing unit (five or more single family units), hotel, garages, retail store, or other building servicing the general public.

Industrial/Limited Access Vehicular Gate Opener-Class III: A vehicular gate opener (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

Conversion Chart

<i>Converting Metric Units to English Equivalents</i>			
When You Know	Multiply By	To Find	Symbol
centimeters	0.3937	inches	in. (or ")
meters	3.2808	feet	ft. (or')
kilograms	2.2046	pounds	lb. (or #)
<i>Converting English Units to Metric Equivalents</i>			
When You Know	Multiply By	To Find	Symbol
inches	2.5400	centimeters	cm
feet	0.3048	meters	m
pounds	0.4535	kilograms	kg
<i>Converting Temperature</i>			
deg. Celsius	$(^{\circ}\text{C} \times 1.8) + 32$	deg. Fahrenheit	$^{\circ}\text{F}$
deg. Fahrenheit	$(^{\circ}\text{F} - 32) \div 1.8$	deg. Celsius	$^{\circ}\text{C}$

FOR YOUR RECORDS

Please record the product serial number (located on the rear of opener arm), and the date and place of purchase in the spaces provided below. Refer to this information when calling GTO for service or assistance with your automatic gate opener.

Serial Number _____ **Date of Purchase** _____

Place of Purchase _____

Remember to keep all receipts for proof of purchase.

Table of Contents

KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

Gate Opener Class Categories-----	inside cover
Units and Standards Conversion Chart -----	inside cover
PLEASE READ THIS FIRST! -----	page iii
Important Safety Instructions -----	page 1
Disconnecting the Opener-----	page 1
Important Safety Instructions for the Consumer -----	page 2
Secondary Means of Protection Against Entrapment -----	page 5
Required Safety Precautions for Gates-----	page 6
Warning Signs and Labels-----	page 7
Installation -----	page 8
Parts List -----	page 8
Tools and Items Needed for Installation-----	page 9
Technical Specifications -----	page 10
Preparation of the Gate -----	page 11
Installation Overview for Pull-To-Open Gates -----	page 11
Installation of the First Gate Opener -----	page 13
Mounting the Opener-----	page 17
Installation of the Closed Position Stop-----	page 18
Mounting the Control Box-----	page 20
Connecting the Battery -----	page 20
Connecting the Battery Wires to Control Board -----	page 21
Connecting Opener Power Cables -----	page 22
Powering Options: Transformer or Solar -----	page 23
Solar Panel and Gate Activity Chart -----	page 23
Connecting Solar Panel(s)-----	page 24
Connecting the Transformer -----	page 25
Setting the Closed Position Limit -----	page 27
Control Board Settings -----	page 28
Stall Force and Auto-Close-----	page 28
Setting Your Personal Transmitter Code -----	page 29
Push-To-Open Installation -----	page 30
Setting the Open Position Limit -----	page 32
Connecting Additional Safety Devices -----	page 33
Control Board Connections -----	page 34
Connecting Accessories -----	page 35
Visual and Audible Diagnostic Indicators -----	page 36
Warranty Service -----	page 38
Accessory Catalog -----	page 39



PLEASE READ THIS FIRST!

Thank you for purchasing a **Mighty Mule® 202 E-Z Gate Opener**—GTO's "do-it-yourself" automatic gate opener! When correctly installed and properly used, your **Mighty Mule® E-Z Gate Opener** will give you many years of reliable service. Please read the following information and watch the enclosed video to ensure you have the correct system for your particular needs. Furthermore, this manual and the video will enable you to properly install your **Mighty Mule® E-Z Gate Opener**.

The **Mighty Mule® 202 Gate Opener** is designed for installation on **pull-to-open dual gate leaves** (gates that open *into* the property). By purchasing an *accessory bracket (FM148)*, the **Mighty Mule® 202 Gate Opener** can accommodate **push-to-open dual gate leaves** (gates that open *out* from the property). The gates must not exceed 12 feet and 300 pounds per leaf (*please see Technical Specifications on page 10*). The **Mighty Mule® E-Z Gate Opener** can be used on vinyl, aluminum, chain link, farm tube, and wrought iron gates. Use on solid gates is not recommended. Solid surface gates have a high resistance to the wind.

Use on solid (surface) gates is not recommended. Solid surface gates have a high resistance to the wind. If the wind is strong enough, the opener will obstruct and stop, blow fuses, or may damage the equipment.

The **Mighty Mule® E-Z Gate Opener** accommodates extra transmitters, digital keypads, solar panels, push buttons, automatic gate locks, and other access control products. These optional accessories (*see the enclosed Mighty Mule® Accessory Catalog*) are available at most stores. Your store should be able to special order any accessory not in stock. If your store cannot special order accessories, please call the GTO Sales Department (800-543-GATE).

The **Mighty Mule® E-Z Gate Opener** features **adjustable obstruction sensing**. This safety feature makes the gate stop and reverse direction within 2 seconds when it comes in contact with an obstruction. **MIN** is the factory setting; meaning the gate will exert the minimum force on an obstruction before it stops and reverses direction.

The **Mighty Mule® E-Z Gate Opener** also has an **adjustable auto-close feature**. After the gate reaches the fully open position, it can be set to remain open up to 120 seconds before automatically closing. Pressing the transmitter button at any time after the gate opens fully will cause it to close immediately. **OFF** is the factory setting; meaning the gate will stay open until you press the transmitter (or keypad, etc.) again.

PLEASE NOTE—If your application requires any of the following:

- Column Mounting;
- Slide gates;
- Swing gates longer than 12 feet or weighing more than 300 pounds;
- Professional installation;

please call GTO at **(800) 543-GATE [4283]** or **(850) 575-0176** for information about our **GTO/PRO** professional line of gate openers and accessories. Our Sales Department will be glad to give you the name and phone number of a **GTO/PRO** dealer near you.

BEFORE YOU BEGIN TO INSTALL YOUR AUTOMATIC GATE OPENER: watch the enclosed video and read these instructions carefully and completely to become familiar with all parts and installation steps. The video is only designed as an overview of the installation procedure. You must read the installation manual for detailed instructions on gate opener safety and proper use of the gate opener.




IMPORTANT SAFETY INSTRUCTIONS




Because automatic gate openers produce high levels of force, consumers need to know the potential hazards associated with improperly designed, installed, and maintained automated gate opener systems. *Keep in mind that the gate opener is just one component of the total gate operating system.* Each component must work in unison to provide the consumer with convenience, security, and safety.

This manual contains various safety precautions and warnings for the consumer. Because there are many possible applications of the gate opener, the safety precautions and warnings contained in this manual cannot be completely exhaustive in nature. They do, however, provide an overview of the safe design, installation, and use of this product. **CAREFULLY READ AND FOLLOW ALL SAFETY PRECAUTIONS, WARNINGS, AND INSTALLATION INSTRUCTIONS TO ENSURE THE SAFE SYSTEM DESIGN, INSTALLATION, AND USE OF THIS PRODUCT.**

Precautions and warnings in this manual are identified with  this warning symbol. The symbol identifies conditions that can result in damage to the opener or its components, serious injury, or death.

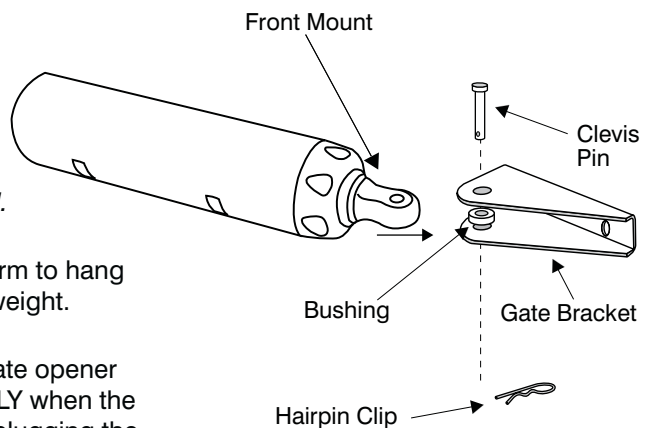
Because GTO automatic gate openers are only part of the total gate operating system, it is the responsibility of the consumer to ensure that the total system is safe for its intended use.

To Manually Open and Close the Gate, Follow the Procedure Below:

 **CAUTION:** The gate will move freely and uncontrolled when the gate opener is removed from the gate. **ONLY** disconnect the opener when the opener power switch is **OFF** and the gate is **NOT** moving.

Disconnecting the Opener

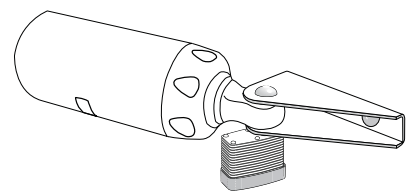
1. Turn opener power switch **OFF**.
2. Remove hairpin clip, clevis pin, and bushing from the front mounting point.
3. Remove the opener from the mount.
The gate can be opened and closed manually when the opener is disconnected.



IMPORTANT: NEVER allow opener arm to hang by the front mount - it will break from the arm weight.

CAUTION: Because the Mighty Mule gate opener is battery powered, disconnect the opener **ONLY** when the power switch on the opener is turned **OFF**. Unplugging the transformer does not turn power to the opener **OFF**.

NOTE: Substitute a **Pin Lock (FM133)** for the clevis pin on the front mount only of the gate opener to prevent unauthorized removal of the opener from the gate (see Accessory Catalog).





IMPORTANT SAFETY INSTRUCTIONS



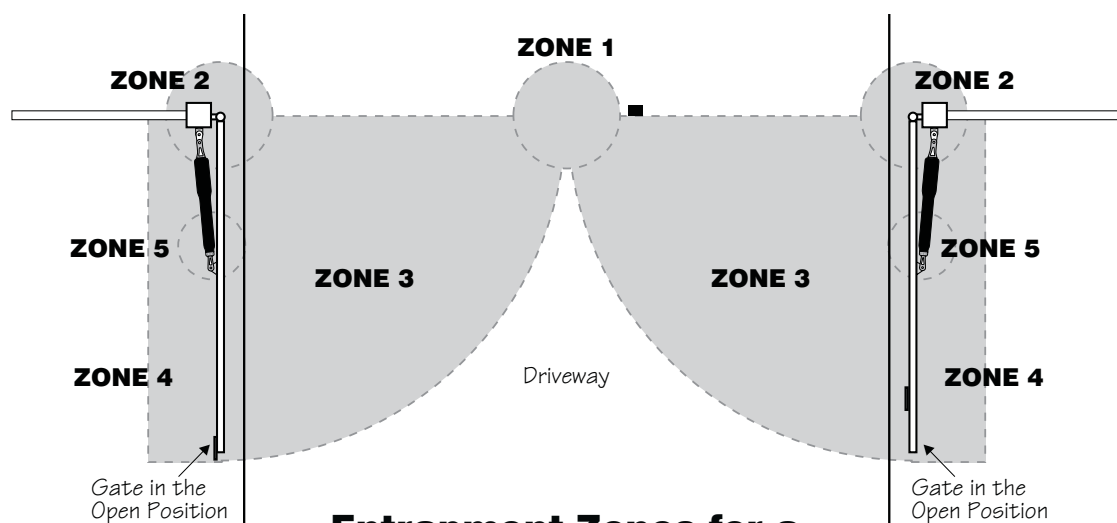
For The Consumer

WARNING: To reduce the risk of injury or death:

1. **READ AND FOLLOW ALL INSTRUCTIONS.** Failure to meet the requirements set forth in the instruction manual could cause severe injury and/or death, for which the manufacturer cannot be held responsible.
2. When designing a system that will be entered from a highway or main thoroughfare, make sure the system is placed far enough from the road to prevent traffic congestion.
3. The gate must be installed in a location that provides adequate clearance between it and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates **must not** open into public access areas.
4. The gate and gate opener installation **must comply with any applicable local codes.**

I. Before Installation

1. Verify this opener is proper for the type and size of gate, its frequency of use and the proper class rating.
2. Make sure the gate has been properly installed and swings freely in both directions. Repair or replace all worn or damaged gate hardware prior to installation. A freely moving gate will require less force to operate and will enhance the performance of the opener and safety devices used with the system.
3. Review the operation of the system to become familiar with its safety features. Understand how to disconnect the opener for manual gate operation (see page 1).
4. This gate opener is intended for **vehicular gates ONLY**. A separate entrance or gate must be installed for pedestrian use (see page 6).
5. Always keep people and objects away from the gate and its area of travel. **NO ONE SHOULD CROSS THE PATH OF A MOVING GATE.**
6. Pay close attention to the diagram below and be aware of these areas at all times.



Entrapment Zones for a Pull-To-Open Application



IMPORTANT SAFETY INSTRUCTIONS



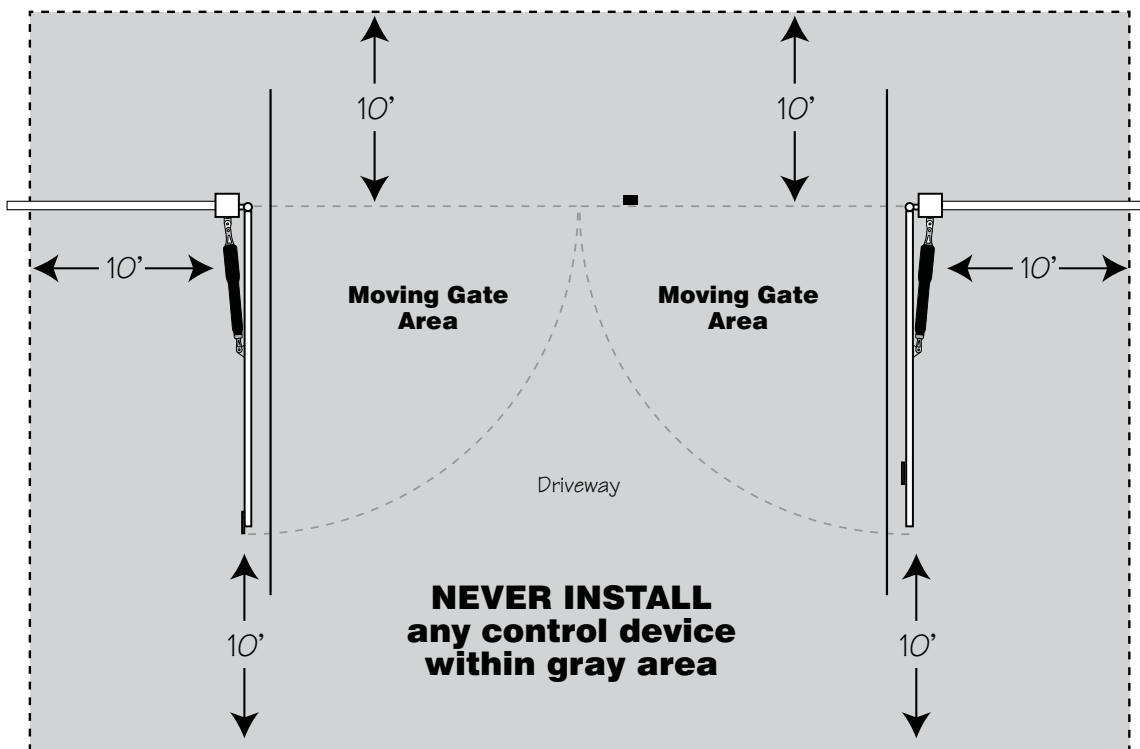
Entrapment Zones for a proper Pull-To-Open installation:

- Zone 1 – leading edge of the gate and the fence post.
- Zone 2 – between the gate and the gate post.
- Zone 3 – the path of the gate.
- Zone 4 – the space between the gate in the open position and any object such as a wall, fence, tree, etc.
- Zone 5 – pinch points between the opener and gate.

II. During Installation

1. Install the gate opener on the inside of the property and fence line. **DO NOT** install an opener on the outside of the gate where the public has access to it.
2. Be careful with moving parts and avoid close proximity to areas where fingers or hands could be pinched.
3. Devices such as contact sensors (safety edges) and non contact sensors (photo beams) provide additional protection against entrapment.
4. If push buttons or key switches are installed, they should be within sight of the gate, yet located at least 10 feet from any moving part of the gate (see diagram below). **Never install any control device where a user will be tempted to reach through the gate to activate the gate opener.**
5. Do not activate your gate opener unless you can see it and can determine that its area of travel is clear of people, pets, or other obstructions. Watch the gate through its entire movement.
6. Secure outdoor or easily accessed gate opener controls in order to prohibit unauthorized use of the gate.

