

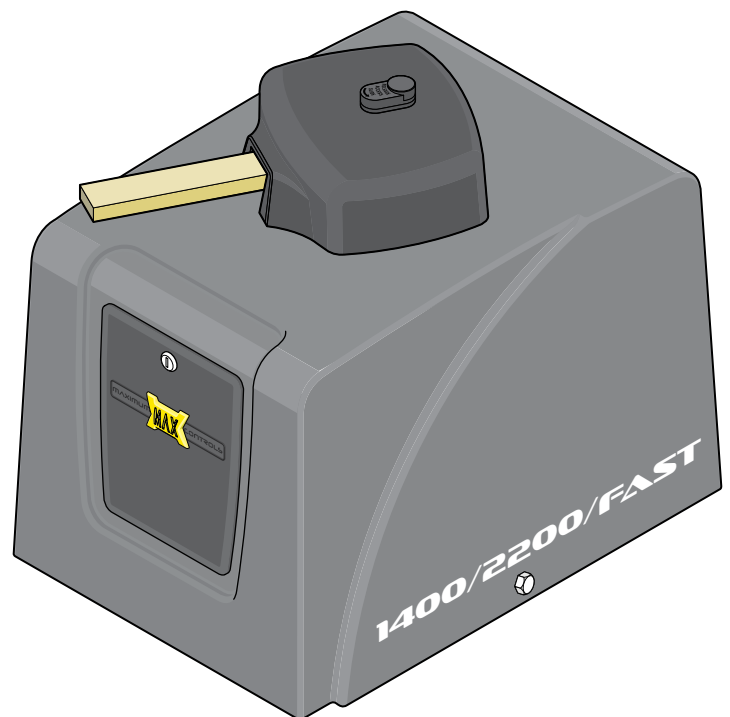
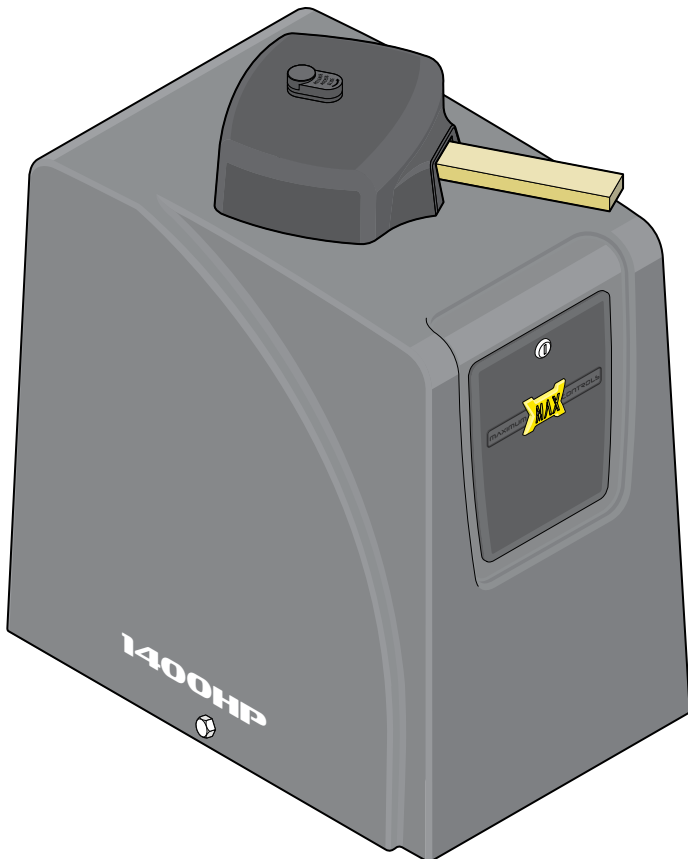


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SAFETY SENSORS REQUIRED FOR UL 325 2016

CONFORMS TO UL STD 325
UL CLASS - I, II, III, IV

CERTIFIED TO CAN/CSA STD
C22.2 NO. 247



Residential / Commercial Brushless DC Swing Gate Operators

Made in USA



Intertek
4009963

MAX MEGATRON

1400 / 1400HP / 2200 / FAST

Single or Bi-Parting Gates

Single or Bi-Parting Gates

Single or Bi-Parting Gates

Bi-Parting Gates ONLY

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MAX MEGATRON SPECIFICATIONS

UL 325 Class of Operation - Class I, II, III, IV

Gate Type - Vehicular Swing Gate

Max Gate Weight / Length:

- **MAX Megatron 1400/1400HP** - 1400lbs @ 15 ft or 1200 lbs @ 20 ft
- **MAX Megatron 2200** - 2200lbs @ 15 ft or 1500 lbs @ 20 ft
- **MAX Megatron FAST** - 1600lbs @ 12 ft gate per operator

NOTE: The MAX Megatron FAST is **ONLY** available for installation on bi-parting gates (dual operators). A single gate operator **CANNOT** be used.

90° Opening Time:

- **MAX Megatron 1400/1400HP/2200** - 16 selectable speeds from approximately 11.5 sec to 20 sec depending on the weight and length of the gate.
- **MAX Megatron FAST** - 16 selectable speeds from approximately 6 sec to 14 sec depending on the weight and length of the dual gates.

Cycles per Hour AC Input Power - Continuous

Battery Back-Up Cycles (BC-7 Battery Module-7 Amp/Hr Batteries fully charged):

- Approximately 450 cycles

NOTE: The number of gate cycles using **ONLY** battery back-up power will vary depending on the weight of the gate, the gate length, the operating condition of the gate hardware, temperature and the amount of charge the batteries have at the beginning of the battery power only operation.

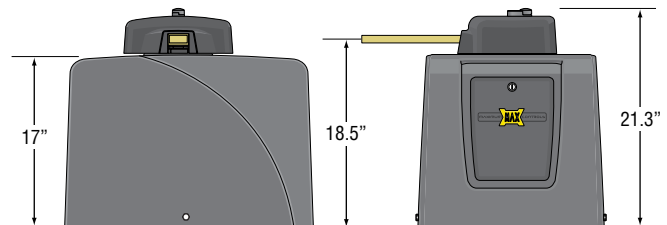
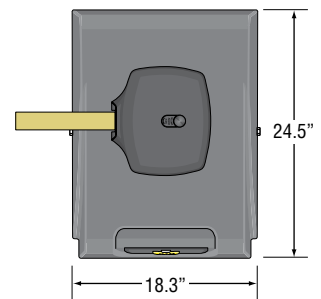
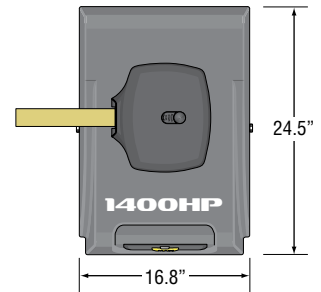
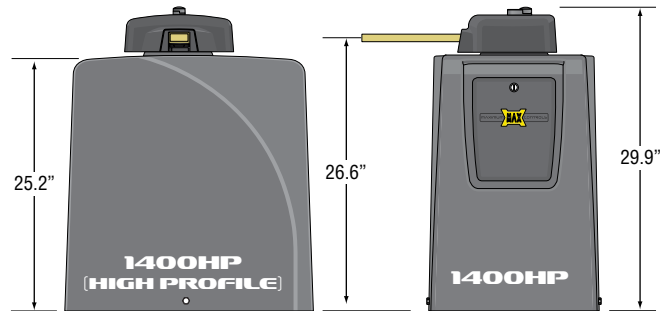
Input AC Power - Switchable: 115VAC or 230VAC single phase

Motor - 24VDC Brushless (equivalent to 1 HP AC motor)

Operating Temperature: -4°F to 158°F (-20°C to 70°C)

Entrapment Protection:

- UL 325 Type A Inherent (ERD sensor)
- Inputs for **NORMALLY CLOSED (N.C.)**
UL 325 Type B1 (photo cell)
and Type B2 (sensing edge)



IMPORTANT SAFETY INFORMATION

WARNING – To reduce the risk of injury or death:

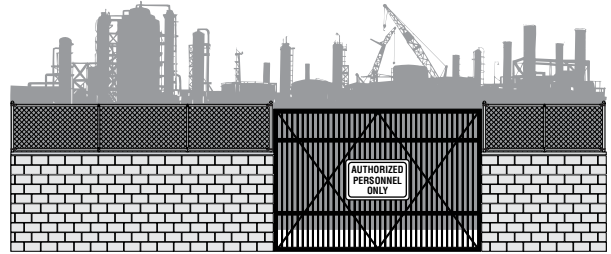
1. READ AND FOLLOW ALL INSTRUCTIONS.
2. Never let children operate or play with gate controls. Keep the remote control away from children.
3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
4. Test the gate operator monthly. The gate **MUST** reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death.
5. Use the emergency release only when the gate is not moving.
6. KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
7. The entrance is for vehicles only. Pedestrians must use separate entrance.
8. SAVE THESE INSTRUCTIONS

UL 325 MODEL CLASSIFICATIONS



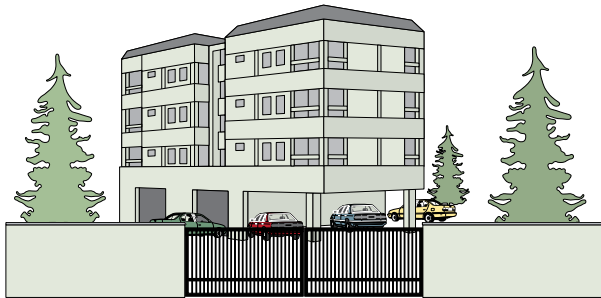
CLASS I

Residential Vehicular Gate Operator - A vehicular gate operator (opener or system) intended for use in a home of one to four single family dwellings, or a garage or parking area associated therewith.



