What else will you need?

Other Materials You May Need
- Low voltage wire (RB59) (16 gauge, multi-stranded, dual conductor, direct bury) wire will be needed. Wire length depends upon which accessories are used and the distance between the transformer power supply and the gate. [100 ft. (304 m) max.]
- If your gate is more than 1000 ft. (304 m) away from an AC 110V power source, Mighty Mule Solar Panels must be used to trickle charge the battery. The FM350, FM500/700 and FM502/702 are solar compatible.
- If your gate opens out from your property, you need to purchase or special order a "push-to-open" bracket (FM418) through your retailer. Call 1-800-543-1236 for details. You can program the FM350, FM500/700 and FM502/702 for this application (dual gates require 2 brackets).
- If you use thin walled tube or panel gates, you will need to reinforce them. See diagrams below for tips on reinforcing these types of gates.
- Depending on the type of a gate, a horizontal cross member or mounting plate may be needed to mount the opener arm and gate bracket to the gate.
- Your gate must be in good working order, firmly hung on well-seated fence post, and swing freely and evenly. This operator will NOT WORK on gates with wheels or gates that drag on the ground.
- Gates weighing more than 290 pounds require ball bearing hinges (not provided by Mighty Mule).
- Gate post greater than 8 inches thick will require longer bolts than provided to mount gate brackets to post. Gate post thickness plus inches.
- Gate post less than 4 inches will require reinforcement hardware; large metal washers or steel plates for each side of the post.
- Masonry column installation may require special procedures. Call 1-800-543-1236 (GTO Technical Support) for details.

Checklist
- Do you have all the tools for the installation?
- Did you purchase the proper power supply option?
- Did you use the "standard" hardware package -- will this suit your installation (some additional hardware maybe needed)?
- Did you note the "standard" hardware package -- will this suit your installation (some additional hardware maybe needed)?
- If you purchased the digital keypad, did you get 3 AA batteries?

Answers to commonly asked questions

1. What is a Mighty Mule E-Z Gate Opener?
   A Mighty Mule E-Z Gate is a remote controlled automatic gate opener system. It is the industry leading gate opener available for the “Do-It-Yourself” installer. Because it is battery operated and uses low voltage power, it is safe (no electrician needed), affordable, and easy to install.

2. How is a Mighty Mule E-Z Gate Opener Powered?
   All Mighty Mule gate openers are low voltage systems with a 12 Volt battery backup system. This assures operation of your gate during a power outage. The battery can either be charged by the included transformer, OR can be charged by optional solar panel(s).

3. How do I Install the Solar Panels?
   The Mighty Mule solar panel (FM121) is a complete kit for easy mounting within 8 ft. of the control box. If your panel(s) must be placed farther away than 8 ft. (up to 250 ft.) to receive maximum sunlight, additional low voltage wiring will be required. It is important that the solar panels face South and are placed in full sunlight, away from overhanging trees, or any obstacle that may shade the panels.

4. Will the Mighty Mule Open During A Power Outage?
   Yes. A fully charged FM350 or FM502 battery will provide an average of fifty (50) cycles (open and close) and the FM350 battery (12 Volt car or marine battery not included) provides up to 1500 cycles during a power outage. This number can vary depending on factors such as the type of gate, number of accessories added, and weather conditions if using solar panel(s) (FM121) to charge the battery.

5. Can I Manually Open the Gate?
   Yes! Each opener arm is mounted to the brackets on the post(s) and gate(s) with clevis pins and clips. By removing the pin and clip at the front end, the arm can be removed and the gate be opened manually.

6. What Happens if the Gate Opener Hits Something?
   All Mighty Mule E-Z Gate openers have built-in safety obstruction sensing which will cause the gate(s) to “Stop” and “Reverse” its direction for two seconds if it comes in contact with an object. If the gate comes in contact with the object twice before returning to its fully open or close position, an alarm will sound for 5 minutes.

7. Is the Mighty Mule Gate Opener Difficult to Install?
   No. Most installations can be completed easily in two to three hours. Dual gates will take slightly longer because two operator arms are required. All installations can be completed with tools commonly used by most homeowners. Kits include an installation video (see box for details).