Pull-To-Open Application





IMPORTANT SAFETY INSTRUCTIONS



III. After Installation

1. Attach the **warning signs** (*included*) to each side of the gate to alert the public of automatic gate operation. It is *your responsibility* to post warning signs on both sides of your gate. If any of these signs or warning decals become damaged, illegible or missing, replace them immediately. Contact GTO for free replacements.
2. The gate is automatic and could move at any time, posing a serious risk of entrapment. No one should be in contact with an activated gate when it is moving or stationary.
3. Do not attempt to drive into the gate area while the gate is moving; wait until the gate comes to a complete stop.
4. Do not attempt to "beat the gate" while the gate is closing. This is extremely dangerous.
5. Do not allow children or pets near your gate. **Never let children operate or play with gate controls.** Keep the remote controls away from children and unauthorized users; store controls where children and unauthorized users do not have access to them.
6. **KEEP GATE AND GATE OPENER PROPERLY MAINTAINED.** Always turn power to opener OFF before performing any maintenance. Regularly grease the gate hinges. Clean the push-pull tube with a soft, dry cloth and apply silicone spray to it at least once per month.
7. To operate this equipment safely, YOU must know how to disconnect the opener for manual gate operation (*see page 1*). If you have read the instructions and still do not understand how to disconnect the opener, contact the GTO Service Department.
8. Disconnect the opener **ONLY** when the power is **TURNED OFF** and the gate is **NOT** moving.
9. Make arrangements with local fire and law enforcement for emergency access.
10. Distribute and discuss copies of the **IMPORTANT SAFETY INSTRUCTIONS** section of this manual with all persons authorized to use your gate.
11. **IMPORTANT: Save these safety instructions. Make sure everyone who is using or will be around the gate and gate opener are aware of the dangers associated with automated gates. In the event you sell the property with the gate opener or sell the gate opener, provide a copy of these safety instructions to the new owner.**

Should you lose or misplace this manual, a copy can be obtained by downloading one from the Mighty Mule® web site (www.mightymule.com), by contacting GTO, Inc., at 3121 Hartsfield Road, Tallahassee, Florida 32303 or by calling 1-800-543-4283 and requesting a duplicate copy. One will be provided to you free of charge.



IMPORTANT SAFETY INSTRUCTIONS

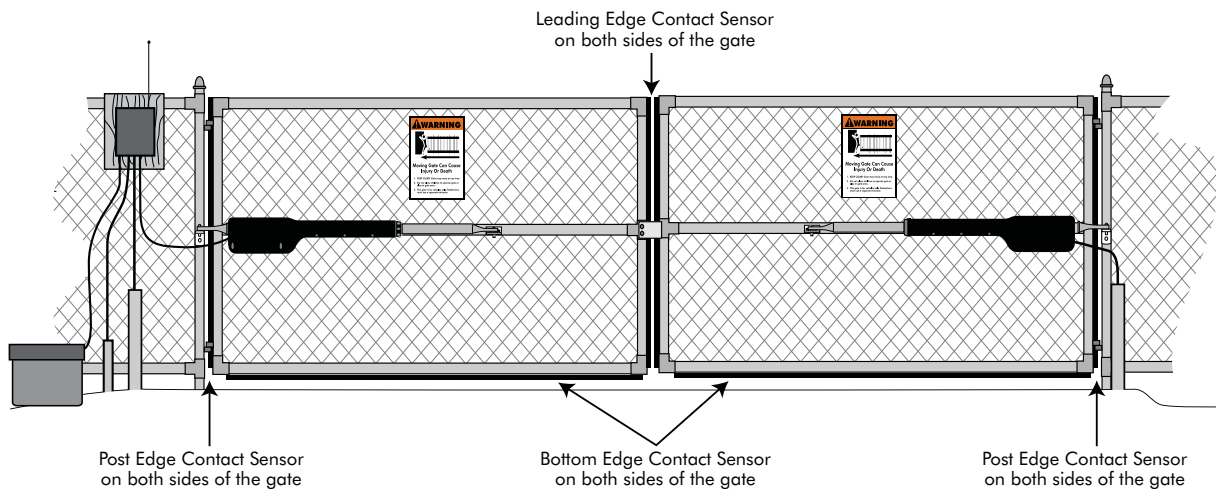


Secondary Means of Protection Against Entrapment

As specified by Gate Opener Safety Standard, UL 325 (30A.1.1), automatic gate openers shall have an inherent entrapment sensing system, and shall have *provisions for, or be supplied with*, at least one independent secondary means to protect against entrapment. The Mighty Mule® utilizes **Type A**, an inherent (i.e., built-in) entrapment sensing system as the **primary** type of entrapment protection. Also, the Mighty Mule® has **provisions for** the connection of **Type B2** protection to be used as the **secondary** type of entrapment protection, if desired.

1. For gate openers utilizing a contact sensor (e.g., safety edge sensor– Type B2) in accordance with UL 325 (51.8.4 [i]):

- A. One or more contact sensors shall be located at the leading edge, bottom edge, and post edge, both inside and outside of a vehicular swing gate system.
- B. A hard wired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate opener is not subjected to mechanical damage.
- C. A wireless contact sensor such as one that transmits radio frequency (RF) signals to the gate opener for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless contact sensor shall function under the intended end-use conditions.



ENTRAPMENT ALARM (UL 325; 30A.1.1A)

The Mighty Mule® E-Z Gate Opener is designed to stop and reverse within 2 seconds when the gate comes in contact with an obstruction. Additionally, these openers are equipped with an **audio entrapment alarm** which will activate if the unit obstructs **twice** while opening or closing. This alarm will sound for a period of 5 minutes, or until the opener receives an intended signal from a hard wired entry/exit source (e.g. push button control or keypad) and the gate returns to a fully open or fully closed position. Turning the power switch on the control box OFF and back ON will also deactivate the alarm. Wireless controls such as transmitters and wireless keypads will not deactivate the alarm.

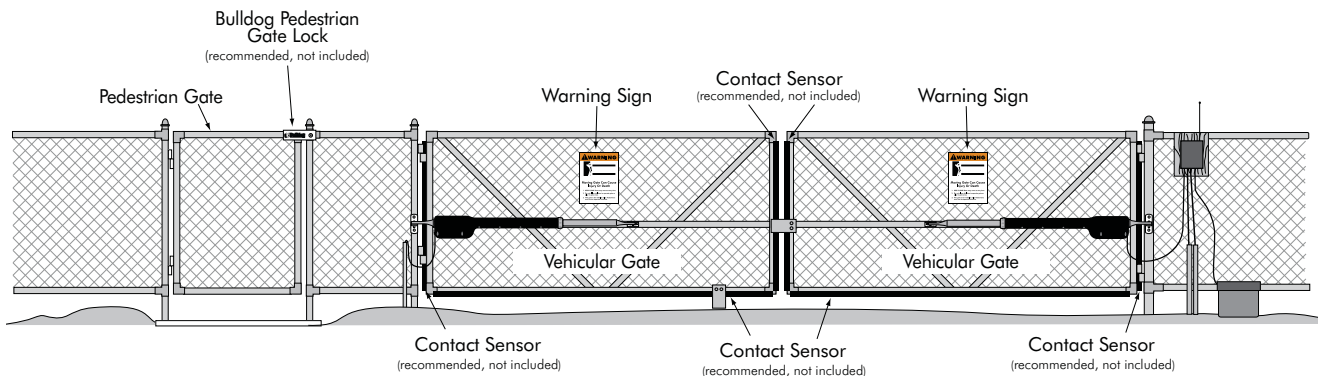


IMPORTANT SAFETY INSTRUCTIONS



Required Safety Precautions for Gates Install Warning Signs

Warning signs alert people of automatic gate operation and are **required** when installing the Mighty Mule® E-Z Gate Opener. Furthermore, a walk-through gate must be installed if pedestrian traffic is expected near the vehicular gate. We recommend using the **GTO Bulldog Pedestrian Gate Lock** (Call the GTO Sales Department) for controlled access.



Entrapment Protection

GTO's inherent obstruction settings, even when properly adjusted, **may not be sensitive enough to prevent bodily injury in some circumstances.** For this reason, safety devices such as safety edge sensors (or photoelectric sensors), which stop and reverse gate direction upon sensing an obstruction, are suggested for enhanced protection against entrapment.

Warning Signs

The warning signs (at right) must be installed on both sides of the gate (see page 7 for details).





IMPORTANT SAFETY INSTRUCTIONS



! WARNING



Moving Gate Can Cause Injury Or Death

- 1. KEEP CLEAR! Gate may move at any time.**
- 2. Do not allow children to operate gate or play in gate area.**
- 3. This gate is for vehicles only. Pedestrians must use a separate entrance.**


Warning signs (4 enclosed) to be installed on both sides of each gate (3-5 feet above the bottom of the gate)

These warning labels should be found at the locations specified below. If any are missing, immediately contact GTO for replacements.



GTO DC SW200 Series
Conforms to UL325
5th Edition Standards
mm/dd/yy
Serial No. **MM202-0000000**
GTO, Inc. - Tallahassee, Florida USA

Product identification label (2) installed under rear mount of each arm



MIGHTY MULE 202
E-Z GATE® OPENER DUAL
1-800-543-GATE (4283) • www.mightymule.com

TO MANUALLY OPEN AND CLOSE THE GATE

1. Turn opener power switch OFF.
2. Disconnect front or rear mount from mounting bracket.
3. Pull opener away from mounting bracket and move gate.

Disconnect opener ONLY when the power switch is OFF and the gate is not moving.

Control box label (1) installed on front of the control box



MIGHTY MULE 202
E-Z GATE® OPENER DUAL
1-800-543-GATE (4283) • www.mightymule.com

! WARNING

MOVING GATE Can Cause Injury or Death



- 1. KEEP CLEAR! Gate may move at any time.**
- 2. Do not allow children to operate gate or play in gate area.**
- 3. This gate is for vehicles only. Pedestrians must use separate entrance.**

Maximum Gate: 300 lbs. (136.1 kg); 12 ft. (3.7 m) • Voltage: 12 Vdc;
Frequency: 0Hz; Power: 25W • Class I, II and III Vehicular Swing Gate Operator

Logo and warning labels (4) installed on each side of opener housings



Parts List - Opener and Mounting Hardware



Battery Wire Harness (1)



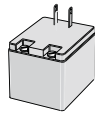
Installation DVD (1)



Warning Signs (4)



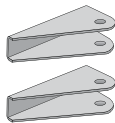
Control Box (1)



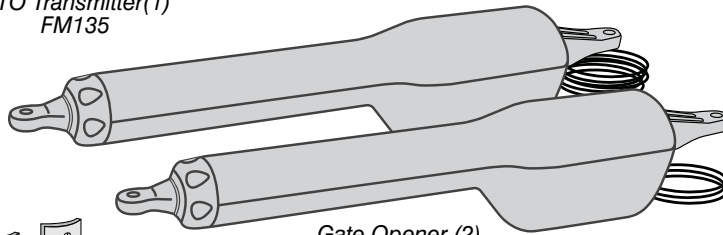
Transformer (1)
RB502



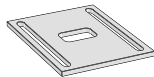
GTO Transmitter(1)
FM135



Gate Bracket (2)



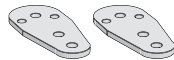
Gate Opener (2)



Closed Position Stop Plate (2)



Post Bracket (2)



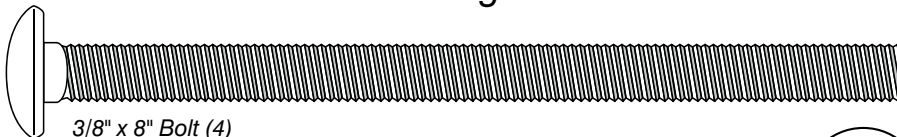
Post Pivot Bracket (2)



Customer Support Card (1)

Hardware Bag Contents

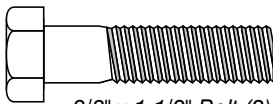
8" Nylon Cable Tie (14)



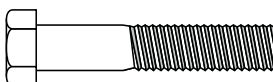
3/8" x 8" Bolt (4)



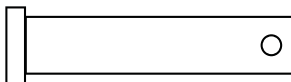
3/8" x 2-3/4" Bolt (4)



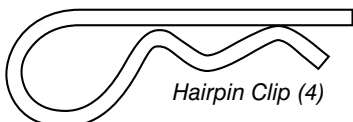
3/8" x 1-1/2" Bolt (2)



5/16" x 1-1/2" Bolt (2)

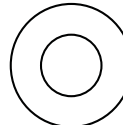


3/8" x 1-1/2" Clevis Pin (4)

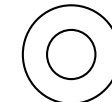


Hairpin Clip (4)

3/8" Washer (12)



5/16" Washer (2)



3/8" Lock Nut (10)



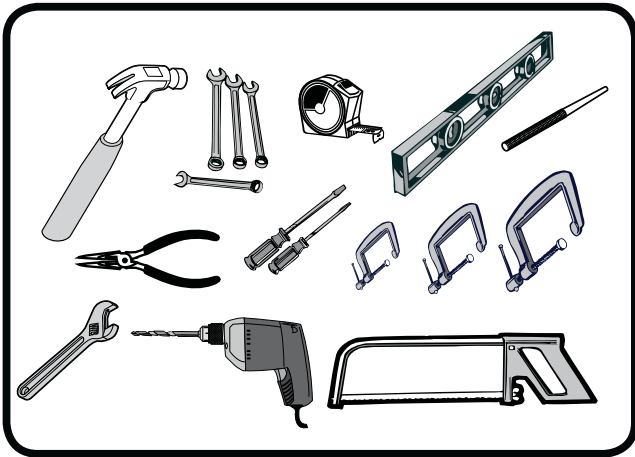
5/16" Lock Nut (2)



3/8" Bushings (2)



2" Mounting Screw (6)



Tools Needed

- Power Drill
- Open End Wrenches — 1/2", and 9/16"
- Adjustable Wrench
- 3/8" Drill Bit
- Hacksaw or Heavy Duty Bolt Cutters
- Small (Flat Bladed) Screwdriver
- Phillips Screwdriver/ Large
- Tape Measure
- Level
- Wire Strippers
- C-Clamps — small, medium, and large
- Center Punch
- Extra person will be helpful
- Hammer (for center punch)

YOU MAY ALSO NEED THESE ITEMS BEFORE YOU BEGIN THE INSTALLATION (Some of these items can be found in the *Accessory Catalog* page 39):

- **Low voltage wire (RB509)** will be needed to run from the transformer to the opener control board; length depends upon the distance between the transformer power supply and the control box. See **Powering Options: Transformer or Solar** on page 23, and the *Accessory Catalog*.
- 12 VDC deep cycle marine battery (not included) is required to power the opener, page 23.
- 16 AWG spade tongue terminal, page 26.
- If your gate is more than 500' away from AC power source you will need to use at least one **Mighty Mule® 10 watt Solar Panel (FM123)** (not included) to charge the 12 Volt battery (not included). See the *Accessory Catalog*.
- If your fence post is made of wood and is less than 6" in diameter or 6" square, page 13.
- Not recommended for gate post over 8", page 12.
- PVC conduit for protecting in ground wiring.
- If you have thin walled tube or panel gates, see **Recommended Reinforcement Examples** page 13.
- Depending on the type of gate, **a horizontal cross member or mounting plate may be needed** to mount the front of the opener and gate bracket to the gate. See page 11 and page 13.
- Surge protection for transformer.
- Some types of installations require U-Bolts for stop plate (not included). See page 18.
- Some installations may require muffler clamps for the gate bracket. See Page 13.
- Push-To-Open Brackets (FM148) are required if gates open out from property. See page 30.
- A low profile gate stop is required for dual gates when using the Mighty Mule gate lock. See page 19.
- Weather proof outlet is required if transformer is plugged into outside outlet. See page 25.

Technical Specifications

MIGHTY MULE® 202 E-Z GATE OPENER

DRIVE

- Low friction screw drive (linear actuator) rated for -5 °F to +160 °F (-20 °C to +71 °C).
- Powered by a 12 V motor with integral case hardened steel gear reducer. Motor speed reduced to 260 rpm. Generates 520 inch lb. of torque at 12 V.
- Maximum opening arc of 110°. Approximate opening time (90°): 18 seconds, depending on weight of gate.

POWER

- The system is powered by a 12 Vdc automotive or marine battery.
 - Battery charge is maintained by a 120 Vac, 14 Vac output transformer (10 VA) through the GTO control board or by optional GTO Solar Panels [the panel should generate minimum of 10 Watts (600 mA)]. A diode on the control board prevents battery discharge.
 - **IMPORTANT:** Never use both transformer and solar panel - this will damage the battery and control board.
 - One (1) blade-style fuse is rated for 15 A.
- NOTE: The transformer should not be directly connected to any battery. Do not replace fuses with higher ampere rated fuses; doing so will void your warranty and may damage your control board.**

CONTROL

- **GTO** microprocessor-based control board is set for dual leaf, pull-to-open gate installations. Jumper can be removed to accommodate an optional kit for push-to-open gates (see *Accessory Catalog*).
- Control board has temperature compensated circuits.
- A circuit on the control board regulates charging. "Sleep draw" is 15 mA; "active draw" is 2 to 5 A.
- Auto-memorization of digital transmitter code.
- GTO RF receiver tuned to 318 MHz.
- Opener length with push-pull tube fully retracted is 26^{3/8}", mounting point to mounting point. Maximum stroke is 13".
- Adjustable auto-close timer (OFF to 120 s), and obstruction sensitivity.
- Power terminal block accommodates a transformer or solar panels.
- Accessory terminal block fully compatible with all Mighty Mule access controls.
- Control board allows connection of safety edge sensors and photoelectric sensors.
- Audio entrapment alarm sounds if unit encounters an obstruction twice while opening or closing.

OPERATIONAL CAPACITY

- The Gate Capacity Chart shows approximate cycles, per day, you can expect from the Mighty Mule 202 Automatic Gate Opener when powered with a transformer. Actual cycles may vary slightly depending upon the type and condition of gate and installation.

Mighty Mule 202 Gate Capacity /Cycle Chart					
<i>Estimated number of daily cycles, based on use with a transformer.</i>					
Number of Cycles Per Day					
Gate Weight	300 lbs.	39	36	34	31
	150 lbs.	41	39	36	34
	100 lbs.	44	41	39	36
	50 lbs.	46	44	42	39
		5' - 6'	8'	10'	12'
Gate Length					

* These specifications are subject to change without notice.