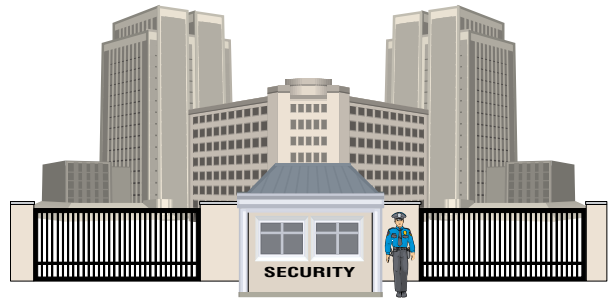
CLASS III

Industrial/Limited Access Vehicular Gate Operator - A vehicular gate operator (opener or system) intended for uses in an industrial location, loading dock area or other location not intended to service the general public.



CLASS II

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



CLASS IV

Restricted Access Vehicular Gate Operator - A vehicular gate operator (opener or system) intended for use in a guarded industrial location or buildings such as airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

UL 325 REQUIRED ENTRAPMENT PROTECTION

This vehicular gate operator must be installed with at least two independent entrapment protection means as specified in the table and definitions below.

The same type of device shall not be used for both entrapment protection means. Use of a single device to cover both the opening and closing directions is in accordance with the requirement, however, a single device is not required to cover both directions. This operator has been provided with type A entrapment protection. The installer is required to install additional entrapment protection devices in each entrapment area.

Gate Type	Class I & II	Class III & IV
Swing Gate	A, B1*, B2*, C, D	A, B1*, B2*, C, D, E
Slide Gate	A, B1*, B2*, D	A, B1*, B2*, D, E

A - Inherent entrapment protection system.

B1 - Provision for connection of a non-contact sensor (photoelectric sensor or the equivalent).

B2 - Provision for connection of a contact sensor (edge device or the equivalent).

* B1 and B2 means of entrapment protection must be MONITORED.

C - Inherent adjustable clutch or pressure relief device.

D - Provision for connection of an actuating device requiring continuous pressure to maintain opening or closing motion of the gate.

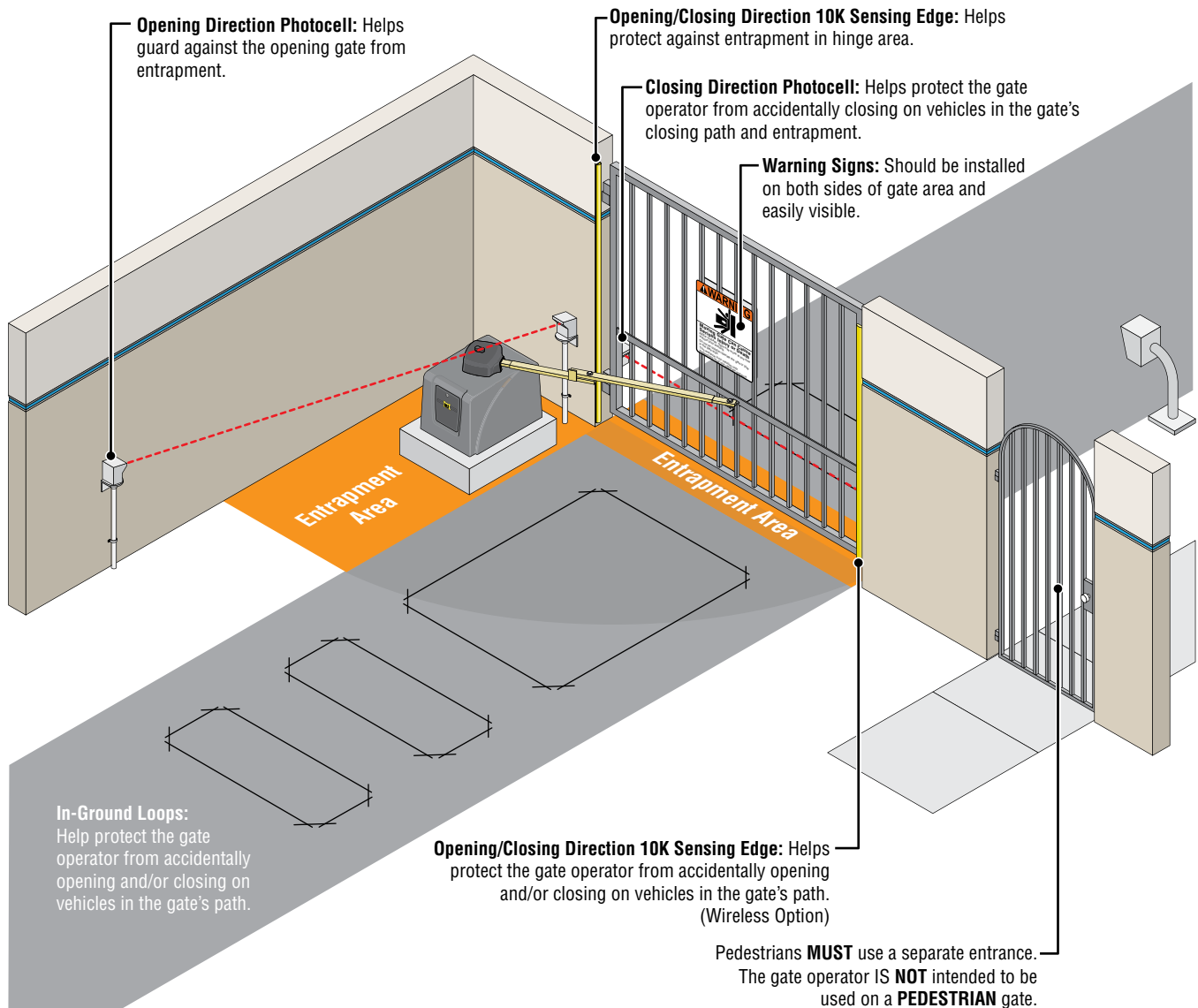
E - An audio alarm.

UL 325 COMPLIANT INSTALLATION REQUIREMENTS

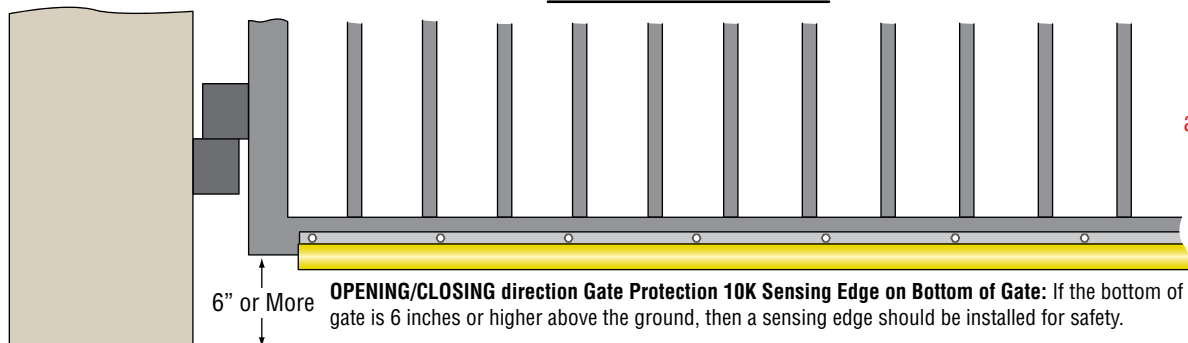
- A** Install the gate operator only when:
- 1 The operator is appropriate for the construction of the gate and the usage Class of the gate,
 - 2 All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 6 feet (1.83 m) above the ground to prevent a 2-1/4 inch (57.2 mm) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position,
 - 3 All exposed pinch points are eliminated or guarded, and
 - 4 Guarding is supplied for exposed rollers.
- B** The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.
- C** The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.
- D** The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not over-tighten the operator clutch or pressure relief valve to compensate for a damaged gate.
- E** For gate operators utilizing Type D protection:
- 1 The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving,
 - 2 A gate operator shall additionally be provided with a placard that is marked in letters at least 1/4-in (6.4-mm) high with the word **"WARNING"** and the following statement or the equivalent: **"Moving Gate Has Potential of Inflicting Injury or Death - Do Not Start Gate Unless Path is Clear"**.
 - 3 An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed, and
 - 4 No other activation device shall be connected.
- F** Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.
- G** The Stop and/or Reset button must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.
- H** A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
- I** For gate operators utilizing a non-contact sensor:
- 1 See instructions on the placement of non-contact sensors for each Type of application,
 - 2 Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle, trips the sensor while the gate is still moving, and
 - 3 One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.
- J** For a gate operator utilizing a contact sensor:
- 1 One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge, and post mounted both inside and outside of a vehicular horizontal slide gate.
 - 2 One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.
 - 3 One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
 - 4 A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.
 - 5 A wireless device such as one that transmits radio frequency (RF) signals to the gate operator 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 device shall function under the intended end-use conditions.
 - 6 One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 6 inches (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
 - 7 One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

INTENDED USE OF SWING GATE OPERATOR

The operator is intended for use on a **VEHICULAR** slide gate ONLY. It is intended to be used **WITH** appropriate entrapment protection safety devices and in-ground vehicle loop detection system. This operator has a inherent entrapment protection system and requires additional external monitored entrapment protection devices (Non-contact Photocells or contact sensing edges) for each entrapment area prior to gate operation.