8. What Maintenance is required?
   All Mighty Mule E-Z Gate Openers are designed to be virtually maintenance free. However, it is recommended that the push-pull tube be sprayed once a month with a good grade of “silicone” spray. DO NOT use an oil based spray as this will attract sand and dirt.
**POWERING ACCESSORIES**

**Replacement Battery (FM150), (FM152)**
- For models: FM350/FM352, FM500, and FM502: up to 50 Watts of solar charging power for Mighty Mule models FM350, FM500, and FM502. Each FM500 Panel uses a 12 Volt marine or automotive battery that is not provided in kit.
- Solar Panel 5 Watt (FM121) or 10 Watt (FM123)
- Not Compatible with Mighty Mule 250
- The Solar Panel is for use for up to 5 Watts of solar charging power for Mighty Mule models FM350, FM500, and FM502 and up to 30 Watts of solar charging power for Mighty Mule models FM350, FM500, and FM502. Each FM500 Panel uses a 12 Volt marine or automotive battery that is not provided in kit.
- Low Voltage Wire (RB566) for model #'s: FM250/FM700/FM702
- (RB570) for model #'s: FM500/FM502/FM350

**LOW VOLTAGE GUIDE**

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**SOLAR GUIDE**

There are two ways the Mighty Mule’s battery can be charged.

1. **Transformer (18V included with kit)**
   - All Mighty Mule II Gate Openers come with a transformer for maintaining the battery charge. You can run up to 1000 feet of low voltage wire (not included) from the power control box to the AC 110 V outlet where the transformer is plugged. If your gate is more than 600 feet from an AC power source, you may need to use solar power. You can use the optimal Mighty Mule panel to maintain the Mighty Mule battery charge with FM350, FM500/700 and FM502/702. Solar panels are not compatible with FM250.

2. **Solar (5 or 10 Watt panels not in kit)**
   - The solar option will have some limits. The maximum number of gate cycles to expect per day in a particular area will vary using 5 to 30 Watts of Mighty Mule solar panels. The figures shown are for winter (minimum sunlight) and do not account for the use of a secondary maintenance charger. For these calculations to be consistent with your system will draw additional power from the battery.
   - Special Considerations:
     - For solar applications it is recommended that you purchase an optional second battery for back up cycle during extended days. There is a pre-wired second battery connection built into the FM350 and FM502 control boxes.
     - Ten (10) Watt solar panels are available by special order only.

**Solar Panel Application Charts Mighty Mule® Automatic Gate Openers**

- Not Compatible with Mighty Mule 250
- Replacement Transformer (FM170) for models: FM350/FM352/FM500
- (FM160) for model: FM350/FM500/FM502
- Standard 12 Volt AC transformer for maintaining the battery included with the Mighty Mule II-E Gate Opener

**LOCKING ACCESSORIES**

**Automatic Gate Lock Pull-to-Open (FM143)**
- Not Compatible with Mighty Mule 250
- The Automatic Gate Lock Pull-to-Open (FM143) or Bulldog Pedestrian Gate Lock (FM145) on brick columns, walls, or for other applications with limited space between gate and post.

**Building Pedestrian Gate Lock (FM145)**
- Designed for horizontal use on “walk thru” gates. The Building is an affordable solution for protecting swimming pool areas, playgrounds, tennis courts, pool decks, etc., from unwanted access. Can be used with Digital Keypad (FM137) or FM136 and is solar compatible.

**HARDWARE ACCESSORIES**

- Column Mount Lock Receiver (4439H) (Not Compatible with Mighty Mule 250)
  - For converting the Automatic Gate Lock (FM143) or Building Pedestrian Gate Lock (FM45) on brick columns, walls, or for other applications with limited space between gate and post.

- Push to Open Bracket (Not Compatible with Mighty Mule 250)
  - For converting the Automatic Gate Lock (FM143) or Building Pedestrian Gate Lock (FM45) on brick columns, walls, or for other applications with limited space between gate and post.

**ACCESSORIES FOR GATE OPENERS**

- **Entry Transmitter (FM135)**
  - The Mighty Mule Entry Transmitter, has adjustable code settings. 8 Volt battery included.