NOTE: BALL BEARING HINGES SHOULD BE USED ON ALL GATES WEIGHING OVER 250 LB.

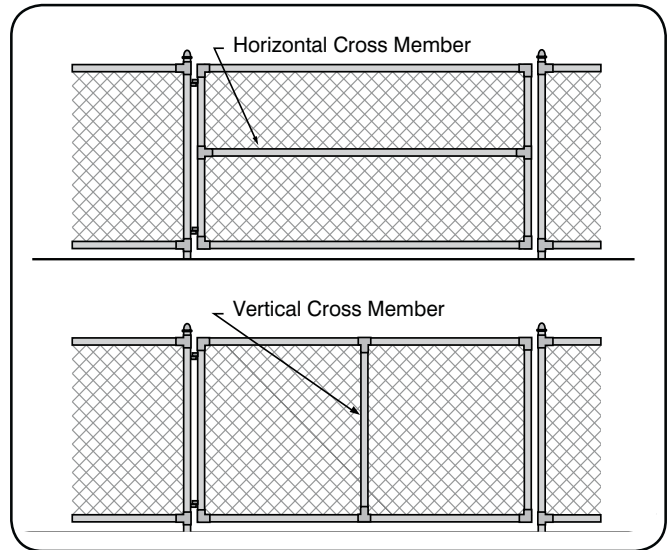
To determine the number of cycles the gate opener will perform using solar panels, please see the specifications listed on page 22 or call (800) 543-1236 or (850) 575-4144 for more information.

* An operation cycle is one full opening and closing of the gate.

Preparation of the Gate

The gate **must** be plumb, level, and swing freely on its hinges. Wheels must not be attached to the gate. The gate must move throughout its arc **without binding or dragging on the ground**. Note that gates over 250 lb. should have ball bearing hinges with grease fittings.

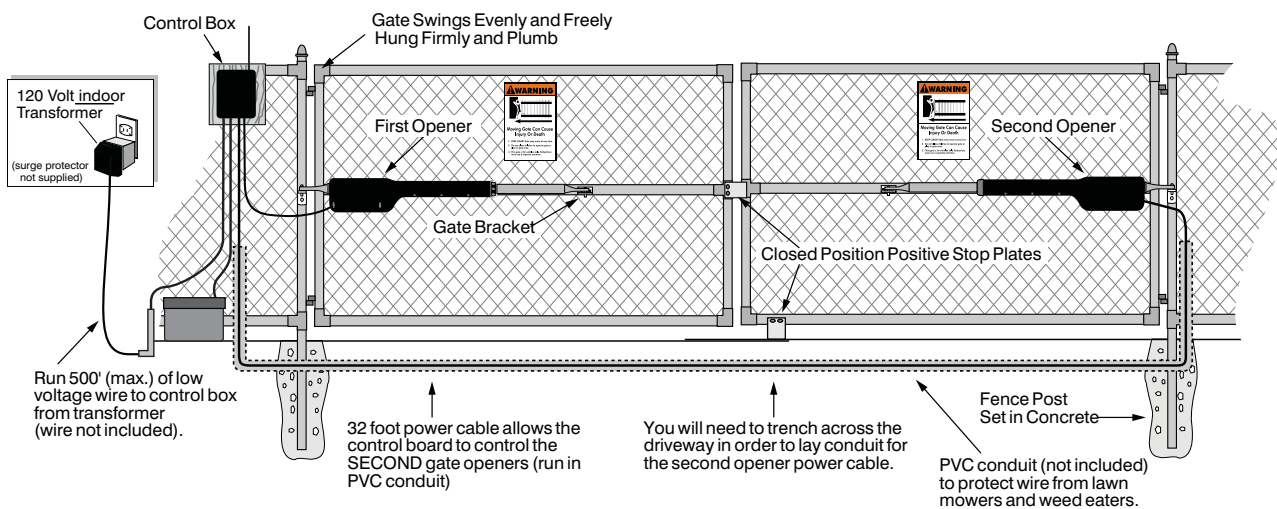
The fence post should be no larger than 6" in diameter and must be secured in the ground with concrete so it will minimize twist or flex when the opener is activated. We recommend you position the opener near the **centerline** of the gate to keep the gate from twisting and flexing and to avoid backsplash from rain water. The addition of a **horizontal or vertical cross member** (if one is not already in place) to provide a stable area for mounting the gate bracket is also important.



IMPORTANT: You need to determine which side of the driveway you will mount the control box. From this point on the gate and gate opener on the same side as the control box will be referred to as the **FIRST** gate and gate opener. The gate and gate opener on the opposite side of the driveway from the control box will be referred to as the **SECOND** gate and gate opener.

Installation Overview for Pull-To-Open Gates

The diagrams shown below are examples of an installation on a chain link fence.

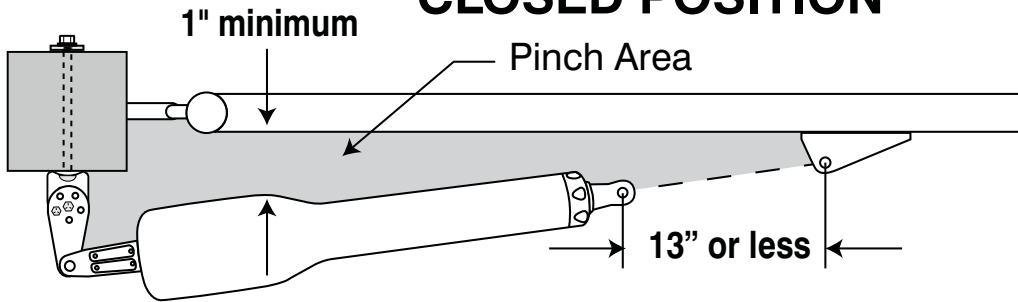


Installation Overview (continued)

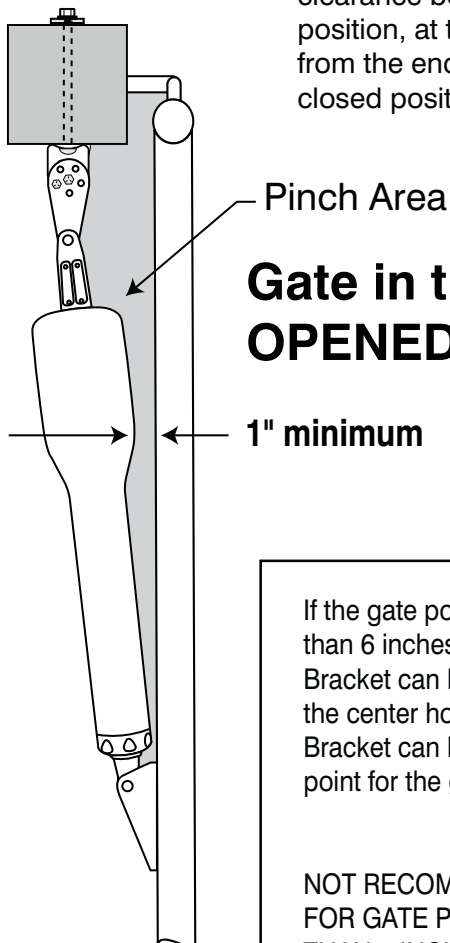
IMPORTANT: To achieve optimum leverage for the gate opener and ensure long trouble free service, the gate opener needs to be installed within the following parameters.

The diagram below shows the optimum position for gate opener arm in relation to the gate in the open and close positions.

Gate in the CLOSED POSITION



Be sure the position of the gate opener and brackets allows for 1 inch of clearance between the gate and the opener in both the open and closed position, at the same time maintaining a maximum distance of 13 inches from the end of the opener arm to the gate bracket with the gate in the closed position.



Gate in the OPENED POSITION

If the gate post is larger than 6 inches the Post Pivot Bracket can be removed and the center hole of the Post Bracket can be the mounting point for the gate opener.

NOT RECOMMENDED FOR GATE POST LARGER THAN 8 INCHES.

Center hole of gate opener pivot bracket

The inset diagram shows a circular view of the gate opener pivot bracket mounted on a gate post. A vertical dashed line indicates the center hole of the bracket, which is used as the mounting point for the gate opener.

Installation of the FIRST Gate Opener

IMPORTANT: The gate on the side where the control box is to be mounted will be the **FIRST** gate opener to install.

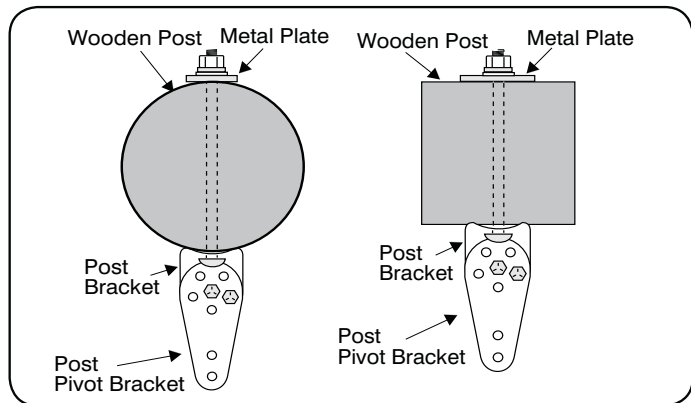
The position of the post bracket determines the leverage and efficiency of the opener. The post bracket position also sets the clearance between the opener and gate in the open and closed positions.

The post bracket works well for installations on round and square fence posts. Because the post bracket carries the entire thrust of the active opener, **bolts that completely penetrate the fence post must be used.**

On wooden posts, place a metal plate or washer (*not supplied*) between the nuts and the fence post to prevent the thrust of the opener from pulling the bolts and washers out of the wood.

NOTE: A fence post smaller than 6" in diameter or 6" square should be made of metal instead of wood so that it will remain stable while the opener is moving the gate.

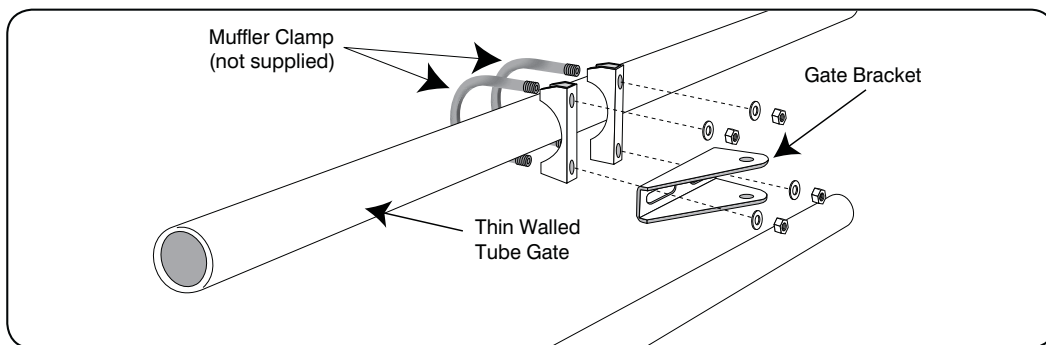
NOTE: The post pivot bracket may not need to be necessary on post larger than 6" in diameter.



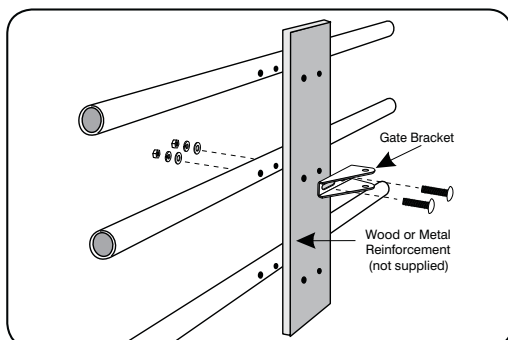
IMPORTANT:

We **recommend** using a muffler clamp, wood, or metal (not included) to reinforce thin walled tube gates or wood to reinforce panel gates as shown. These reinforcement methods will prevent damage to the opener and gate when the opener is installed. Additional hardware may be needed depending on the installation.

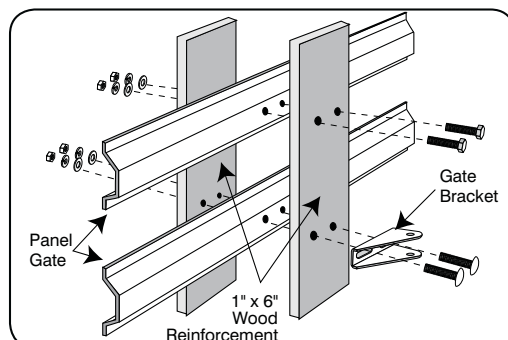
Muffler Clamp for Gate Bracket



Wood or Metal Reinforcement



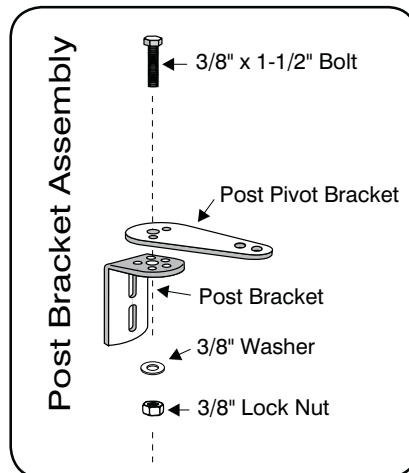
1" x 6" Wood Reinforcement



Determining the Mounting Position of the Post Bracket Assembly and the Gate Bracket

Step 1

Insert the 3/8" x 1 1/2" bolt through the center hole of the post brackets and post pivot bracket as shown. Fasten a 3/8" washer and 3/8" lock nut on the end of the bolt. DO NOT *overtighten* the lock nut because the post pivot bracket will have to be adjusted later.

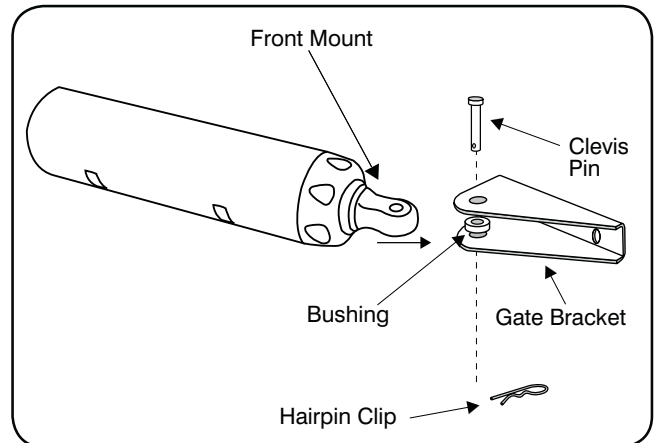
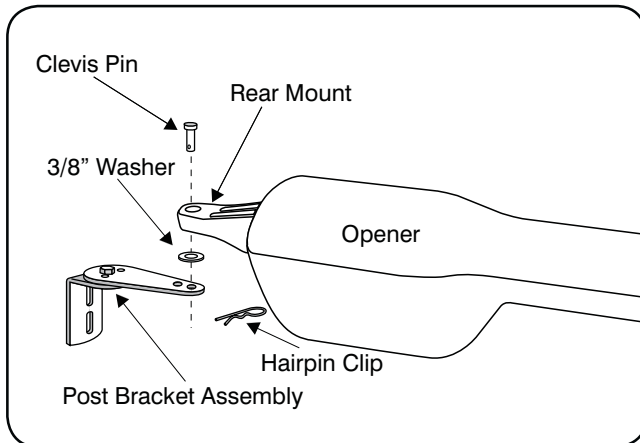


REMINDER:

The following steps are intended for pull-to-open gate installations only.

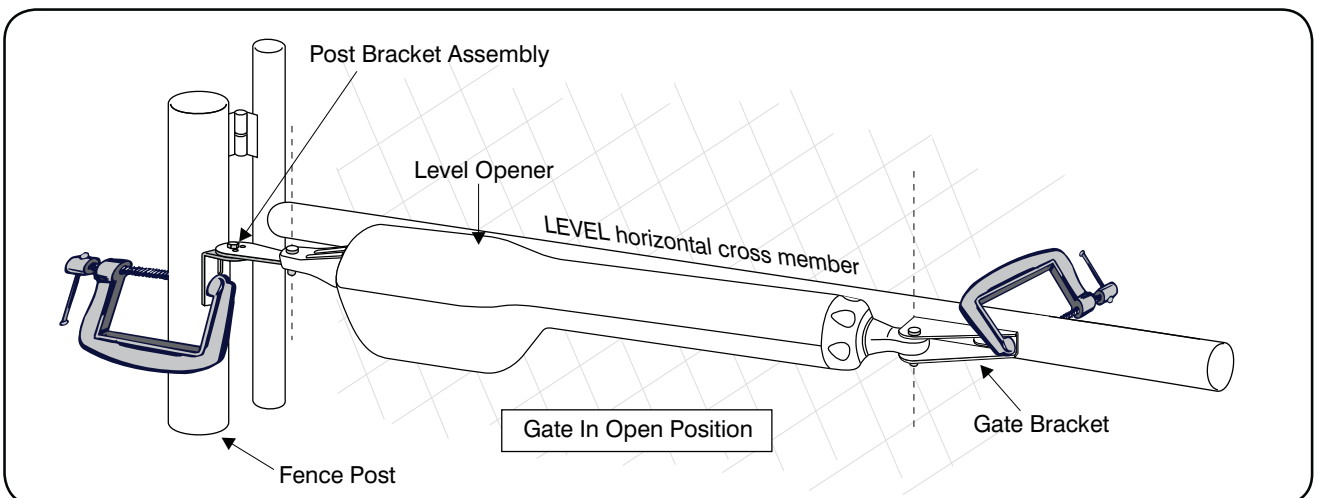
Step 2

Attach post bracket assembly to the rear mount of the opener with a clevis pin and a 3/8" washer. Secure the clevis pin with a hairpin clip. Attach gate bracket to the front mount of the opener with a clevis pin and a 3/8" bushing. Secure the clevis pin with a hairpin clip.