Bottom of Gate



NOTE: sensors **MUST** be **MONITORED** and **NORMALLY CLOSED (N.C.)**

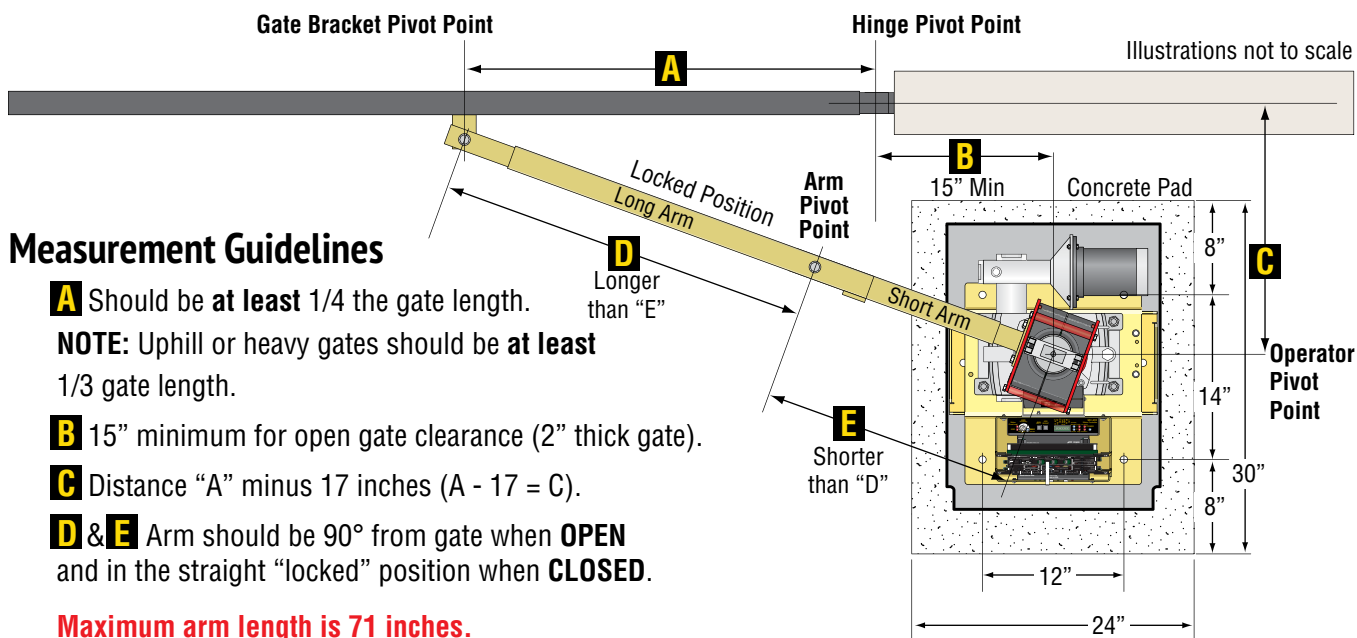
INSTALLATION

Read and understand this entire manual before installation. Check with the local building department prior to installing this gate operator to comply with local building code requirements. The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates should not open into public access areas.

GATE OPERATOR POSITION

The gate must be properly installed and work freely in both directions prior to installation of the gate operator.

Closed Position



Measurement Guidelines

A Should be **at least** 1/4 the gate length.

NOTE: Uphill or heavy gates should be **at least** 1/3 gate length.

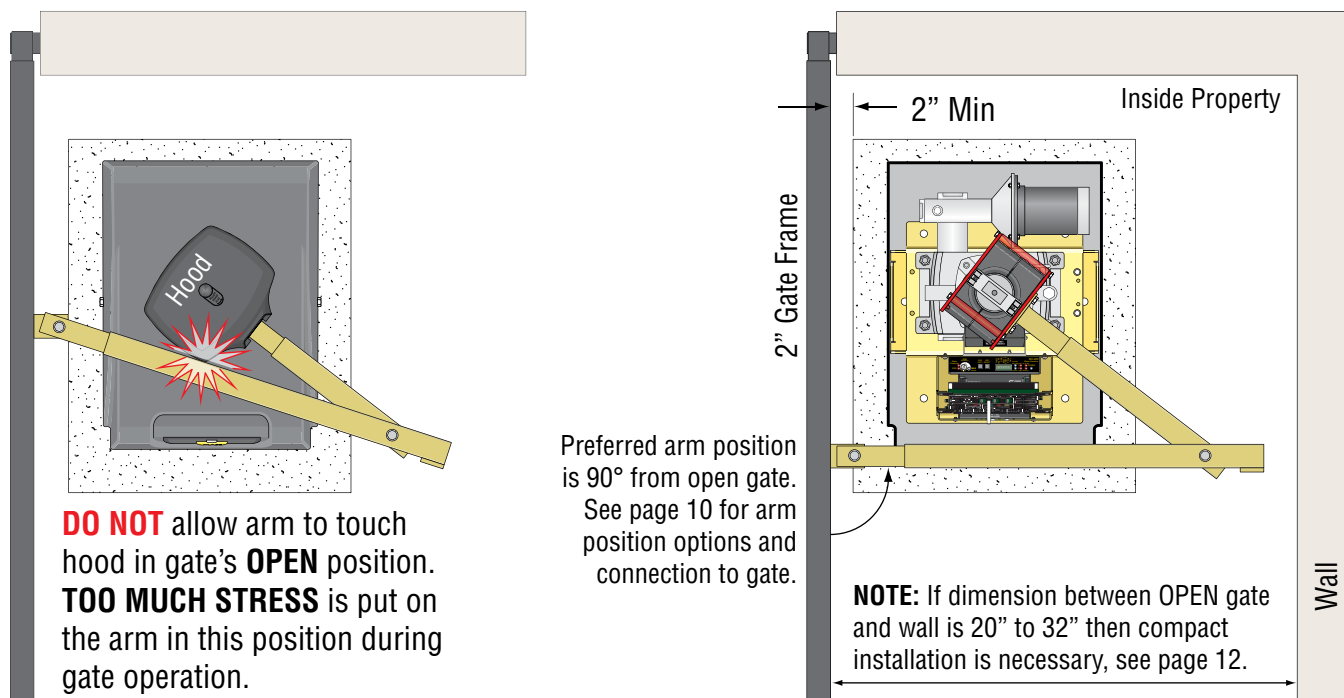
B 15" minimum for open gate clearance (2" thick gate).

C Distance "A" minus 17 inches ($A - 17 = C$).

D & E Arm should be 90° from gate when **OPEN** and in the straight "locked" position when **CLOSED**.

Maximum arm length is 71 inches.

Open Position

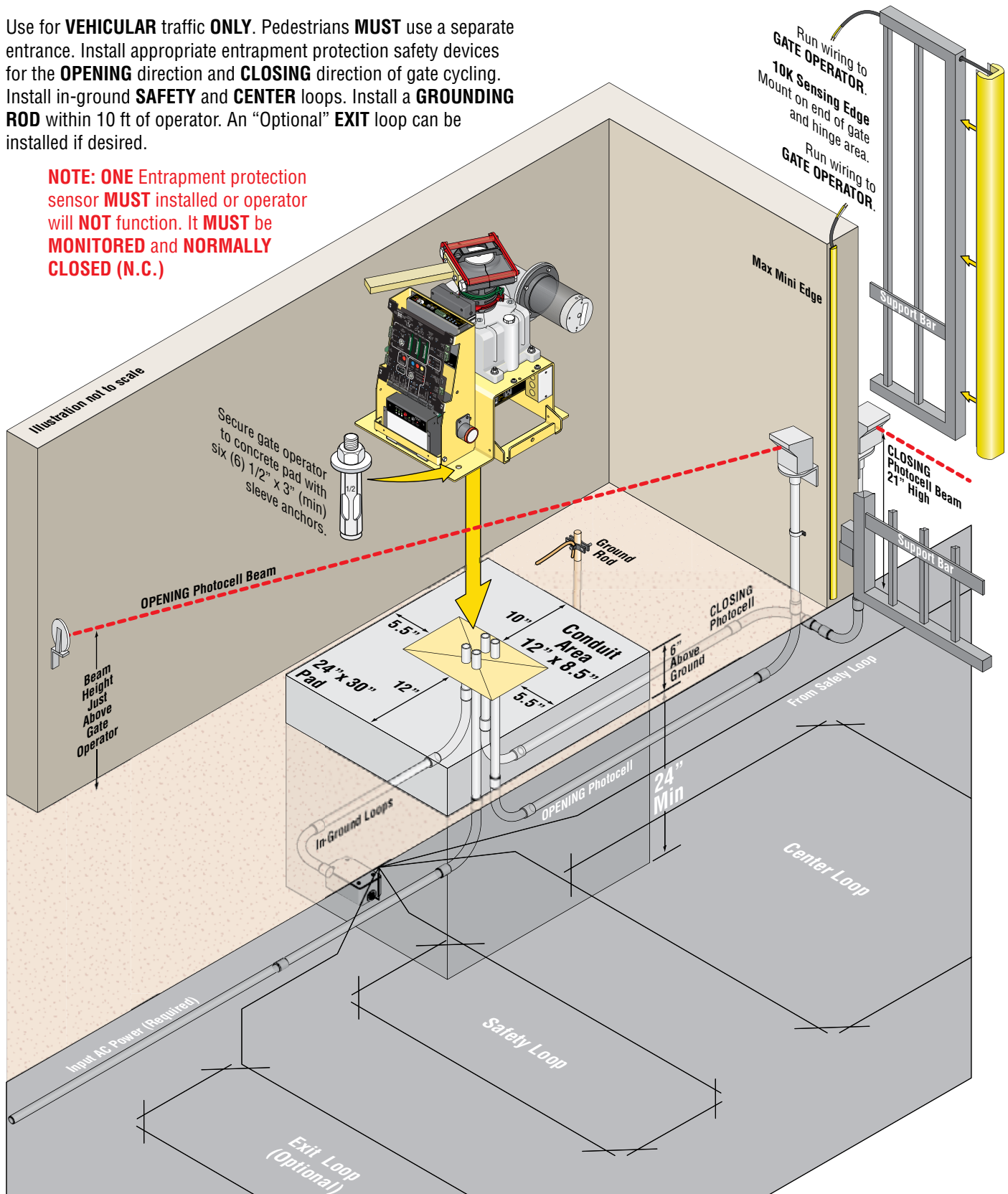


INSTALLATION

RECOMMENDED GATE OPERATOR LAYOUT

Use for **VEHICULAR** traffic **ONLY**. Pedestrians **MUST** use a separate entrance. Install appropriate entrapment protection safety devices for the **OPENING** direction and **CLOSING** direction of gate cycling. Install in-ground **SAFETY** and **CENTER** loops. Install a **GROUNDING ROD** within 10 ft of operator. An "Optional" **EXIT** loop can be installed if desired.