- **Key Chain Transmitter (FM134)**
  - The Key Chain Transmitter is a miniature version of the Mighty Mule Entry Transmitter and has the same adjustable code settings. 12 Volt battery included.

- **Dual Button Transmitter (RB742)**
  - Triple Button Transmitter (RB743)
  - These transmitters are for remote control of multiple gate openers, and/or garage door openers. (see Garage Door Receiver). 9 Volt battery included.

- **Digital Keypad (FM137) Wireless or Wired**
  - The Digital Keypad can be easily installed on a wireless or wired keypad. It is programmed to use up to fifteen different personal identification numbers (PIN) codes.

- **Wireless Intercom/Keypad (FM136)**
  - The Wireless Intercom/Keypad system is ideal for any residential application, allowing you of visitors and allowing gate opener activation from the safety of inside your home. The 2-Wire Kit provides superior range with crystal clear two-way communication up to 500 ft. wireless or 1,000 ft. wired.

- **Low Voltage Light Kit (FM124)**
  - (Not Compatible with Mighty Mule 250)
  - This solar compatible Light Kit is perfect for solar applications requiring your illumination. The digital controller allows adjustment from 0.5 to 30 seconds when gate opener is activated. Hardware is included for either a post or column mount installation.

- **Gate Opening Vehicle Sensor (FM138)**
  - (Not Compatible with Mighty Mule 250)
  - The Gate Opening Sensor is an electronic sensor, which transmits “beep” sounds of activation of the Mighty Mule Gate Opener with a 22 ft. radius of detection of vehicles in motion. Includes 50 ft. direct burial cable. Also available in 100 ft. (FM140) and 150 ft. (FM141) lengths.

- **Garage Door Receiver (RB709)**
  - The Garage Door Receiver shows you to use the same Mighty Mule Entry Transmitter (see Dual and Triple Transmitters) to operate your Mighty Mule Gate Openers and your garage door opener. Compatible with most garage door openers.

- **Push Button Control (FM132)**
  - (Estimated number of cycles per day)
  - Push Button Control (FM132) is used to open and close. Used with Mighty Mule systems for maximum stability and security. Comes with a keyed manual release. Re-opens and closes the gate automatically when using 5 to 30 Watts of Mighty Mule solar panels. The solar option will have some limits. The table and map illustrate the maximum number of gate cycles to expect per day in a particular area using V Watts. Each solar panel is for use for up to 15 Watts of solar charging power for Mighty Mule models FM350, FM500 and FM502.
  - For mounting the Automatic Gate Lock (FM143) or Bulldog Pedestrian Gate Lock (FM145) on brick columns, walls, or for other applications with limited space between gate and post.

- **Replaceable Transformer (FM170)**
  - (Not Compatible with Mighty Mule 250)
  - Must be ordered separately, not included in kit.
  - Standard 12 Volt AC transformer for maintaining the battery included with the Mighty Mule II-E Gate Opener.

- **Solar Panel 5 Watt (FM121) or 10 Watt (FM123)**
  - (Not Compatible with Mighty Mule 250)
  - For use with Mighty Mule models FM350, FM500 and FM502 and up to 30 Watts of solar charging power for Mighty Mule models FM350, FM500, and FM502. Each FM500 Panel uses a 12 Volt marine or automotive battery that is not provided in kit.

- **Low Voltage Wire (RB566)**
  - For models: FM350/FM352, FM500, and FM502, which is a standard 12 Volt, 70 amp-hour, maintenance-free battery for the Mighty Mule gate opener systems. For model FM250 (FM152) which is a standard 12 Volt, 2-amp-hour, for the Mighty Mule 250 gate opener system and the Bulldog Pedestrian Gate Lock (FM145). For model FM350 please use a 12 Volt marine or automotive battery that is not provided in kit.

- **Low Voltage Wire (RB566) grades:**
  - 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 Automatic Gate Locks, Building Pedestrian Gate Locks, or other wire-controlled devices. This specially designed wire is UV resistant, PVC coated and ready for direct burial. Available in 100 ft. rolls or special lengths.