Step 3

With the gate in the open position (up to 110° from its closed position), and the opener fully retracted, adjust the post bracket assembly and gate bracket until the opener is level. While holding the opener level, use C-clamps to **temporarily** keep the post bracket assembly and gate bracket in their respective positions on the fence post and gate.



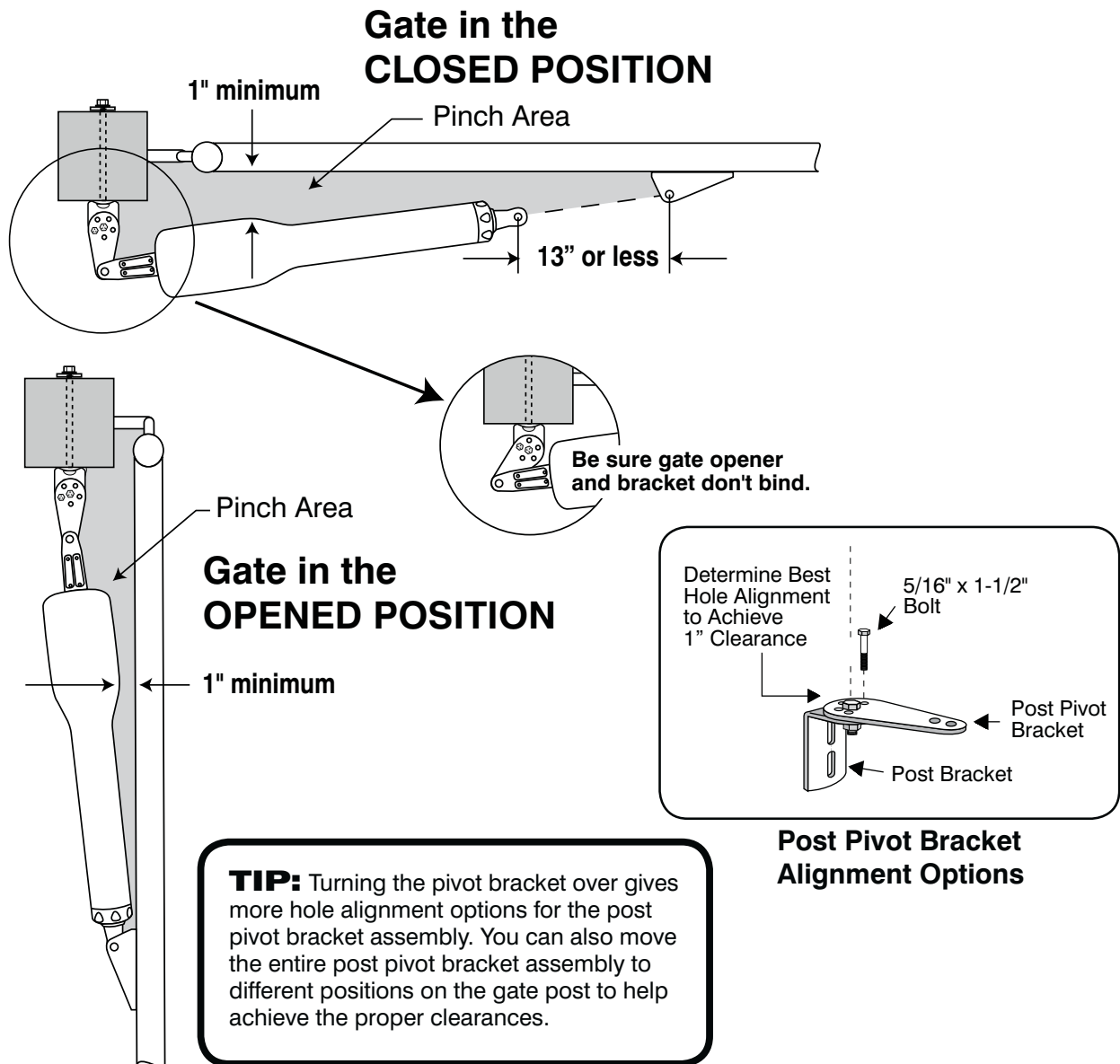
IMPORTANT: While determining the mounting point for the post pivot bracket assembly, be sure that the position allows for minimum 1 inch of clearance between the gate and the opener in both the open and closed positions, as well as maintaining the maximum 13" distance explained in the gate installation overview earlier. This position will give the opener the most efficient leverage point for opening and closing the gate and more importantly provides the least possible pinch area.

Step 4

After verifying that you have the best position for the post pivot bracket in the open position, insert the 5/16" x 1-1/2" bolt through the aligned holes of the post bracket and post pivot bracket to hold it in place. Remove the clevis pin from the front mount and while supporting the gate opener, swing the gate and gate opener to the closed position. With the gate and gate opener in the closed position check the clearance and be sure that the gate opener is not binding at the post pivot bracket.

If you don't have 1 inch of clearance, the gate opener is binding on the post pivot bracket, or you don't have 13' or less from the front mount to the gate bracket in the closed position, remove the 5/16" x 1-1/2" bolt and readjust the pivot bracket until you can achieve these important clearances and distance.

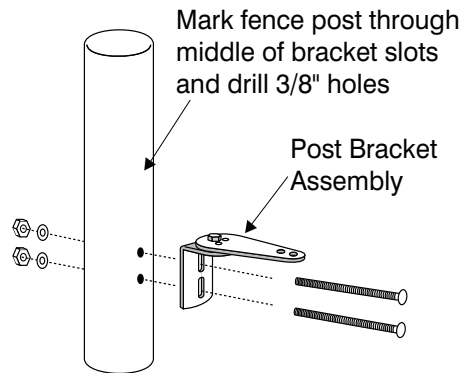
With the post pivot bracket in the optimum position for clearance and freedom of movement, reattach the opener to the gate bracket in the open position and recheck the gate opener level and make sure the brackets are clamped securely.



Installing the Post Bracket Assembly and Gate Bracket

Step 5

Mark reference points for bolt holes on the fence post through middle of bracket slots. Marking reference points in this manner allows room for adjustment when mounting the post bracket assembly and gate bracket. After marking your reference points, remove the opener and brackets from the fence and gate.



Step 6

Drill $\frac{3}{8}$ " holes through fence post as marked.

Step 7

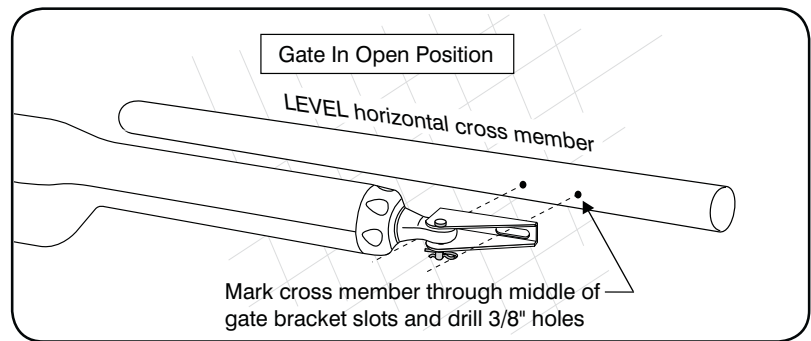
Fasten post bracket assembly to the fence post using (2) $\frac{3}{8}$ " x 8" bolts, washers and lock nuts (*provided*). Remove excess bolt length extending beyond the tightened nuts with a hacksaw or bolt cutters.

NOTE: In cases where the fence post has a diameter larger than 6", **threaded rods or carriage bolts longer than 8"** (*not supplied*) must be used.

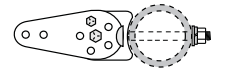
Step 8

Mark reference points for bolt holes on the gate cross member through middle of gate bracket slots. Drill $\frac{3}{8}$ " holes through the gate cross member as marked.

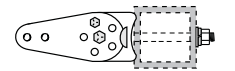
Mount gate bracket using (2) $\frac{3}{8}$ " x 2- $\frac{3}{4}$ " bolts, washers, and lock nuts (*provided*). Cut off excess bolt length extending beyond the tightened nuts.



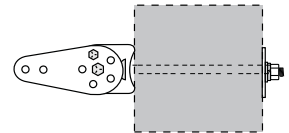
EXAMPLES TOP VIEW



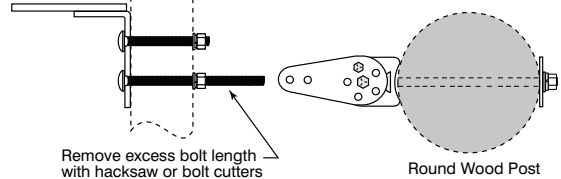
Round Metal Post



Square Metal Post



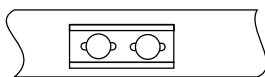
Square Wood Post



Round Wood Post

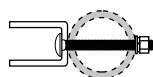
Gate Bracket Mounting Examples

FRONT VIEW

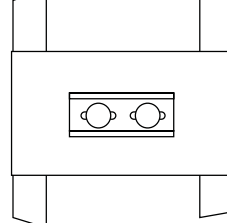


Round Tube & Chain Link Gate

SIDE VIEW

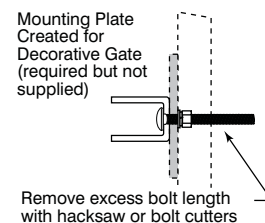


FRONT VIEW



Square Tube Gate

SIDE VIEW

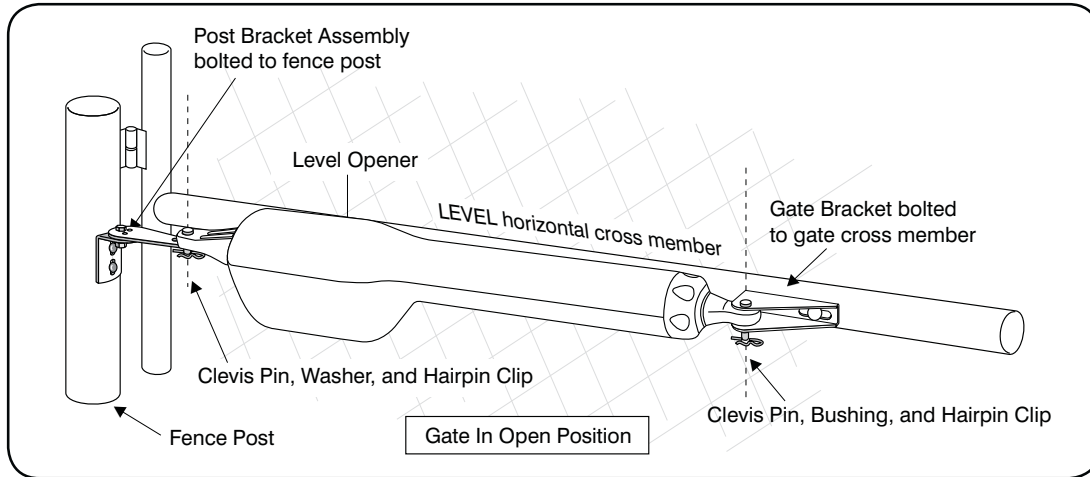


Mounting Plate Created for Decorative Gate (required but not supplied)

Mounting the Opener

Step 9

Attach the opener to the securely bolted post bracket assembly and gate bracket using clevis pins, bushings, and hairpin clips, or optional Pin Locks (see *Accessory Catalog*). Verify that the opener is level and adjust the post bracket assembly if necessary.



Installation of the SECOND Gate Opener

Install the SECOND gate opener and hardware on the SECOND gate following the same procedures as the FIRST gate opener and hardware (**Step 1 - Step 9**).

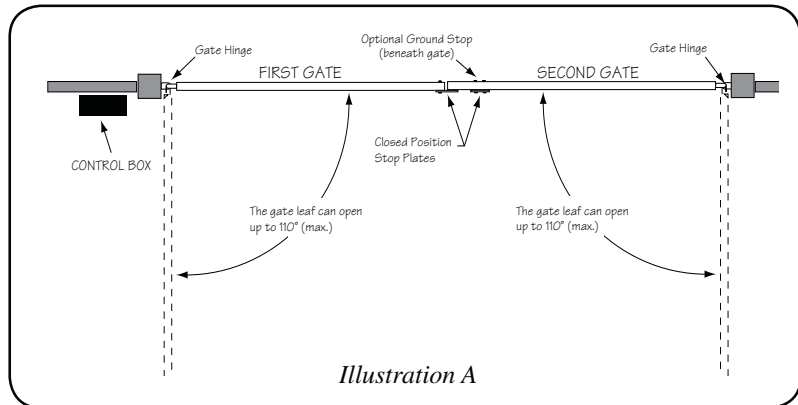
The power cable for the Second Opener should be run in PVC conduit under the driveway to protect it from damage due to lawnmowers, heavy equipment and other damaging forces. It will also make it simple to remove or replace the Second Opener if it is ever damaged.

NEVER SPLICE opener arm POWER CABLES. This will cause performance problems and may damage the opener.

Installation of the Closed Position Stops

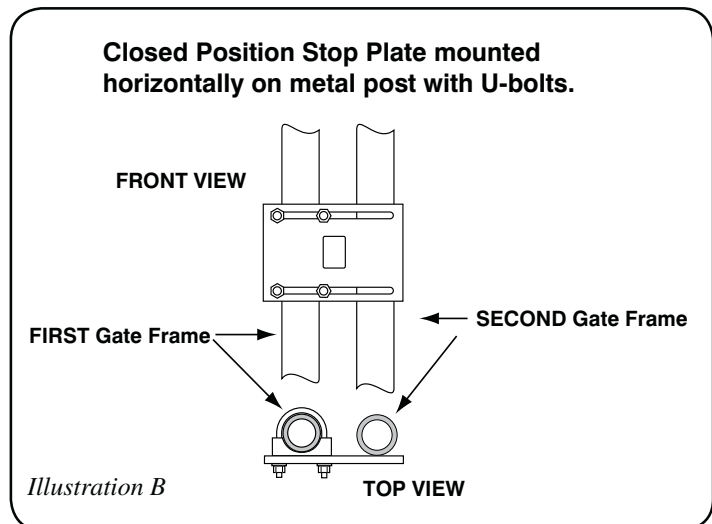
The Mighty Mule® Gate Opener firmly holds the gate in the closed position using the positive stop plate. The positive stop helps stabilize the gate leaf in the closed position. To further enhance the stability and security of your gate, install the optional **Mighty Mule® Automatic Gate Lock** (see *Accessory Catalog*).

IMPORTANT: You need to determine which side of the driveway you will mount the control box. From this point on the gate and gate opener on the same side as the control box will be referred to as the **FIRST** gate and gate opener. The gate and gate opener on the opposite side of the driveway from the control box will be referred to as the **SECOND** gate and gate opener.



Step 1

Detach the gate operators from the gates and move the gates to their closed position (Illustration A). Using appropriate hardware for your type of gate (U-bolts for tube or chain link; screw or bolts for wood or metal - this hardware is not included) attach the closed position stop plate (horizontally) about mid height on the **FIRST** gate frame. Do not tighten it completely at this time. Slide the stop plate toward the frame of the **SECOND** gate leaf until they touch (Illustration B). Once you have moved the stop plate to the correct position, tighten its hardware completely.



NOTE: The optional ground stop post is used to provide a secure point for the **SECOND** gate to close against. If you will be using the **Mighty Mule Gate Lock** accessory with your gate opener system, the closed position ground stop is **REQUIRED**, as shown in Steps 2 and 3 on the next page.

Step 2

Install a low profile ground stop (not provided) beneath the SECOND gate stop plate.

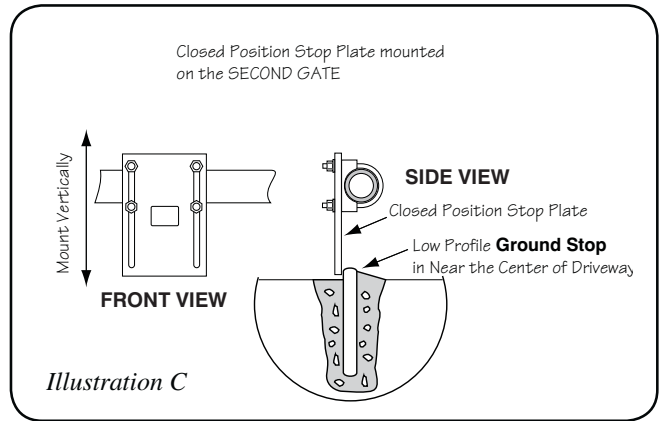
The ground stop needs to be positioned near the end of the gate as shown in Illustration A and may be made of metal or concrete and should be firmly secured in the ground (we recommend setting it in concrete).