NOTE: ONE Entrapment protection sensor **MUST** installed or operator will **NOT** function. It **MUST** be **MONITORED** and **NORMALLY CLOSED (N.C.)**



INSTALLATION

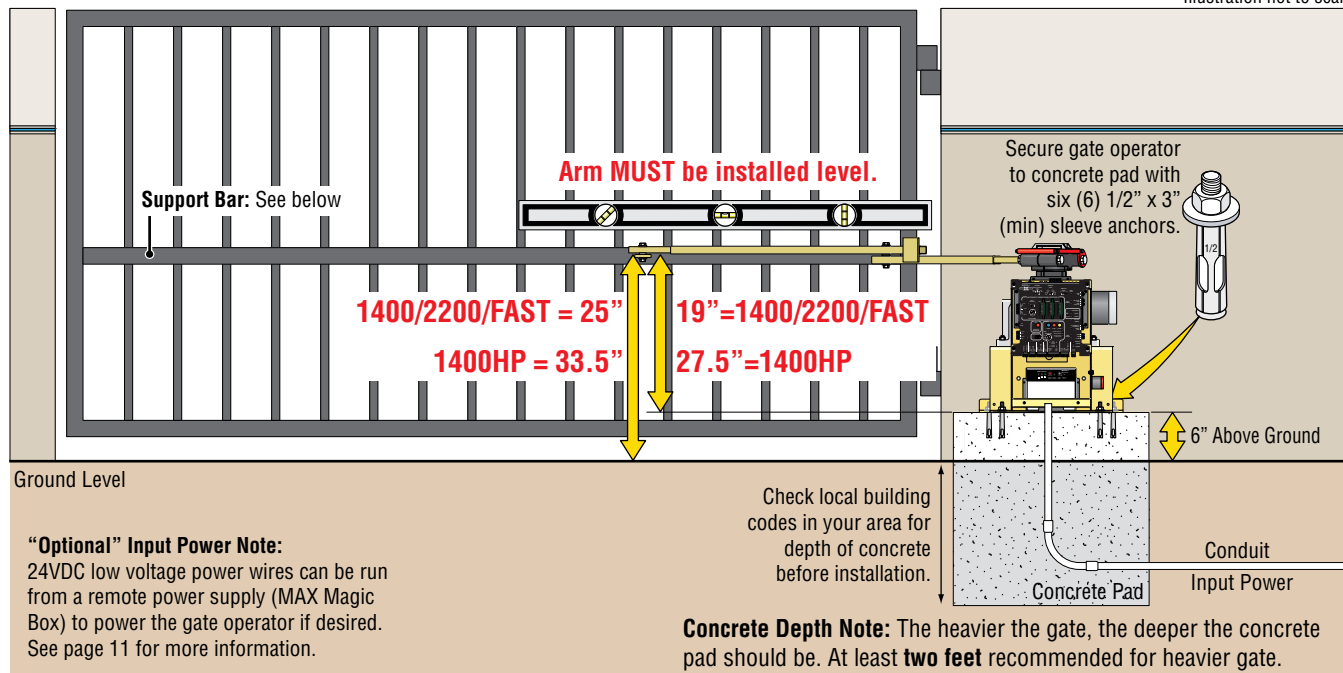
LAYOUT AND ARM HEIGHT OF 1400/2200/FAST OR 1400HP

The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. See “Gate Operator Position” on page 6 for operator position and “Arm Connection to Gate” on page 10.

Conduit Guidelines and Suggestions (See page 7)

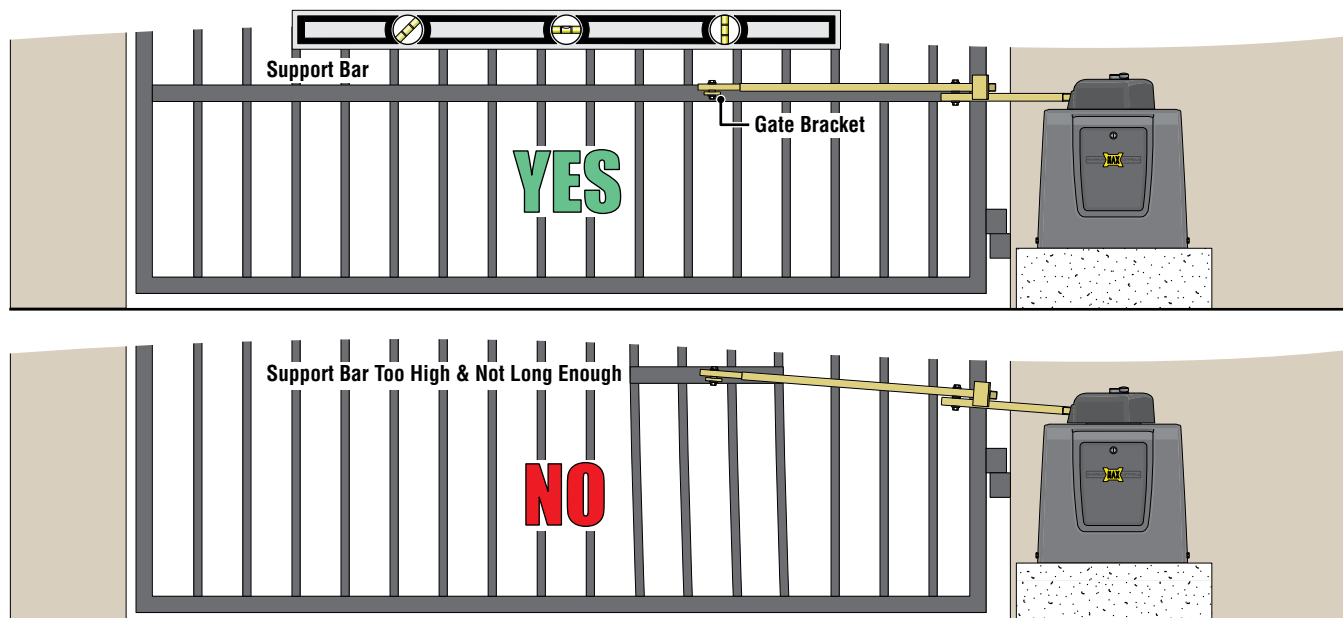
- **REQUIRED** - AC input power wire.
- **REQUIRED** - Entrapment protection (photoeye and/or sensing edge). See page 13.
- Normally open photoeye. See page 13.
- In-ground loop wires. See page 14.

Illustration not to scale



Support Bar

A support bar should be installed at the gate bracket height across the **ENTIRE** gate to keep the gate pickets from bending.



INSTALLATION

DUAL GATE OPERATORS

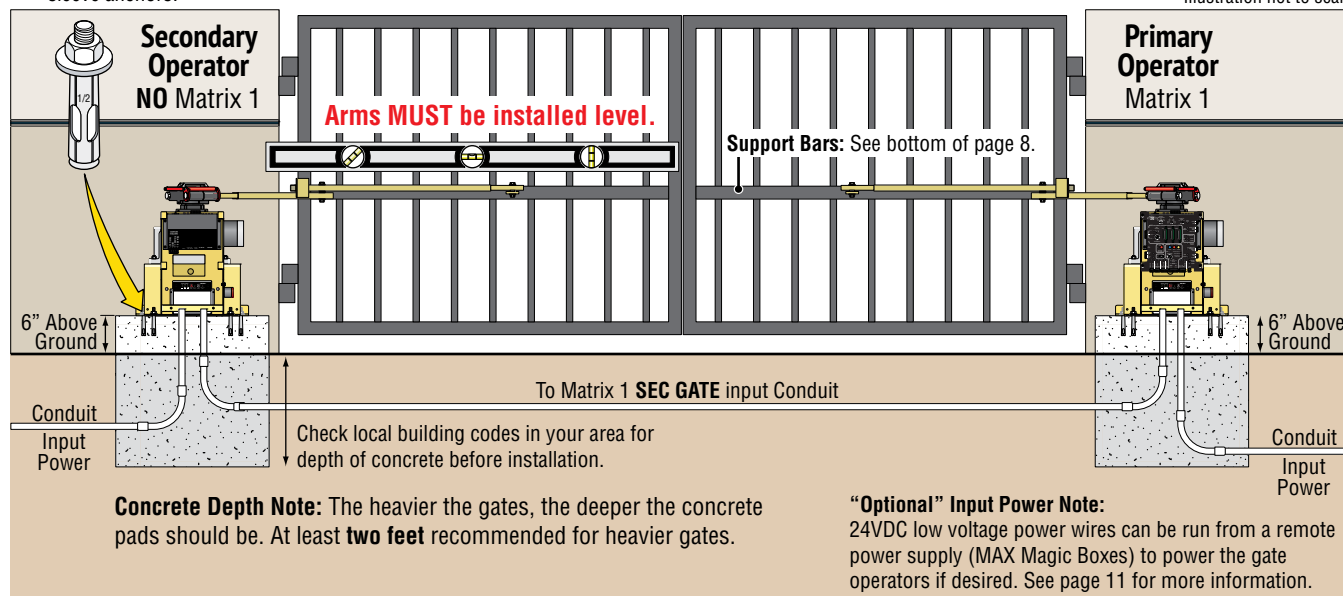
The gates must be properly installed and work freely in both directions prior to the installation of the dual gate operators. See "Gate Operator Position" on page 6 for operator positions and previous page for arm height.