Step 3

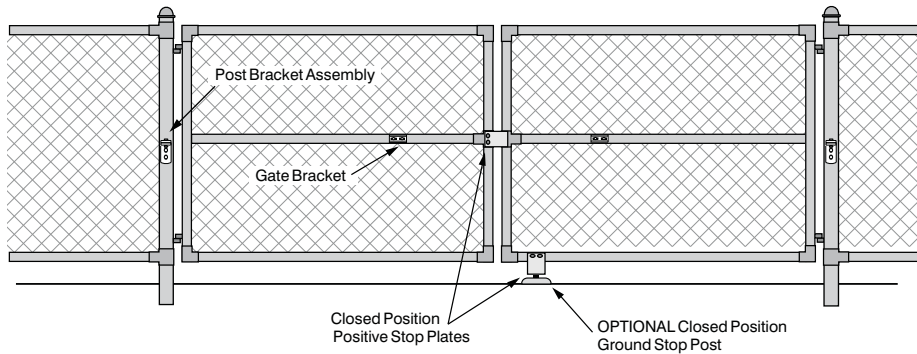
Attach a vertical closed position stop plate to the SECOND gate.

Using appropriate hardware for your type of gate attach the vertical closed position stop plate to the SECOND gate frame at the point where it will come in contact with the ground stop post.. Do not tighten it completely at this time. You must slide the closed position stop plate toward the ground stop until they touch (Illustration C). Once you have moved the stop plate to the correct position, tighten its hardware completely.

NOTE: For a push-to-open installation (gate opens out from the property) attach the closed position stop plate to the outside of the gate.

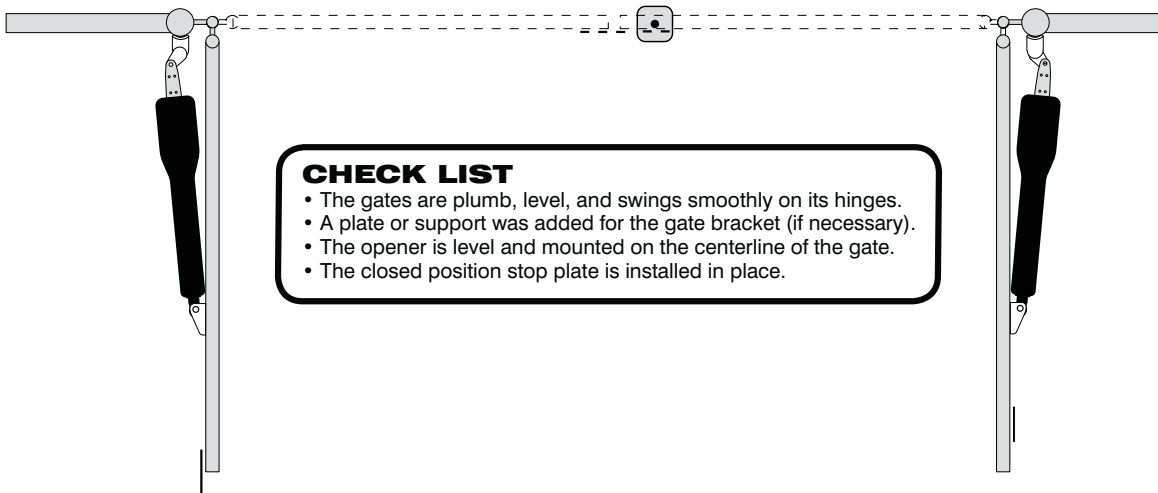


At this stage of the installation, the openers should be installed on the gate leaves and the open and closed position stops should be in place.



Step 4

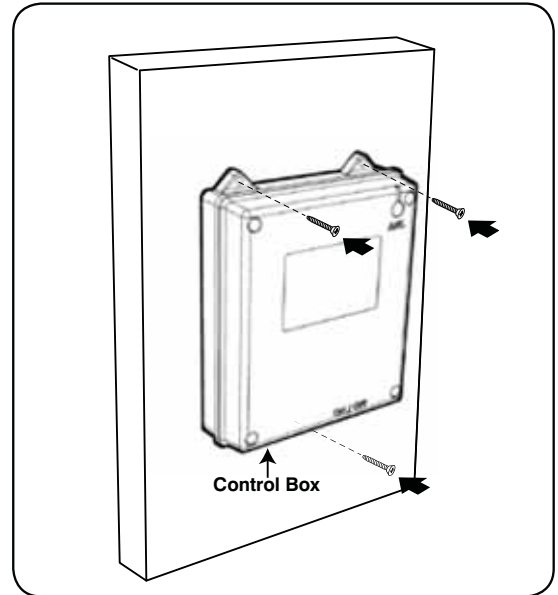
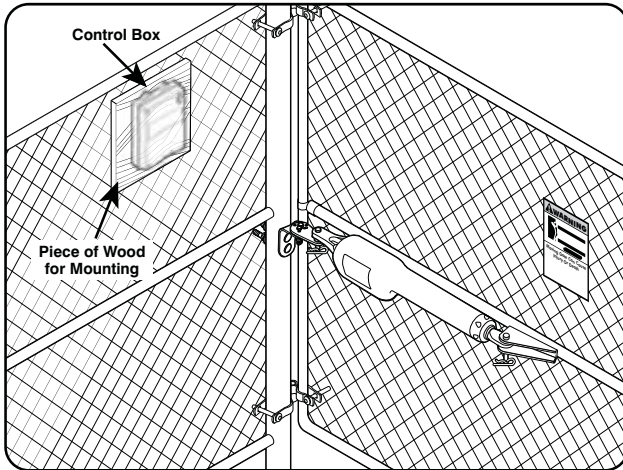
Return the gates to their open positions and reconnect the gate openers front mounts to the gate brackets using the bushings, clevis pins and hairpin clips. Check the checklist below to be sure that you have completed the important installation steps.



Mounting the Control Box

Step 1

Mount the Battery Box using the screws (provided) or another secure mounting method. The control box must be mounted at least 3 feet above the ground to protect it from rain splash, snow, etc., and at least 3 feet from an AC power source to prevent electrical interference.



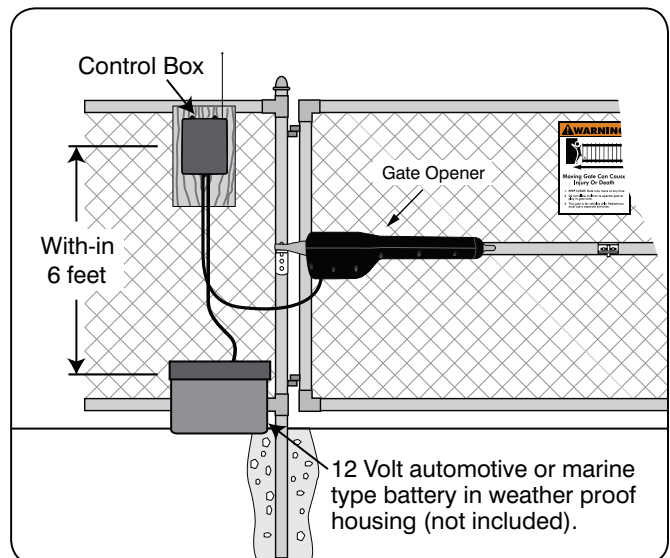
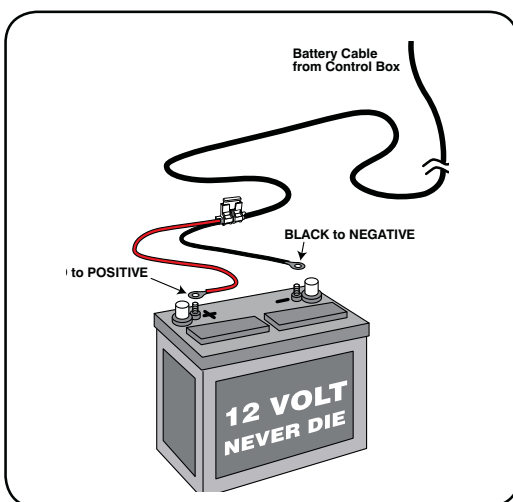
Connecting the Battery

Step 1

Place the 12 Volt automotive or marine type battery and its weatherproof case within 6 feet of where the control box is mounted.

Step 2

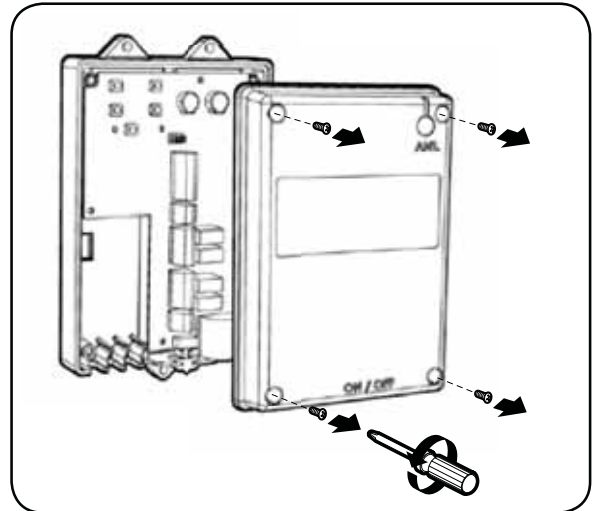
Attach the battery wires provided to the terminals of the battery. Take care to attach the BLACK wire to the NEGATIVE terminal and the RED wire to the POSITIVE terminal. Reverse connection will cause damage to the control board.



Connecting the Battery Wires to Control Board

Step 1

Remove the CONTROL BOX cover by removing the four (4) screws to access the CONTROL BOARD.



Step 2

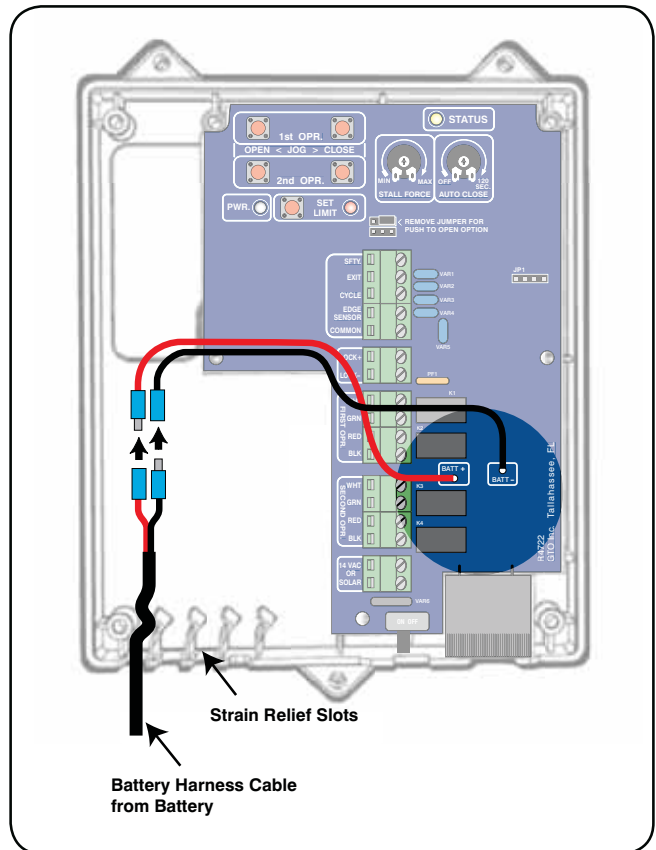
Locate the BATTERY wires from on the CONTROL BOARD marked "BATT +" and "BATT -".

Step 3

Run the Harness wires through the control box STRAIN RELIEF SLOT as shown, leaving enough wire to reach the BATTERY WIRE PLUGS from the control board.

Step 4

Plug the BLACK wire into the BLACK wire from "BATT -" terminal and the RED wire to the RED wire from "BATT +" terminal. Reverse connection will cause damage to the control board.



Connecting Opener Power Cables

Step 1

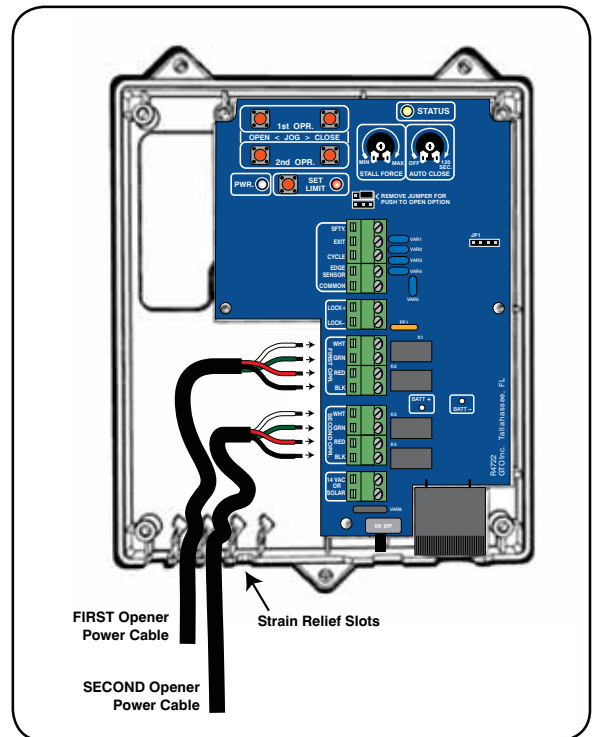
Strip approximately $\frac{3}{16}$ " of insulation from each wire of the FIRST opener power cable. Insert the power cable into a strain relief slot. Bring approximately 4" of wire into the control box. Insert the stripped power cable wires into the appropriate terminals on the FIRST OPR. terminal block. The white wire should be inserted into the WHT terminal, the green wire into GRN, the red wire into RED, and the black wire into the BLK, terminals.

Tighten the set screws against the end of the wires. A dab of petroleum jelly on each terminal will help prevent corrosion.

Step 2

Review the Installation Overview illustration on page 11 before proceeding.

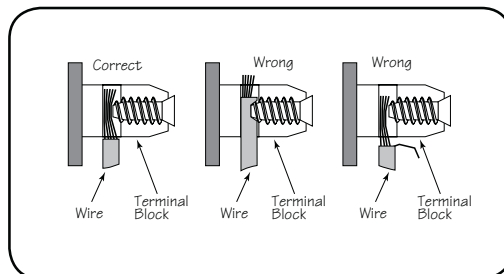
Cut a slot into the driveway to accommodate PVC conduit (not provided). The buried conduit will protect the 32 foot power cable from automobile tires, lawn mower blades, weed eaters, and grazing animals. PVC conduit also allows for easy removal of power cable in the event the SECOND opener needs to be replaced. Pull the 32 foot second opener power cable through the conduit and secure them into the slot in the driveway.



Step 3

Strip approximately $\frac{3}{16}$ " of insulation from each wire of the 32 foot power cable. Twist each exposed wire tightly. Insert the power cable into a strain relief slot. Bring approximately 4" of wire into the control box. Insert the stripped power cable wires into the appropriate terminals on the SECOND OPR. terminal block. The white wire should be inserted into the WHT terminal, the green wire into GRN, the red wire into RED, and the black wire into the BLK, terminals.

Tighten the set screws against the end of the wires. A dab of petroleum jelly on each terminal will help prevent corrosion.



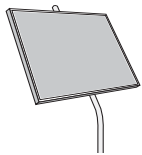
Powering Options: Transformer or Solar

IMPORTANT

- The Mighty Mule 202 is designed and intended for use with a 12 Volt automotive or marine type battery. The battery must be placed inside a weatherproof case and located within 6 feet of the control box. The 8 foot harness supplied connects the battery to the control board.
- The battery charge is maintained by the 14 Volt transformer included **OR** by using optional solar panel(s). The transformer **OR** solar panel is connected to the opener arm control board using low voltage, 16 gauge, dual conductor, multi-stranded, direct burial wire (RB509) (see the *Accessory Catalog*).
- All low voltage wire used with the Mighty Mule® Gate Opener must be 16 gauge dual conductor, multi-stranded, direct burial wire (see page 39 and the *Accessory Catalog*). **Do not run more than 500 feet of wire.**
- The transformer is designed and intended for indoor use. If the transformer can be plugged only into an outside electrical outlet, a weatherproof cover or housing (available at local electrical supply stores) **must** be used.
- If your gate is more than 500 ft. from an AC power source, you will need to use at least one 10 watt Solar Panel to charge the battery (see *Accessory Catalog*). Refer to the **Solar Panels and Gate Activity** chart below.

**NEVER USE TRANSFORMER AND SOLAR PANEL(S) AT THE SAME TIME
– it will damage the control board –**

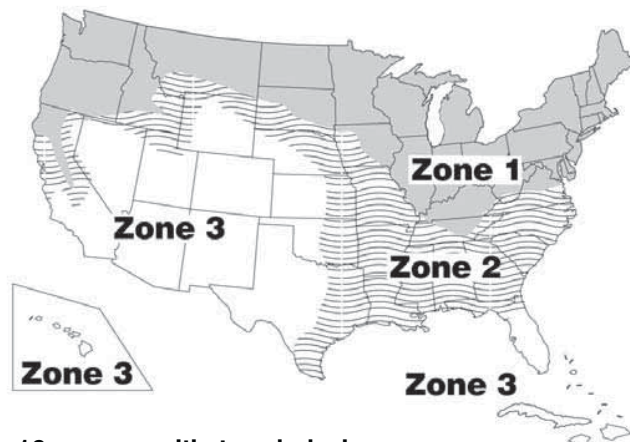
Solar Panel and Gate Activity Chart



The table and map illustrate the maximum number of gate cycles to expect per day in a particular area when using from 10 to 20 watts of solar charging power. (see *Accessory Catalog*). The figures shown are for winter (minimum sunlight) and do not account for the use of any accessory items.

Accessories connected to your system will draw additional power from the battery and will require additional solar panels.

Single Gate Winter Ratings	Zone 1	Zone 2	Zone 3
dual gate (10 watts) solar charger	8	16	26
dual gate (15 watts) solar charger	11	20	30
dual gate (20 watts) solar charger	14	28	38



NOTE: UP to 250 feet of dual conductor 16 gauge multi stranded wire may be used to allow installation of solar panels in direct sunlight.

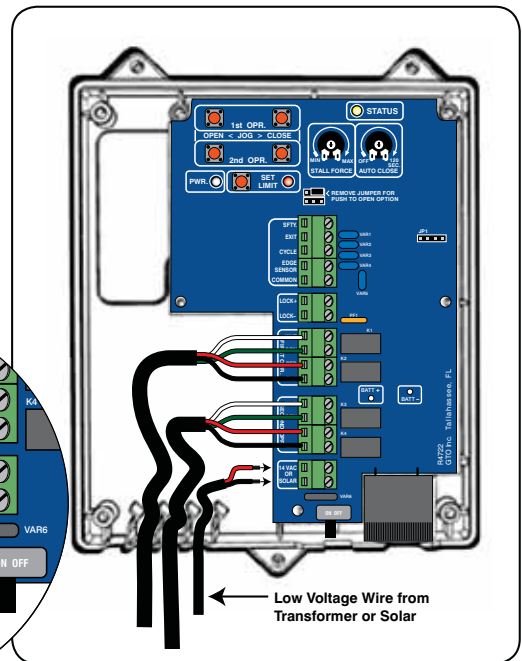
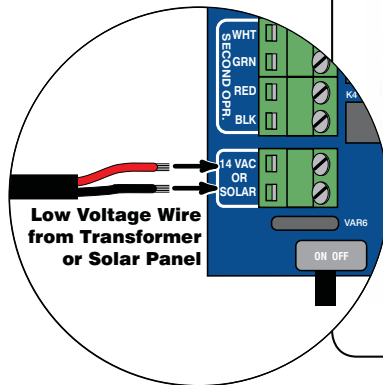
Connecting Solar Panel(s)

IMPORTANT: Never connect the transformer and a solar panel to the opener control board at the same time. It will damage the control board.

If you are using the transformer included with the Mighty Mule 202 to charge the opener battery, skip this section and go to "CONNECTING BATTERY".

Strip $\frac{3}{16}$ " off the ends of the low voltage wire and twist tightly. Attach these ends to the '14VAC or SOLAR' terminals located on the terminal block (see illustration at right). **Be certain not to let the exposed wires touch each other!**

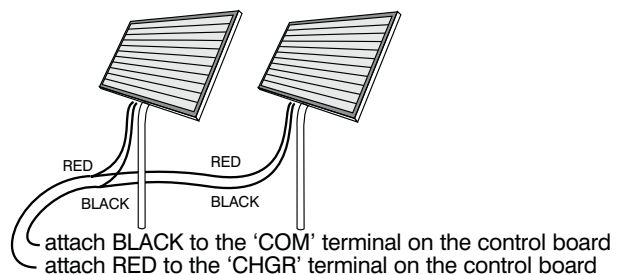
Insert one solar panel wire into a '14VAC or SOLAR' terminal. Insert the other solar panel wire into the remaining '14VAC or SOLAR' terminal. The wires can be connected to the '14VAC or SOLAR' terminals regardless of color.



Tighten set screws against exposed end of wires. A dab of household petroleum jelly on each terminal will help prevent corrosion.

NOTE: For multiple panels wire the panels in parallel as shown in this diagram.

Solar Panels connect in PARALLEL



IMPORTANT INFORMATION ABOUT LOW VOLTAGE WIRE

The only wire acceptable for use with GTO products is 16 gauge multi-stranded, low voltage, PVC sheathed wire. This particular gauge enables the transformer to provide an adequate charge through the control board to the battery at distances up to 500 ft.

DO NOT use telephone wire or solid core wire. Unlike multi-stranded wire, these types of wire are inadequate for use with your gate opener system.

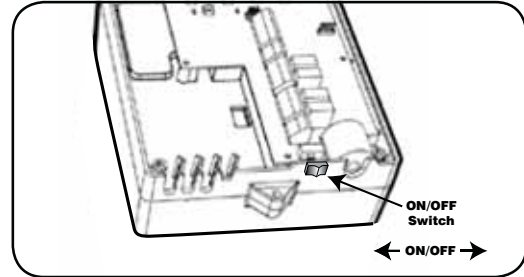
NEVER splice wires together. Splicing permits corrosion and seriously degrades the wire's ability to carry an adequate current.

Connecting the Transformer

IMPORTANT: Use either transformer or solar panel. DO NOT connect both transformer and solar panels to the opener control board at the same time. It will damage the control board.

Step 1

Make sure the power switch is **OFF** before proceeding to the next step.



Step 2

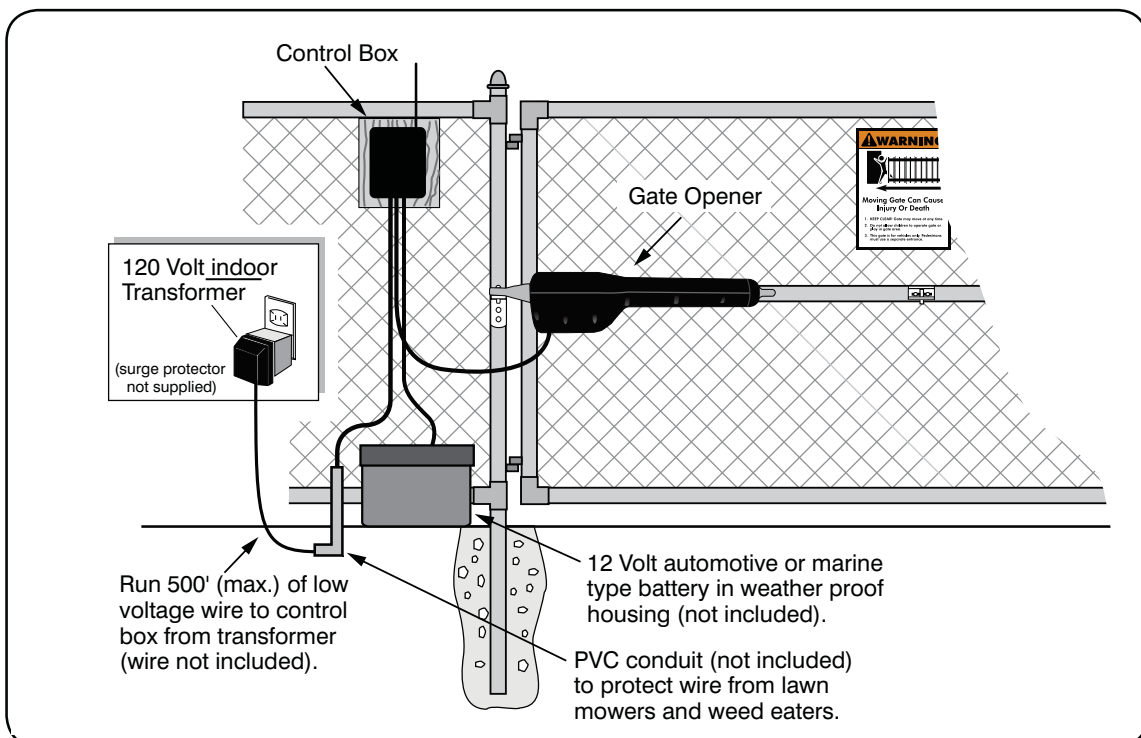
Select the electrical outlet where you will plug the transformer. Measure the distance from this outlet to the control box following the path where the wire will be laid. After you have measured how much wire is needed, cut the wire to the appropriate length - up to 500 feet.

Step 3

Lay the measured length of low voltage wire in a trench following a path from the selected electrical outlet to the control box. Wires coming up from the ground should be run through PVC conduit to protect them from lawn mower blades, weed eaters, and grazing animals. Be sure to bury the wire laid in the trench.

Step 4

Bring enough wire up through the PVC conduit to reach the control box.

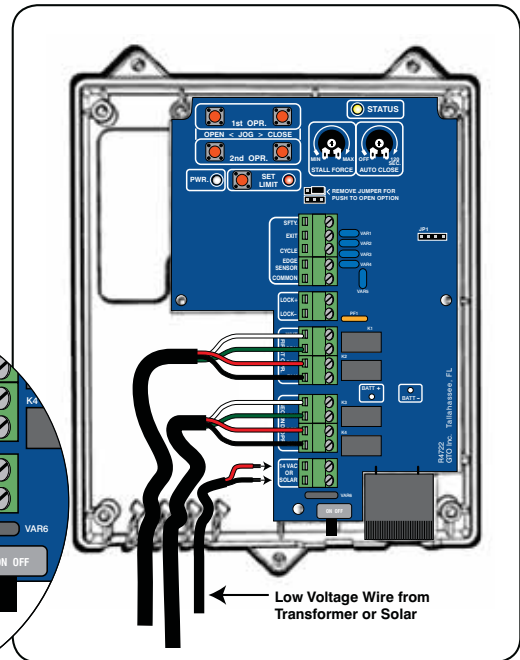
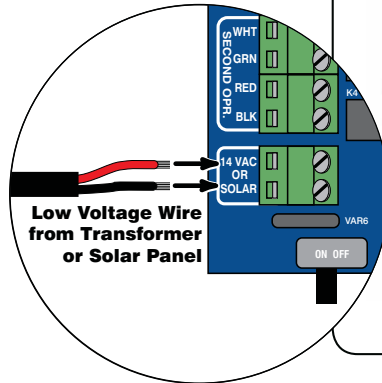


Step 5

Strip $\frac{3}{16}$ " off the ends of the low voltage wire and twist tightly. Attach these ends to the '14VAC or SOLAR' terminals located on the terminal block (see illustration at right). **Be certain not to let the exposed wires touch each other!**

Insert one transformer wire into a '14VAC or SOLAR' terminal. Insert the other transformer wire into the remaining '14VAC or SOLAR' terminal. The transformer wires can be connected to the '14VAC or SOLAR' terminals regardless of color.

Tighten set screws against exposed end of wires. A dab of household petroleum jelly on each terminal will help prevent corrosion.



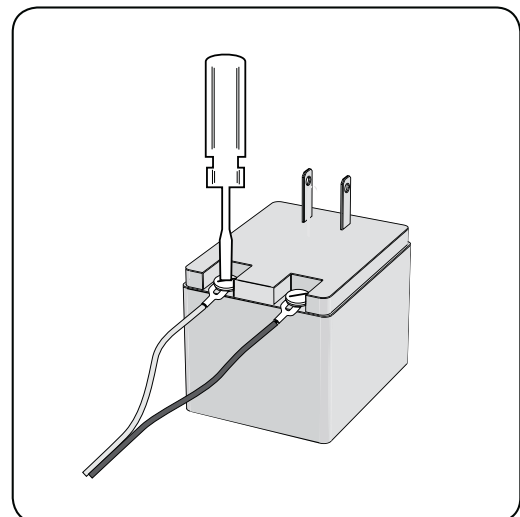
Step 6

At the AC outlet strip $\frac{1}{2}$ " of insulation from the ends of the low voltage wire. Attach these stripped ends to the transformer terminals.

A dab of household petroleum jelly on each terminal will help prevent corrosion.

We suggest crimping a spade tongue terminal (not provided) to the end of each wire before attaching it to the transformer.

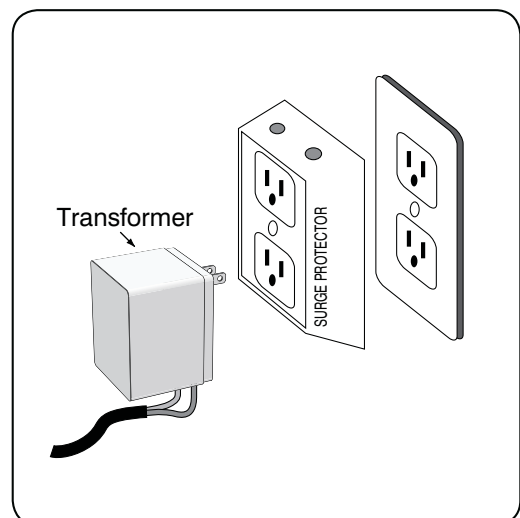
Make sure the exposed wires do not touch each other!



Step 7

Plug the transformer into the electrical outlet. (Use of a surge protector with the transformer is **strongly** recommended - not included)

If electrical outlet is located outdoors, outlet and transformer should be protected by a weatherproof cover.



Setting the Closed Position Limit

for PULL-TO-OPEN installation

Must have a transmitter that operates the gate. If not see 'Setting Your Personal Transmitter Code' on page 29.

Your Mighty Mule 202 has two Limits

- 1. OPEN Limit setting:** (Gate in the OPEN POSITION / FACTORY SET & NOT ADJUSTABLE) The open limit is when the opener is fully retracted and the gate is in the full open position.
- 2. CLOSED Limit setting:** The CLOSED Limit setting (gate in the CLOSED POSITION). To achieve optimum closed position, you are required to complete the following STEPS:

Step 1

If not already **ON** slide the **ON/OFF** switch on the Control Box to the **ON** position and make sure the arms are in the OPEN POSITION (fully retracted).

Step 2

Press and **HOLD** the **2nd Opener CLOSE** button on the control board and be prepared to **RELEASE** the button when the gates reached the desired closed position/limit. Use the **JOG OPEN and CLOSE** buttons to "fine tune" the gate position if necessary.

Step 3

Repeat **STEP 2** for the 1st Operator

Step 4

NOTE: The opener Push-Pull tubes must be extended more than 7 inches to set limits.

With the gates in in the desired closed positions **PRESS and HOLD** the **SET LIMIT** button until the buzzer and RED Light come on. Then release the button.

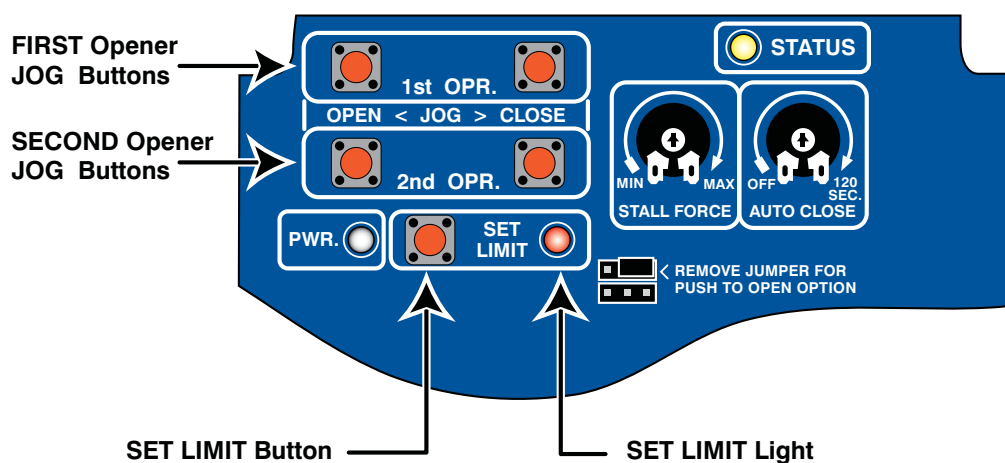
Step 5

NOTE: When the control box cover is removed the receiver range is reduced to less than 5 feet.

Press the transmitter button once (within 5 feet of the control board) and allow the gates to fully open. The alarm will beep once when both gates reach the OPEN LIMIT. This indicates the LIMITS for both arms are learned and stored in memory

Step 6

Press the transmitter button and allow the gates to fully close to verify that they stop at the desired positions. Repeat STEPS 2-5 if correction is needed.



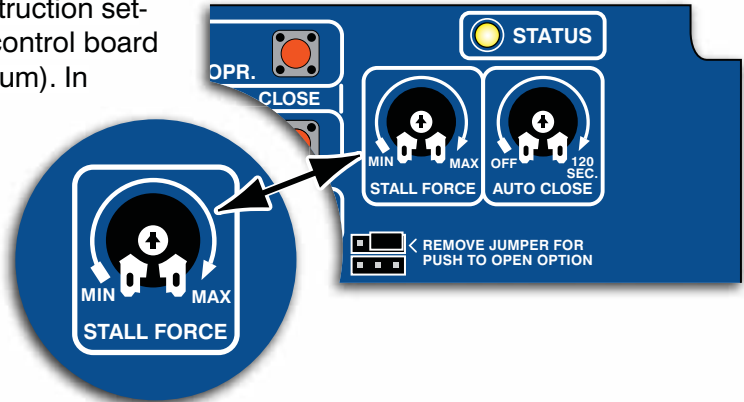
Stall Force Potentiometer Setting

IMPORTANT: For safety reasons the obstruction setting or **Stall Force** on the Mighty Mule® control board comes from the factory set at **MIN** (minimum). In many gate installations this setting will need to be adjusted to overcome the weight and size of the gates.