Conduit Guidelines and Suggestions

- **REQUIRED** - Run AC input power wire to **EACH** gate operator.
- **REQUIRED** - Entrapment protection (photocell and/or sensing edge) to **EACH** Corresponding **GATE OPERATOR**. (see below & page 13)
- Normally open photocell to the **PRIMARY OPERATOR**. (page 13)
- In-ground loop wires to the **PRIMARY OPERATOR**. (page 14)

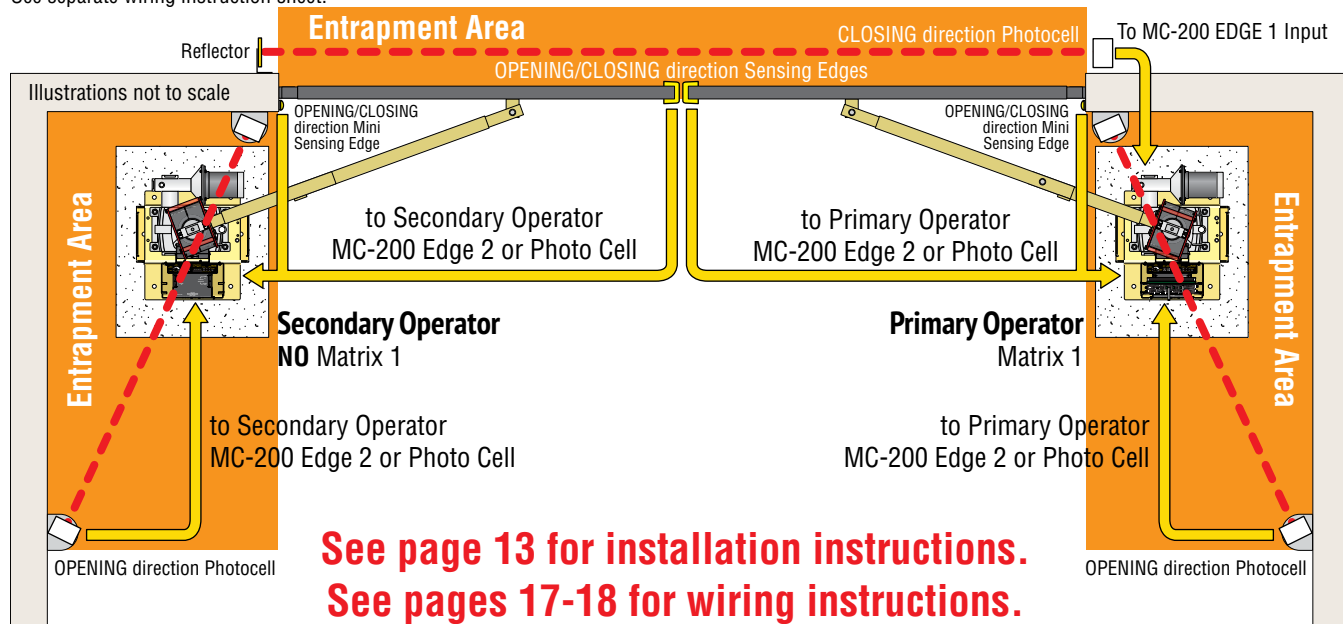
Secure EACH gate operator to concrete pad with six (6) 1/2"x 3" (min) sleeve anchors.

Illustration not to scale



Each entrapment protection device MUST be connected to corresponding gate operator.

Dual Gates CLOSING direction Thru-Beam Photocell ONLY:
See separate wiring instruction sheet.

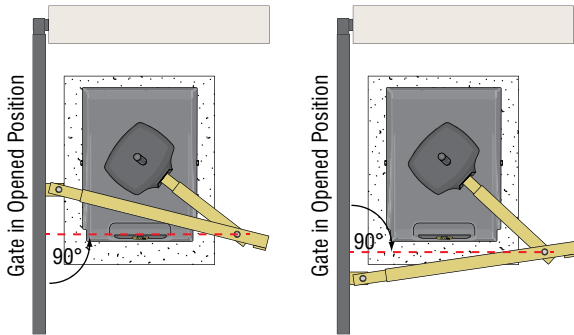


INSTALLATION

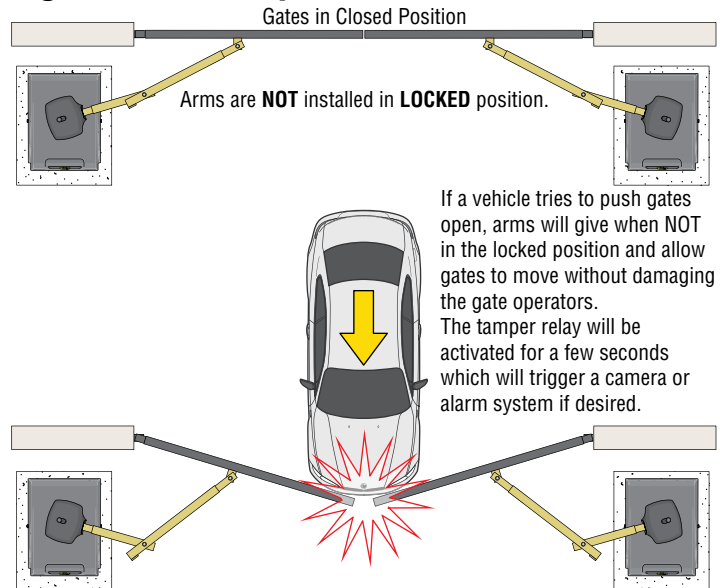
ARM POSITION OPTIONS

Retro-Fit Arm Option

When replacing an existing gate operator, the arm may not be able to conform to the preferred arm position (90° from gate in open position). The positions illustrated below can be acceptable as long as the gate operator cycles smoothly and there is **NO** gate hesitation when gate starts cycling in either direction.

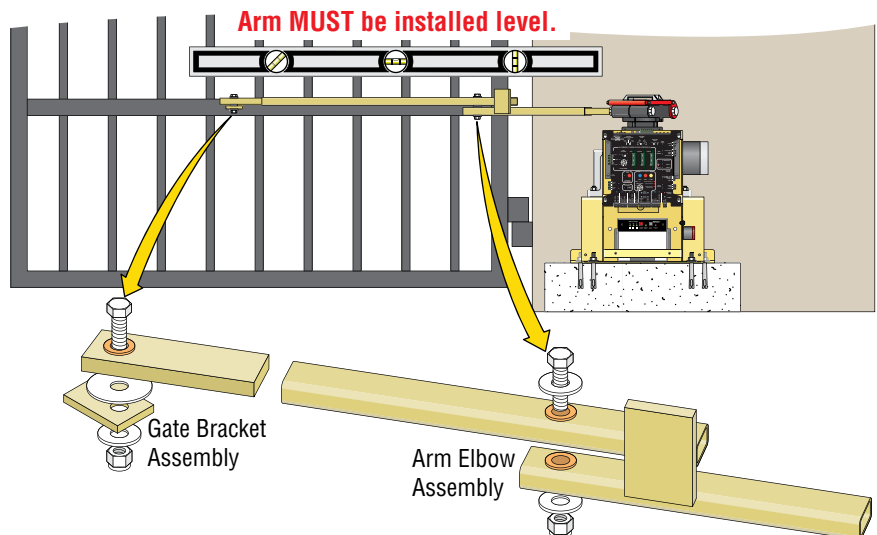
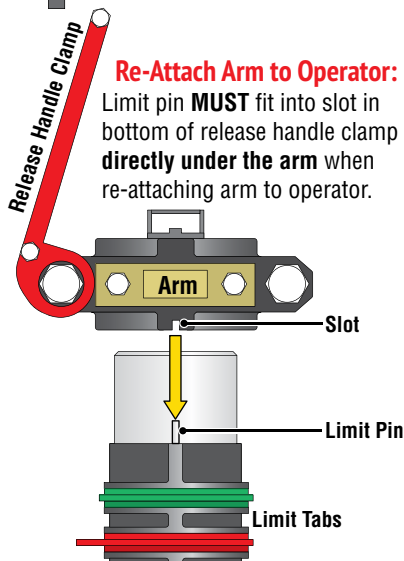
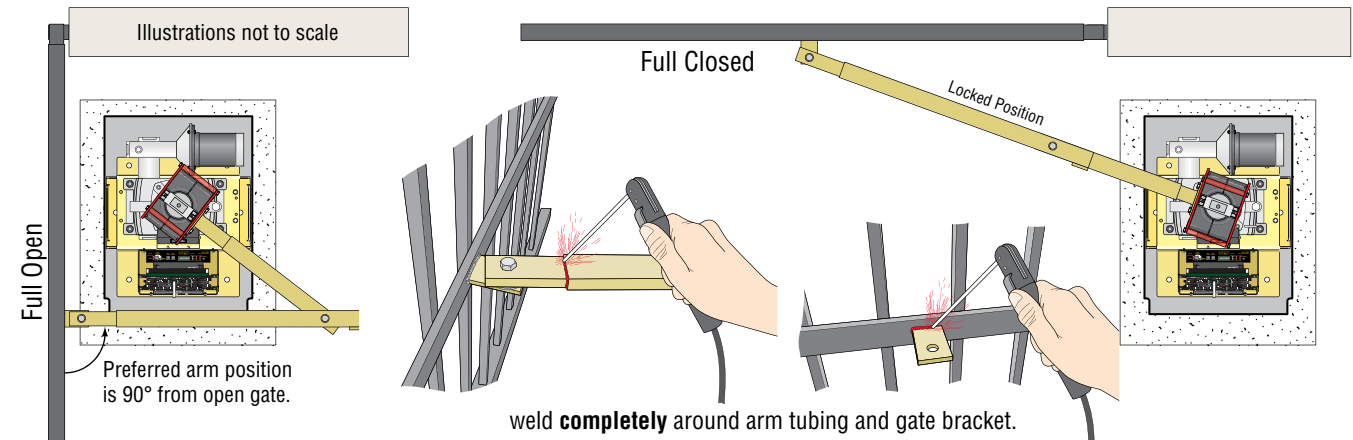


High Traffic Arm Option



ARM CONNECTION TO GATE

After you're satisfied testing the arm in the **FULL OPEN** and **FULL CLOSED** positions, weld gate bracket and arm.