The **Stall Force** potentiometer on the control board operates like a volume control on a radio. It controls the obstruction sensitivity (or the amount of force the opener will apply to an obstruction) before it automatically stops and reverses direction for approximately two (2) seconds.

Use a small slotted screwdriver to turn the arrow in the center of the potentiometer. Adjust the sensitivity from the **MINIMUM** position where the gate operates without obstructing from its own weight or the wind conditions in your area.

NOTE: You may need to increase the stall force in cold weather due to increased resistance from gate hinges.

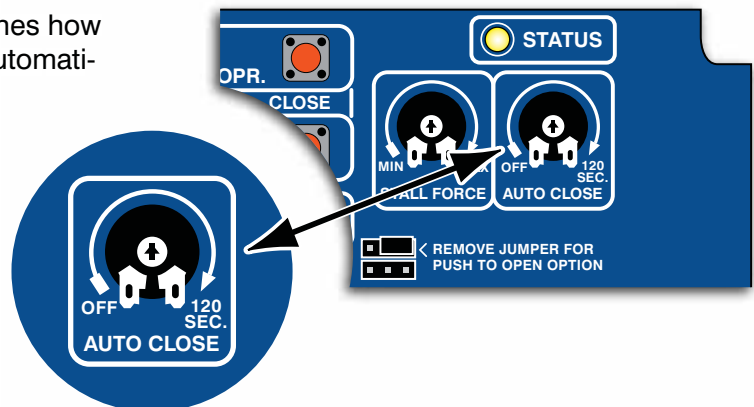


ALWAYS KEEP SAFETY AT THE TOP OF YOUR LIST WHEN ADJUSTING OR SERVICING YOUR AUTOMATIC GATE OPENER!

Setting Auto-Close Time

CLOSE TIME (auto close timer): Determines how long the gate will remain open before it automatically closes. The limits are **OFF** and **3 - 120** seconds. The factory setting is **OFF**.

NOTE: Auto-Close timer is disabled (gate will not automatically close) if gate is not in the open limit.



Setting Your Personal Transmitter Code

All GTO transmitters are set to a standard code at the factory and are ready to operate your Mighty Mule® Gate Opener®. For your safety and security, however, we strongly recommend that you replace the factory setting with your own personal code. Follow the directions below:

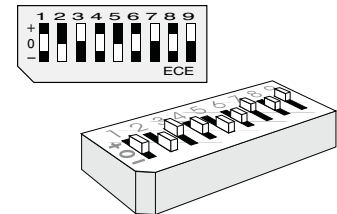
1. Remove the Transmitter Cover

On the back of the transmitter use a small phillips head screw driver to remove the two screws on the sides of the visor clip and separate the front cover from the transmitter. With the front cover removed, the battery and the DIP switches will be exposed. To set a new code, use a small screwdriver to move the switches.



2. Set the Transmitter DIP Switches

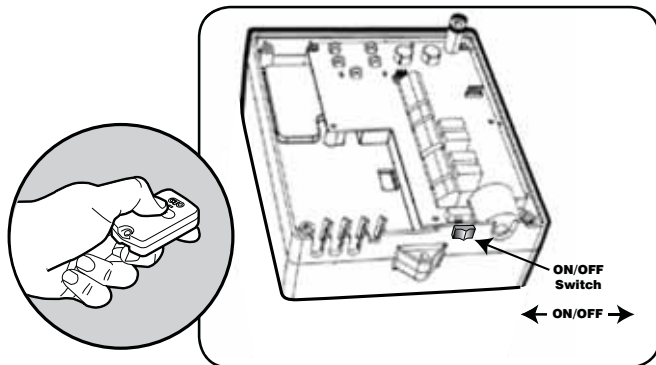
There are nine (9) transmitter DIP switches; each can be placed in three different positions (+, 0, -). **DO NOT** set all the switches in the same position, such as all +, all 0, or all -. Once the DIP switches have been set to a personal code, replace and close the access cover.



WARNING: No other adjustments should be made inside the transmitter.

3. "Learn" the New Code to Control Board Memory

- Slide the ON/OFF switch to the OFF position.
- Press and hold the hand held transmitter button while sliding the ON/OFF switch to the ON position.
- Continue to hold the transmitter's button until the alarm sounds (3-5 seconds).
- Release the transmitter's button. The new transmitter code is 'learned'.
- Verify that the transmitter operates the gate.



NOTE: It is NOT necessary to remove the cover of the control box to 'learn' the new transmitter code, but when the control box cover is removed the receiver range is reduced to less than 5 feet.

FCC WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In accordance with FCC Part 15, Section 15.21, the manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could VOID the user authority to operate the equipment.

NOTE: 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. The external solid wire antenna (10") was assembled in the equipment under FCC tested and marketing.

However, there is no guarantee that interference will not occur in particular installations. 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 replace the receiver antenna. • Increase the separation between the equipment and the receiver. • Connect the equipment into an outlet on a circuit different from that which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.

Push to Open Installation

Determining The Mounting Position of The Post Bracket Assembly

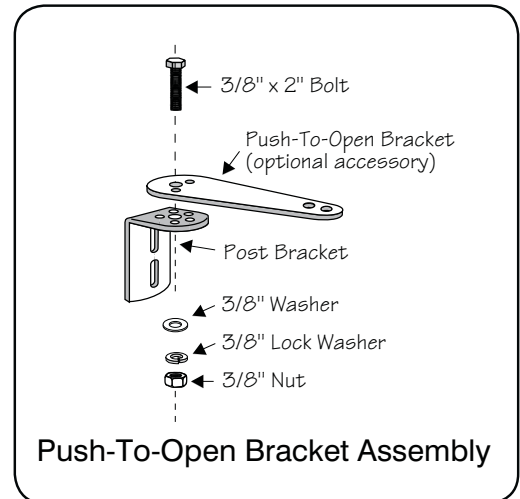
⚠ Swinging gates MUST NEVER open into public access areas!

"Push-to-Open" gates open *out* from the property. **Push-to-Open Brackets are required for this type of installation** (see *Accessory Catalog*). If you have pull-to-open gates (gate opens *into* the property), return to page 13;

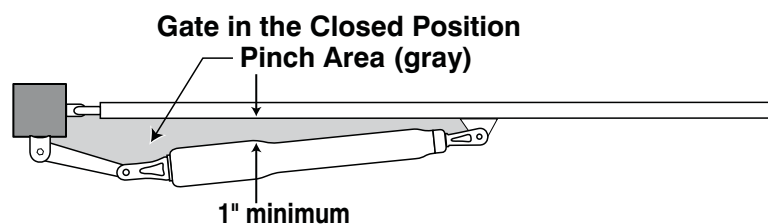
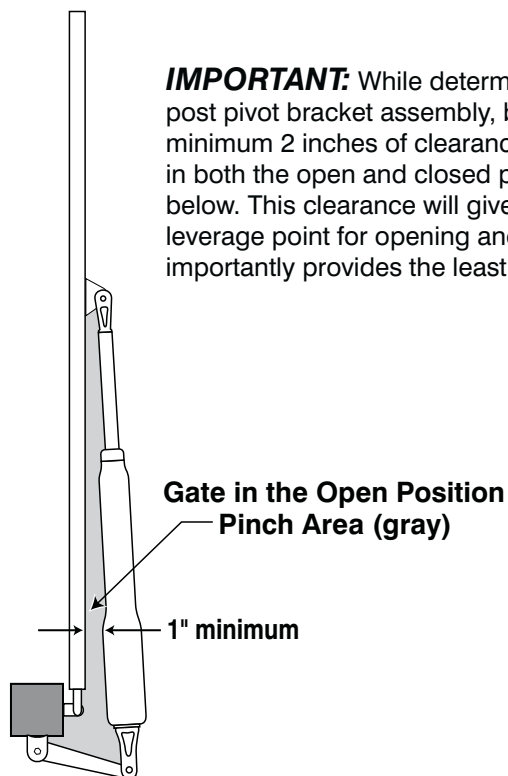
In a PUSH-TO-OPEN installation the opener is installed while the gate is in the **closed** position and the opener fully retracted .

Step 1

With the gate in the closed position (up to 110° from its open position), and the opener fully retracted, adjust the post bracket assembly and gate bracket until the opener is level. While holding the opener level, use C-clamps to **temporarily** keep the post bracket assembly and gate bracket in their respective positions on the fence post and gate.



IMPORTANT: While determining the mounting point for the post pivot bracket assembly, be sure that the position allows for minimum 2 inches of clearance between the gate and the opener in both the open and closed positions, as shown in the diagrams below. This clearance will give the opener the most efficient leverage point for opening and closing the gate and more importantly provides the least possible pinch area.



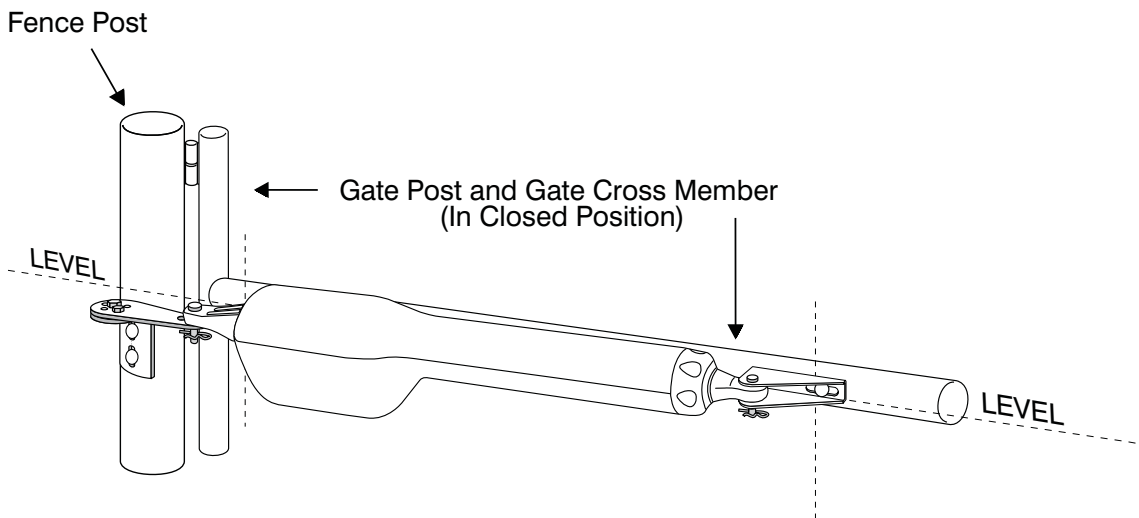
Step 2

After verifying that you have the best position for the post pivot bracket, insert the 5/16" x 1 3/4" bolt through the aligned holes of the post bracket and post pivot bracket and fasten it with the 5/16" washer and nut.

IMPORTANT: If you loosened the clamp on the post bracket to achieve the optimum position, tighten it in its new position and recheck the gate bracket with the gate in the open position (move the gate bracket and re-clamp it if necessary).

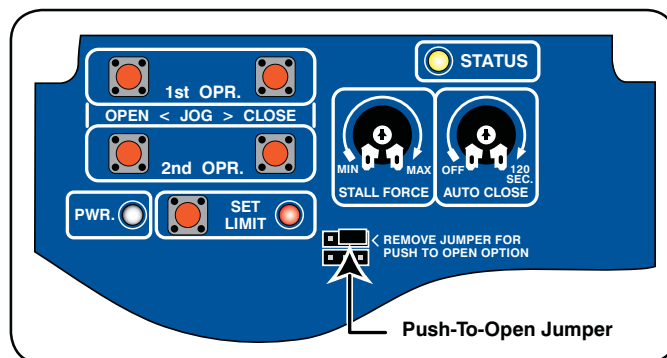
Step 3

With the gate in the **fully closed position** and the opener retracted, swing the opener to the gate. Mark reference points for bolt holes on gate cross member through middle of gate bracket slots. The opener must be level. (Some vertical adjustment is possible by sliding the post bracket assembly up and down.) Drill 3/8" holes into the gate cross member as marked. Fasten gate bracket to cross member using (2) 3/8" x 3" bolts, washers, lock washers, and nuts. Attach the opener to the post bracket assembly and gate bracket using clevis pins, bushings, and hairpins clips.



Step 4

Make sure the control box power switch is **OFF**. Use small pliers to remove the **JUMPER** for PUSH-TO-OPEN applications (shown to the right). Turn power switch **ON**. The control board is now configured to *push* the gate open.



Setting the Open Position Limit

for PUSH-TO-OPEN installation

Note: Must have a transmitter that operates the gate. If not see 'Setting Your Personal Transmitter Code' on page 29.

In the PUSH-TO-OPEN application your Mighty Mule 202 has two Limits...

- 1. CLOSED Limit setting:** (Gate in the CLOSED POSITION / FACTORY SET & NOT ADJUSTABLE) The closed limit is the opener fully retracted and the gate in the closed position.
- 2. OPEN Limit setting:** The OPEN Limit setting (gate in the OPEN POSITION). To achieve optimum open position, you are required to complete the following STEPS:

Step 1

If not already **ON** slide the **ON/OFF** switch on the Control Box to the **ON** position and make sure the arms are in the **CLOSED POSITION** (fully retracted).

Step 2

Press and **HOLD** the **FIRST Opener OPEN** button on the control board and be prepared to **RELEASE** the button when the gates reached the desired open position/limit. Use the **JOG OPEN and CLOSE** buttons to "fine tune" the gate position if necessary.

Step 3

Repeat **STEP 2** for the **SECOND Opener**.

Step 4

NOTE: The opener Push-Pull tubes must be extended more than 7 inches to set limits.

With the gates in in the desired open positions **PRESS and HOLD** the **SET LIMIT** button until the buzzer and **RED Light** come on. Then release the button.

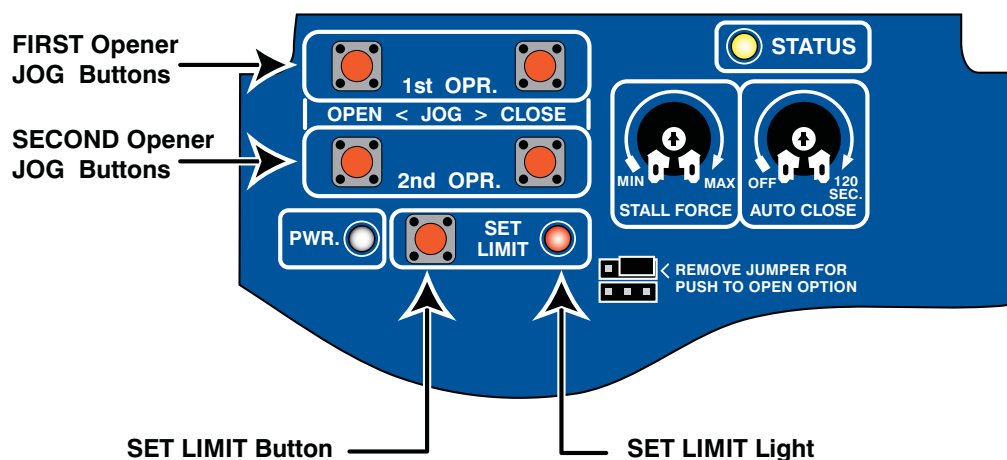
Step 5

NOTE: When the control box cover is removed the receiver range is reduced to less than 5 feet.

Press the transmitter button once and allow the gates to fully close. The alarm will beep once when both gates reach the **CLOSED LIMIT**. This indicates the **LIMITS** for both arms are learned and stored in memory

Step 6

Press the transmitter button and allow the gates to fully open to verify that they stop at the desired positions. Repeat **STEPS 2-5** if correction is needed.



Connecting Additional Safety Devices

Although GTO strongly recommends the use of additional safety devices, we do not endorse any specific brand names. Only use products that are certified and listed to be in compliance with any applicable UL standards (Underwriters Laboratories) and national and regional safety codes.

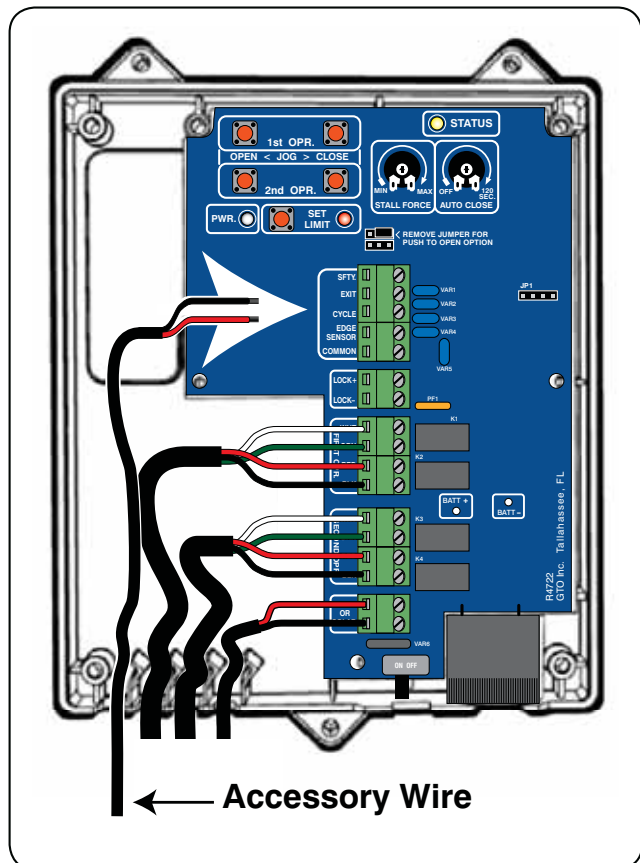
Call GTO Sales at 1-800-543-4283 for information on compatible products for your specific application.