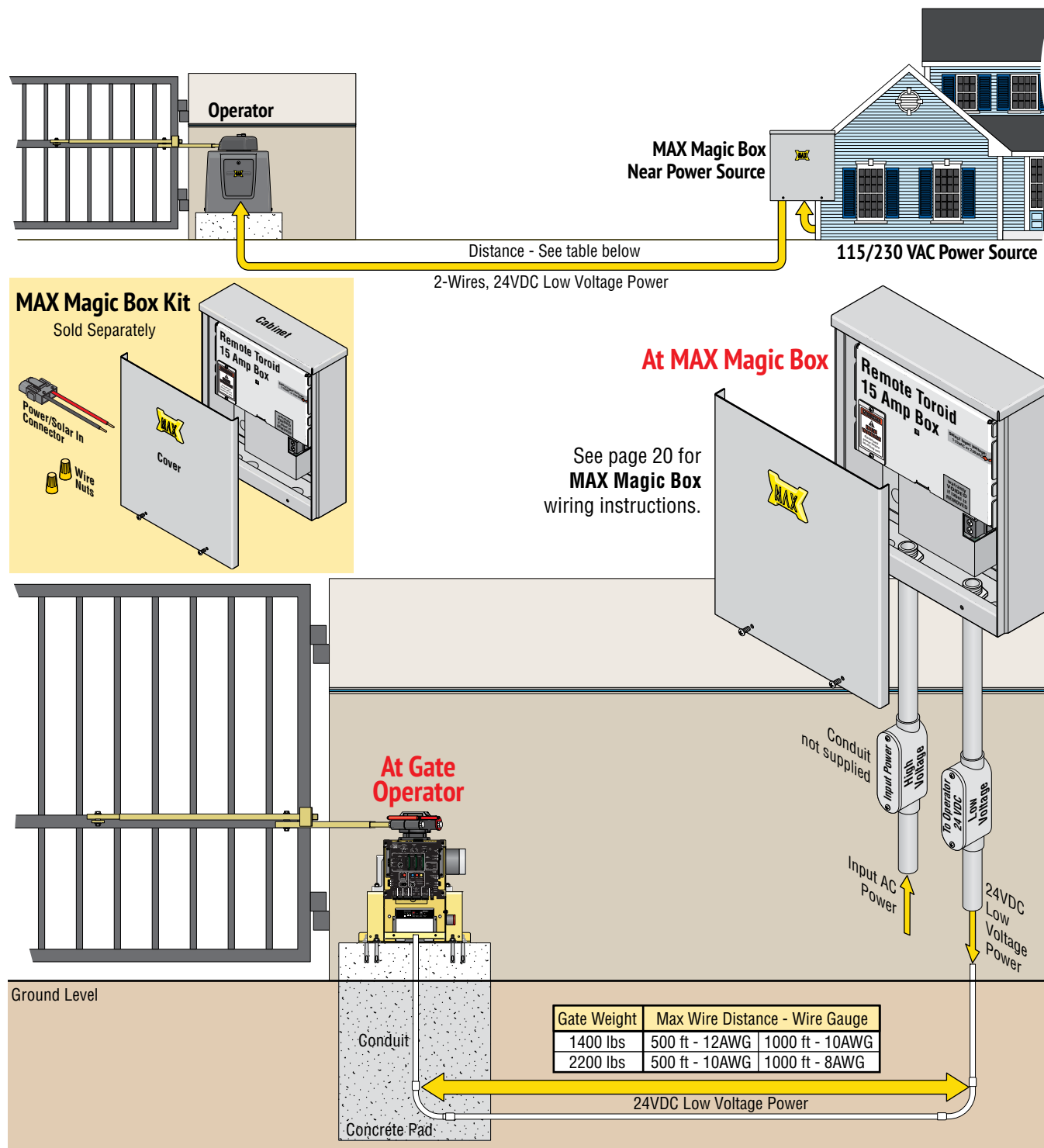
INSTALLATION

OPTIONAL REMOTE POWER SUPPLY KIT - MAX MAGIC BOX

A remote power supply is for installations where it is too costly or difficult to trench a 115/230 VAC power line to the operator but instead run a low voltage power line to the operator. A **MAX Magic Box Kit** (sold separately) is required to remotely install a **Remote MAX Megatron Toroid box**.

Install the **MAX Magic Box** near the 115 VAC or 230 VAC input AC power source, up to 1000 ft away from gate operator.

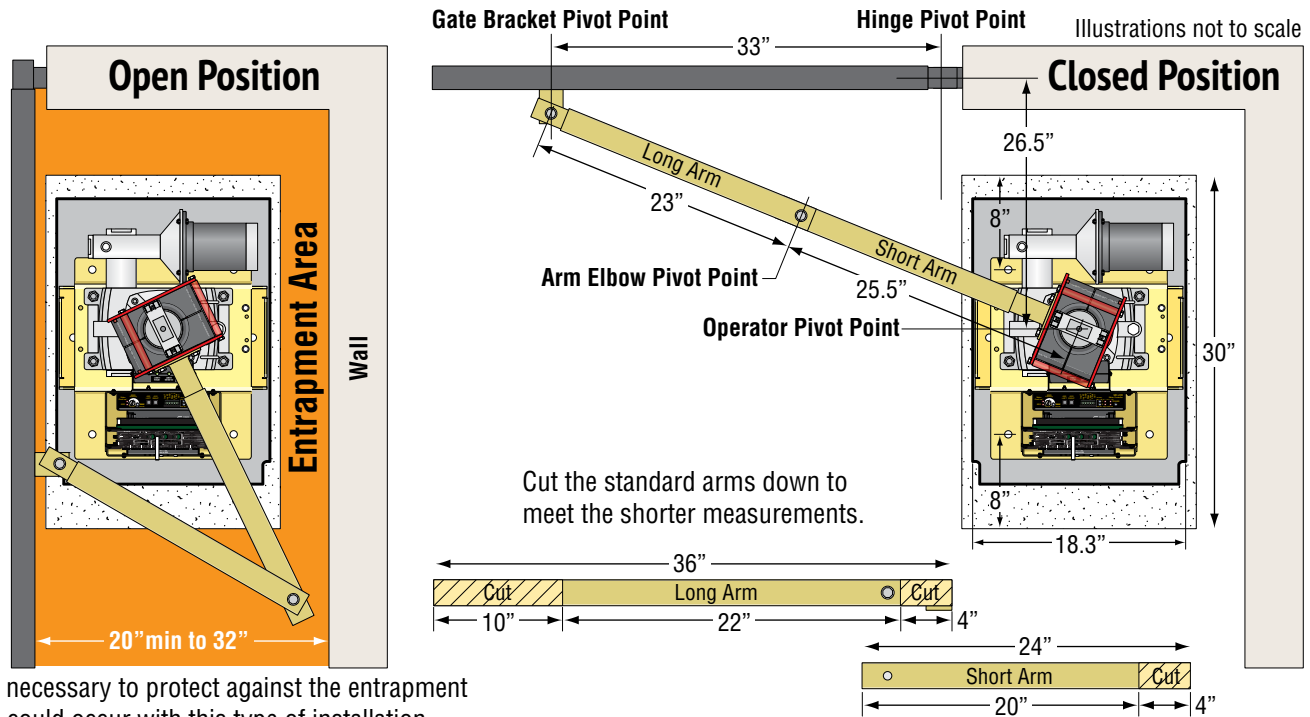
NOTE: A **MAX Magic Box** kit is required for **EACH** gate operator when using dual gate operators.



INSTALLATION

COMPACT INSTALLATION ONLY

Use compact installation arm measurements when area between the **OPEN gate** and wall is 20" min to 32".
DO NOT use these arm measurements for a standard installation. (For standard installation, see page 6)



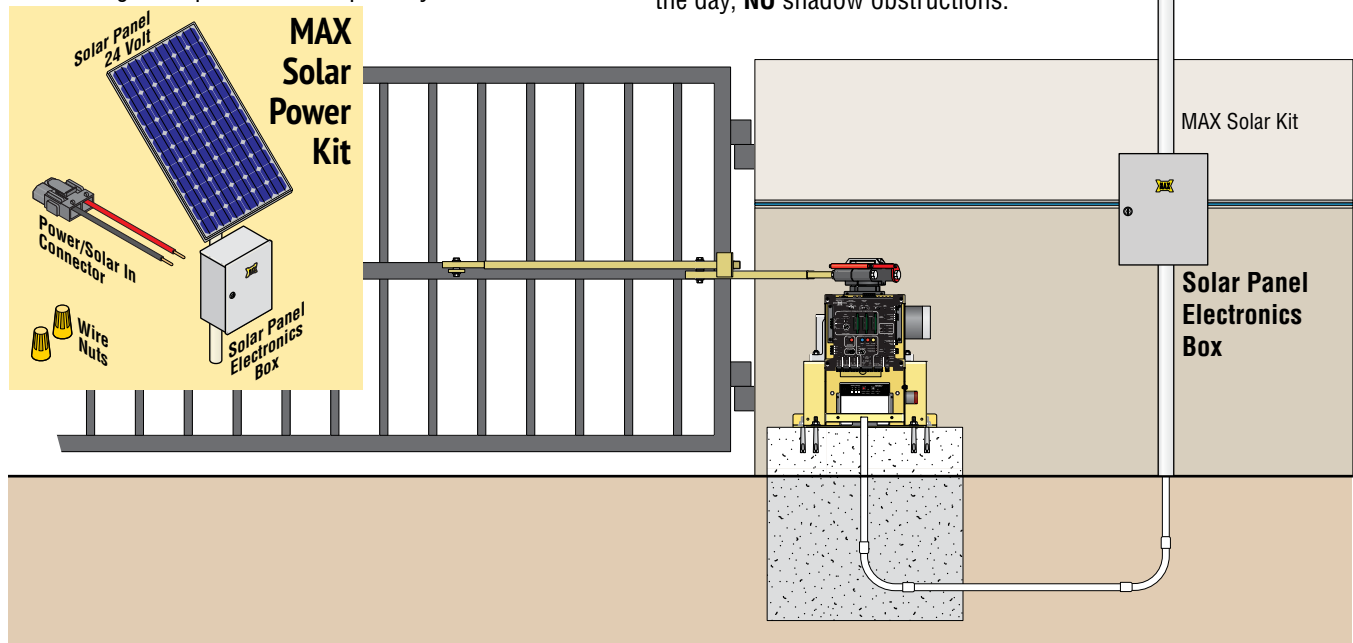
It is necessary to protect against the entrapment that could occur with this type of installation. (See entrapment protection on page 13)

SOLAR - OPTIONAL

Refer to Solar application guide.