⚠ Make sure the power to the opener is turned off before connecting safety device wiring to the terminal blocks. Unplugging the transformer does not turn power to the opener OFF. ⚠

Wiring Accessories

Run wires from safety devices and other accessories through the strain relief openings in the bottom of the control box.

The Connecting Accessories chart on page 35 will show where different accessories are connected to the control board.



Control Board Connections

NOTE:

- All accessory inputs are dry-contact, normally open, inputs. DO NOT apply external voltage sources to these inputs.
- All accessory inputs are connected with respect to **COMMON** terminal.

CHARGE POWER INPUTS

- 1 CHGR: Power Input Terminals:**
- Input terminals for transformer or solar panel.
 - Non-polarity sensitive

- 2 SAFETY:** (Typically for use with photo beam device, loop detector or other non-contact sensors)
- Activation of this input while the gate is closing will cause the gate to stop and return to the opened position.
 - Activation of this input while the gate is opening has no effect. (gate will continue to open)
 - Activation of this input while gate is idle will prevent gate from closing.
 - Activation of this input while at open limit will restart the auto close time (if enabled).

- 3 EXIT:** (Typically for use with exit loop or wand)
- Activation of this input will open the gate if it's not already at the open position.
 - Activation of this input while at open limit will restart the auto close time (if enabled).
 - Activation of this input while gate is idle will prevent gate from closing.

- 4 CYCLE:** (Typically for use with doorbell button or hardwired keypad)
- Each activation at this input will cycle the operation as follows:
.... OPEN STOP CLOSE STOP OPEN ...

- 5 EDGE:** (Typically for use with contact edge sensor)
- Activation of this input while gate is moving will cause it to reverse direction for 2 seconds.
 - Activation of this input while idle will prevent gate from running.

- 6 COM:**
- Common/Negative terminal for accessory devices.

- 7 LOCK +:** Positive terminal to connect GTO electro-mechanical lock. (FM143)

- 8 LOCK - :** Negative terminal to connect GTO electro-mechanical lock. (FM143)

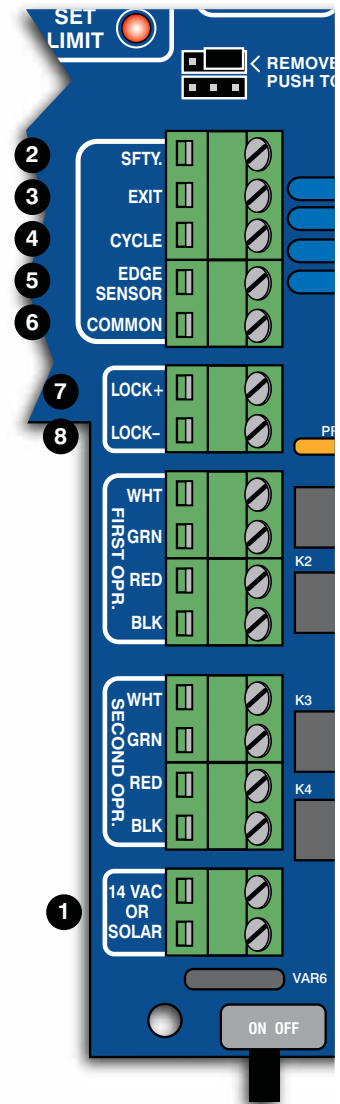
ACCESSORY INPUTS

LOCK OUTPUTS

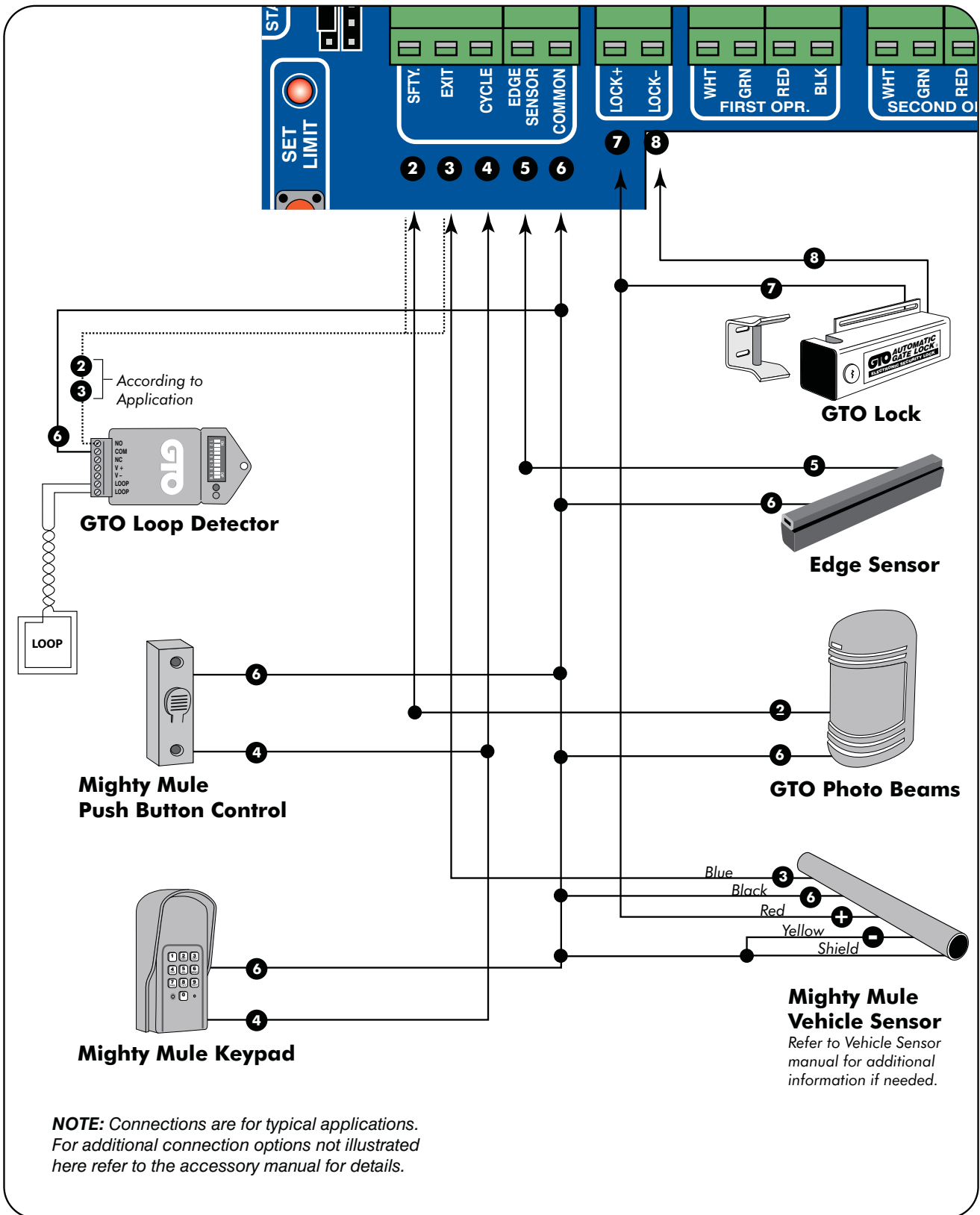
12 VOLT POWER

- 6 COM:** Common/Negative terminal for accessory power source.

- 7 LOCK +:** Power source for GTO / Mighty Mule accessories, i.e. Driveway Sensor



Connecting Accessories



Visual and Audible Diagnostic Indicators

If your gate opener does not function properly after it is installed, use this guide or use the **online troubleshooter at <http://support.gtoinc.com/support/troubleshooter.aspx>** before calling the GTO Service Department.

- On all gates weighing 250 lb. or more, routinely grease the ball bearing hinges at least 4 times a year; more frequently if the gates are in a coastal area.
- Clean the push-pull tube with a soft, dry cloth and apply silicone spray to it at least once a month.

1. Visual Indicators:

- a. Power LED (Green):**
 - ON: AC power or Solar power is present.
 - OFF: There is no AC input power.
- b. Status LED (Yellow): (while unit is running this LED will be OFF)**
 - Rapid blinking in random pattern: GTO's transmitter 318 MHz signal is detected.
 - Continuously ON: Battery is in fast charge mode.
 - 1 Blink every 2 seconds: Battery is in float charge mode (battery is fully charged)
 - OFF: Switch is in the OFF position or there is no input power for at least 60 seconds.

2. Audible Indicator (Alarm/Buzzer):

- a. 1 Beep upon power up:**
 - This is normal self test when the unit is turned on.
- b. Continuous beep after power up:**
 - Unit has learned new transmitter code, releasing the transmitter button will shut off the alarm or...
 - Unit has entered 'LEARN LIMIT' mode, releasing the transmitter button will shut off the alarm.
- c. Rapid beeping:**
 - Unit has encountered two (2) obstructions without reaching either limit. (Power cycle to reset the alarm)
 - Transmitter will not operate the gate.
 - Alarm will automatically shut off after 5 minutes.
- d. 1 beep every 20 seconds:**
 - Low battery is detected.
- e. 1 beep every 2 second:**
 - Position sensor is open circuit. Call GTO service department.
- f. 2 beeps every 2 second:**
 - Position sensor is short circuit. Call GTO service department.
- g. 1 beep when attempting to run the gate:**
 - Blown fuse.
 - Battery is extremely low or damaged.
 - Loose connection from battery to circuit board.

The Gate CLOSSES Then Opens Again on its Own:

1. Check the position of the mounting brackets and readjust if necessary.
2. Check the gate for binding or hinge damage.
3. Adjust stall force if necessary.
4. Reprogram closed position limits.

The Gate OPENS Then Closes Again on its Own:

1. Check the position of the mounting brackets and readjust if necessary.
2. Check the gate for binding or hinge damage.
3. Adjust stall force if necessary.

VOLTAGE RATINGS

14 Vac Transformer _____	10.0 to 16.0 Vac
10 W Solar panel (single) _____	18.0 to 22.0 Vdc 600 mA
measure voltage at panel and control box.	
12 V Battery _____	12.5 to 13.5 Vdc
Charging circuit _____	13.8 to 14.8 Vdc
measure voltage with battery connected	

Warranty Service

If your Mighty Mule® Gate Opener is not operating properly, please follow the steps below:

1. First use the procedures found in the **Visual and Audible Diagnostic Indicators** section (see page 34).
2. Use the Online Troubleshooter at **<http://support.gtoinc.com/support/troubleshooter.aspx>**.
3. If you are unable to solve the problem, call the **GTO Service Department** at (800) 543-1236, or (850) 575-4144. Refer to the serial number (located on the back of opener arm) and date of purchase when calling for assistance.
4. If replacement of your gate opener is necessary, the Service Department will assign a **Return Goods Authorization (RGA) number** to you for all warranty repairs
5. Securely pack the component(s) authorized for return to the factory. Write the RGA number issued to you on the outside of the package in **LARGE BOLD PRINT** and include a copy of the receipt for proof of purchase. Ship the package(s) freight prepaid to:
GTO, Inc., 3121 Hartsfield Road, Tallahassee, Florida, USA 32303.

NOTE: Products returned to GTO without a Return Goods Authorization (RGA) number in LARGE BOLD PRINT on the outside of the package WILL NOT be accepted. Also, items returned to GTO freight collect WILL NOT be accepted.



For more information on Mighty Mule's full line of Automatic Gate Openers and Access Controls visit our website at www.mightymule.com

**For 24 hour/day, 7 day/week Technical Service visit
<http://support.gtoinc.com/support/troubleshooter.aspx>**

The GTO, Inc. Technical Service Department is open
Monday – Friday 8:00 A.M. – 7:00 P.M. (Eastern Time)

1-800-543-1236

For sales call toll free:

1-800-543-GATE (4283)

GTO, Inc.

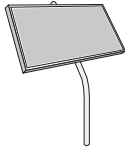
3121 Hartsfield Road • Tallahassee, Florida, USA 32303 • (850) 575-0176
Fax (850) 575-8912 • www.mightymule.com

MIGHTY MULE®

E-Z GATE OPENERS

ACCESSORIES

Accessories are Available From Your Retail Store



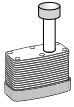
Solar Panel (FM123) 10 watt

This solar powered battery charger is for use with the **FM202** gate operator system. Particularly suited for remote installations, each **Solar Panel** comes with tubular steel support, mounting clips, wire connectors, and 8 ft. of low voltage wire (see Low Voltage Wire for additional wire). The **Mighty Mule®** control board has clearly labeled terminal connections for easy installation of the **Solar Panel**. Installation in some regions of the world will require multiple solar panels for adequate charging power.



Push Button Control (FM132)

Unlit doorbell button for remote entry or exit control. Wires directly to the control board and uses 16 gauge multi-stranded, dual conductor low voltage wire (sold separately).



Pin Lock (FM133)

The **Pin Lock** substitutes for the clevis pin at the front end of the **Mighty Mule®** gate openers. Helps prevent theft of the operator from the gate, while allowing quick release of the operator.



Key Chain Two Button Transmitter (FM134)

The **Key Chain Transmitter** is a dual button version of the **Mighty Mule®** single button entry transmitter and has the same adjustable code settings. Used for 2 gates or 1 gate and garage door using the **GTO** garage door receiver (RB709U). (battery is included)



Single Button Transmitter (FM135)

The **Mighty Mule®** entry transmitter, with adjustable code settings, is standard equipment with all **Mighty Mule®** systems. (battery is included)



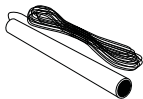
Digital Keypad (FM137)

The specially designed digital keypad can be easily installed as a wireless or wired keypad. It can be programmed to use up to 25 different personal identification number (PIN) codes. Each code is face programmable with additional security features built in. Wired installations require 16 gauge, low voltage, multi-stranded, dual conductor, direct burial wire (sold separately). Requires 3 AA batteries (not included).



Mounting Post (FM100) - In Ground

This black powder coated pedestal is designed to provide convenient access to your keypad, wireless intercom, or other access control device from your vehicle. With its break down design it is easy to install and works well in most standard applications. Surface Mount Flanges (F102) and Extensions (F103) for added height are available.



Mighty Mule® Vehicle Sensor (FM138)

The **Gate Opening Sensor** is designed for residential and agricultural applications and is compatible with most **Mighty Mule®** automatic gate opener models (see **Sensor Box** for model compatibility). The **Sensor** is an electromagnetic sensor, which offers 'hands free' operation of the **Mighty Mule®** Gate Operator with a 12 ft. radius of detection of vehicles in motion. *A wireless version of the Gate Opening Sensor is available. (FM130)*



Automatic Gate Lock (FM143)

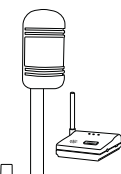
A **MUST** for added security. Solenoid driven, with a steel housing. Unlocks and locks automatically as gates open and close. Used with **Mighty Mule®** DC swing gate operating systems for maximum stability and security. Comes with a keyed manual release. Recommended for gates over 8 ft. long. Ideal for animal enclosures or high wind areas.

Accessories are Available From Your Retail Store (con't)



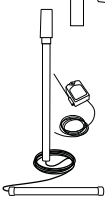
Wireless Entry Intercom / Keypad (FM136)

Allows owner to screen guest at the gate before allowing access to the property. Keypad also allows owner to give up to 25 programmable entry codes to family, friends or approved delivery personnel. Codes can be permanent or temporary. Can be wireless up to 500 feet. Additional base stations available (F3101MBC).



Driveway Alarm (FM131)

Keep track of the comings and goings on your property with this electromagnetic sensor alert system. When a vehicle passes the sensor, the receiver emits an audible tone and lets you know someone's there. Functional range of up to 400 ft. Easy-to-install and stake is included in kit. Transmitter requires 2 "C" batteries (not included)



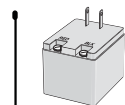
Wireless Driveway Vehicle Sensor (FM130)

The wireless gate opening sensor offers hands free operation of the Mighty Mule Gate Opener. Works wirelessly up to 100 feet from the gate. Transmitter, receiver and two AA batteries are included.



Low Voltage Wire (RB509)

The 16 gauge, multi-stranded, dual conductor **Low Voltage Wire** is for connecting the AC powered transformer, or the **Solar Panel** to the control board. Also used for the connection of accessories, such as locks, keypads, push buttons and other wired control devices. This specially designed wire is UV treated, PVC coated and ready for direct burial. Available in 1000' rolls or special lengths.



Replacement Transformer (RB502)

Standard 14 volt, 720 mA, AC transformer for maintaining the battery included with the **Mighty Mule®** gate operator. This is the only transformer approved for use with **Mighty Mule 202** gate operator systems.



Garage Door Receiver (RB709U-NB)

The Garage Door Receiver allows you to use the same **Mighty Mule®** entry transmitter to operate your gate operator and your garage door operator. Compatible with most garage door operators.



Push to Open Bracket (FM148)

Required when **Mighty Mule®** 202 gate operator(s) must push the gate open, such as on a sloping driveway or where space prevents gate(s) from opening inward (pulled open). Order two PTO brackets for conversion of a dual swing gate installation.

**If you have a question about any special order item,
just call 1-800-543-GATE!**

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