MAX Solar Power Kit: MUST be used when using solar power. Sold separately.

Solar Panel: must be mounted facing south. It must get full sunlight throughout the day, **NO** shadow obstructions.



INSTALLATION

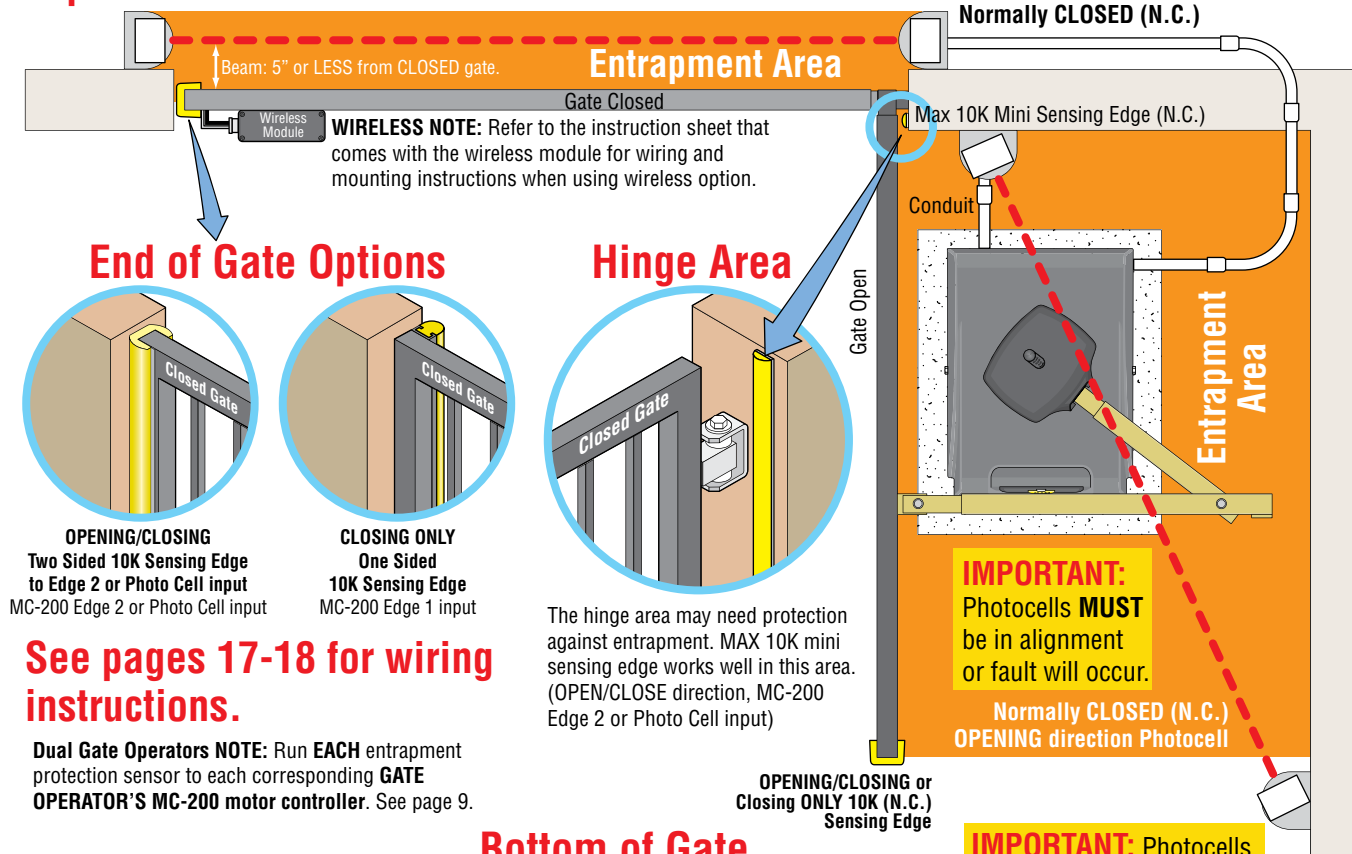
ENTRAPMENT PROTECTION

Install photocells and/or sensing edges to help protect against entrapment during cycling of the gate (entrapment protection).

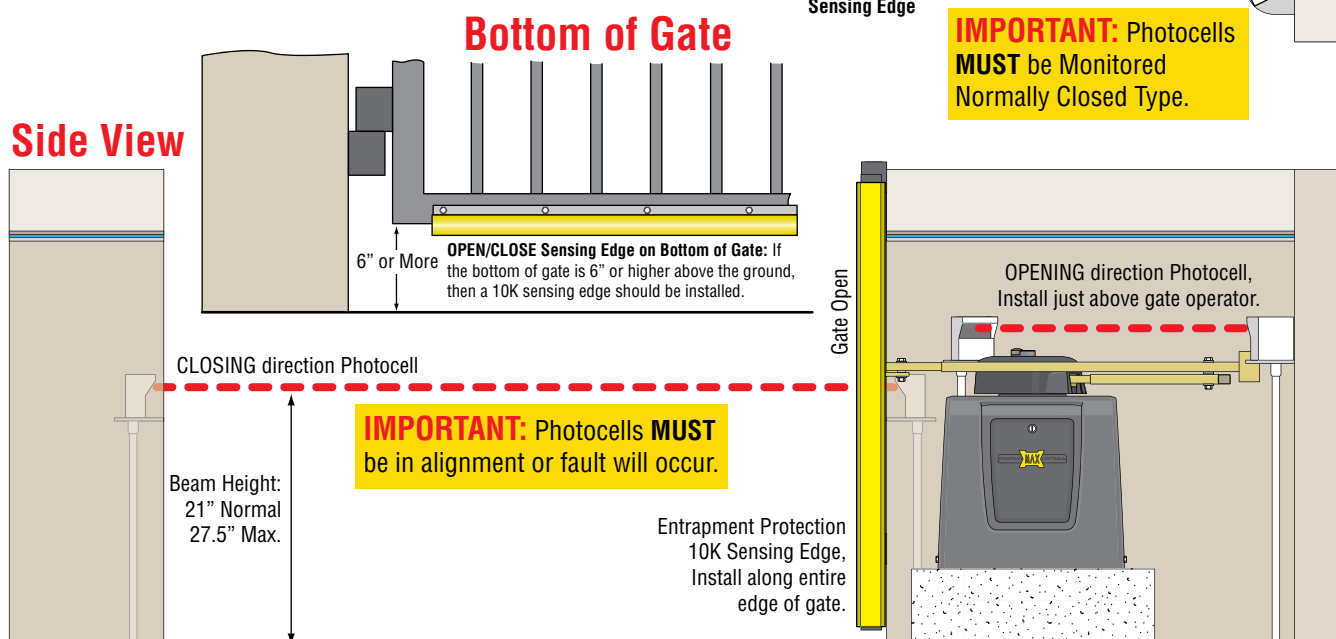
ONE entrapment protection sensor **MUST** be installed and connected to “Edge 1 CLOSING direction” on MC-200 motor controller or operator will **NOT** function. Entrapment protection sensors **MUST** be **MONITORED** and **NORMALLY CLOSED (N.C.)**.

IMPORTANT: Sensing edges **MUST** be Monitored 10K Normally Closed Type and a GEM-104 module **MUST** be installed.

Top View



Side View



INSTALLATION

IN-GROUND LOOPS

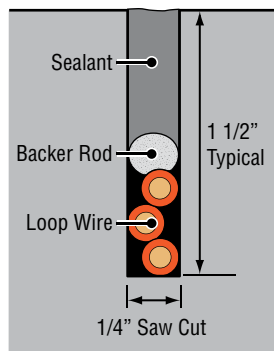
Install in-ground loops to help protect vehicles from a moving gate. See pages 25 & 29 for wiring instructions.

Outside Property

Illustration not to scale

Inside Property

Side View of Saw Cut



Pavement

Safety Loops

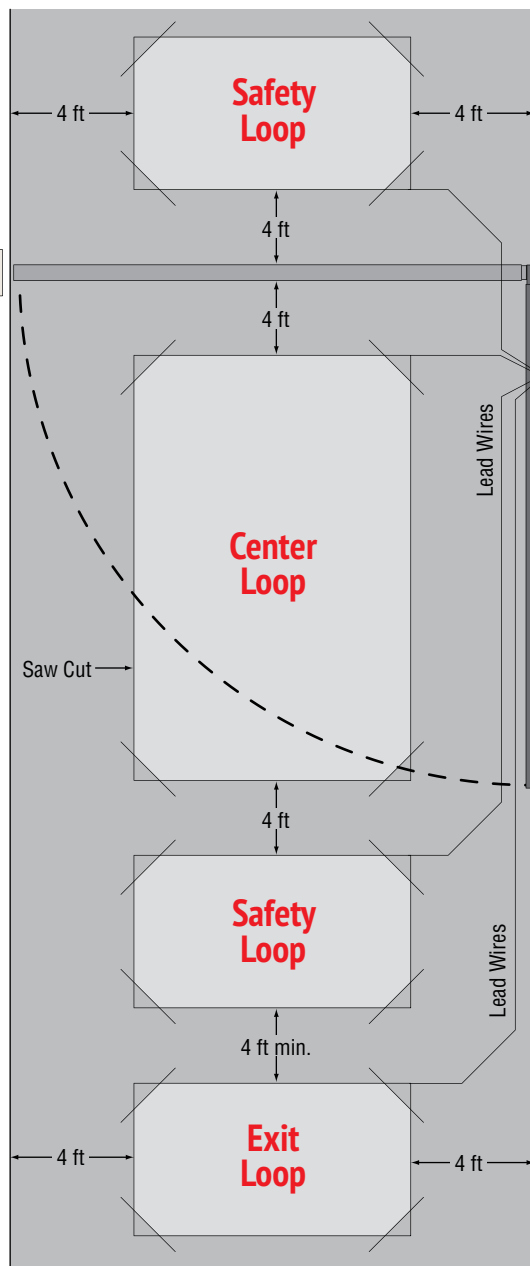
Are placed on each side of the gate to prevent the gate from closing on a vehicle in it's path. They will stop or reverse the cycling of the gate while a vehicle is in or near the gate's pathway.

Center Loop

Will **ONLY HOLD** the gate in the **Full Open Position** when a vehicle is on the center loop. However, it **WILL NOT stop or reverse** the gate once it starts to close.

Exit Loop

Automatically opens the gate for exiting vehicles without having to use a radio transmitter (remote control). The exit loop can be placed a minimum of 4 feet away from the safety loop or far enough away from the gate so it has opened by the time the vehicle approaches it.



Refer to loop manufacturer's instructions to determine specific loop dimensions.

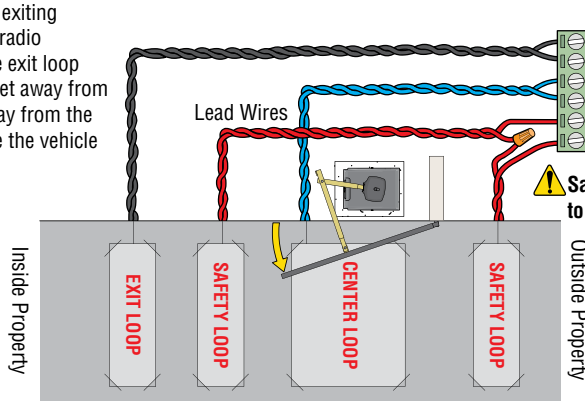
It is recommended that a licenced installer perform this work.

Conduit

Lead Wires

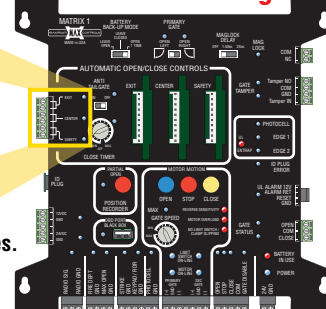
Lead Wires

Loop lead wires are twisted 6 twists per foot minimum inside conduit.



Safety loops need to be wired in series.

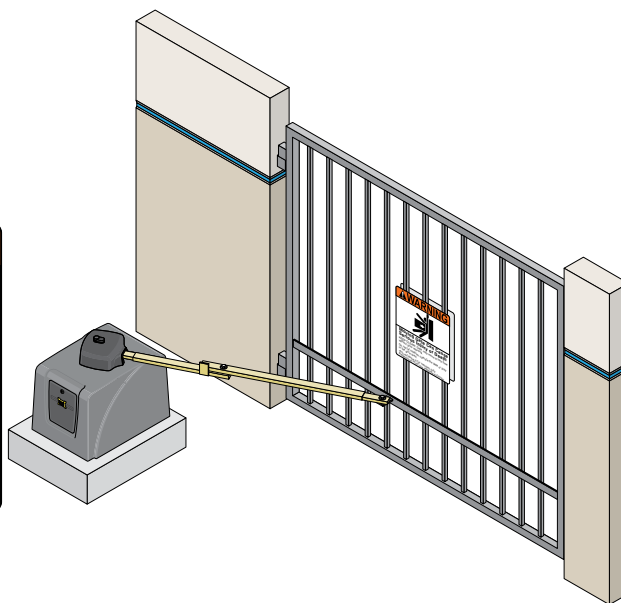
Matrix 1 Wiring



INSTALLATION

INSTALL WARNING SIGNS

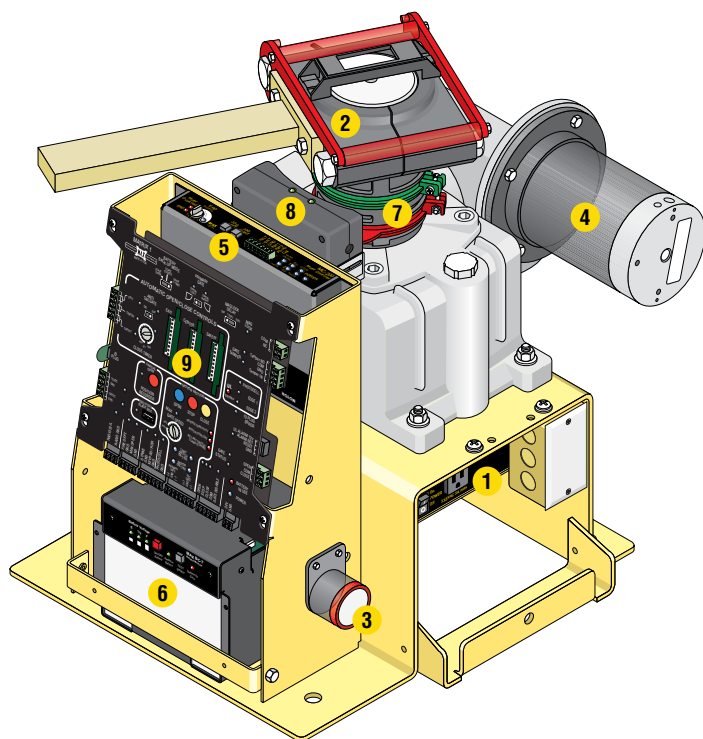
A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.



WIRING OPERATOR

Check with local building department prior to installing any permanent wiring on this gate operator. Make sure all wiring complies with local code requirements.

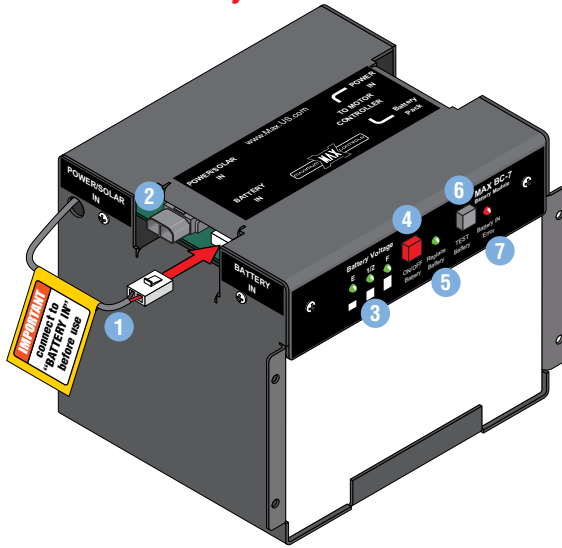
GATE OPERATOR OVERVIEW



- 1 MAX Megatron Toroid Box:** AC power management for the AC input power to the gate operator. See pages 19, 20 & 23.
- 2 Release Handle Clamp:** Manually move the gate when handle is raised. See page 41.
- 3 Audible Alarm:** Sounds when there is a problem with cycling the gate. **Push the STOP button on the Matrix 1 or an externally mounted Alarm Reset button to shut-off alarm.** Alarm can sound every time operator is cycled using ONLY battery back-up power when turned ON, See page 32.
- 4 24VDC Brushless Motor (6 million cycles)**
- 5 MAX MC-200 Motor Controller:** Manages UL entrapment protection devices and operator motor reversing ERD sensitivity adjustment. See pages 19, 20, 22, 25 & 34.
- 6 MAX BC-7 Battery Module:** Battery Back-Up and DC power management for the gate operator. See next page.
- 7 Limit Tabs:** Adjusts the OPEN and CLOSE gate positions. See page 35.
- 8 Limit Switch Box:** Contains the limit switches. Gate operator will **NOT** function when limit switch box is not connected. See page 35.
- 9 Matrix 1:** Manages control panel operations. Manages inputs/outputs, loops and reports problems with gate operator. See Matrix 1 Section starting on page 24.

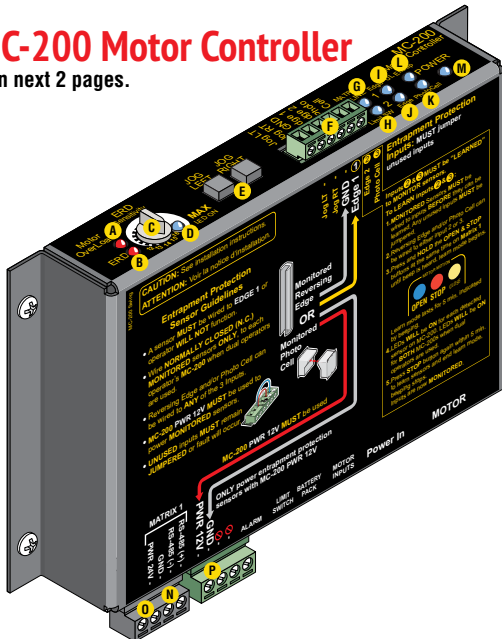
WIRING OPERATOR

MAX BC-7 Battery Module



MAX MC-200 Motor Controller

Continued on next 2 pages.



- G Matrix On Line LED:** Gate operator is successfully communicating with Matrix 1 when lit.
- H Limit SW On Line LED:** Limit Switch Sensors are successfully communicating with MC-200 Motor Controller when lit.
- I Edge 1 LED:** Edge 1 sensor has been activated when lit.
- J Edge 2 LED:** Edge 2 sensor has been activated when lit. LED will light up during "LEARNING" mode when sensor is connected, see page 18.
- L Photocell LED:** Photocell sensor has been activated when lit. LED will light up during "LEARNING" mode when sensor is connected, see page 18.
- M UL Entrap LED:** Edge1/Edge2/Photocell inputs have been activated when lit.
- N Power LED:** Low voltage power is connected when lit.
- O RS-485 Input:** Factory wired for **Primary** operator. Wire to Matrix 1 "SEC GATE" for **Secondary** operator **ONLY**.
- P 24V Power Input:** 24V Power for Matrix 1 **ONLY**.

12V Entrapment Protection Sensor Power Out: 12V Power that **ALL** Entrapment protection sensors **MUST** use **PWR 12V** power.

- 1 BATTERY Plug:** **MUST** be plugged into **BATTERY IN** port **Before** use.
- 2 POWER/SOLAR IN Port:** MAX Megatron Toroid box connection.
- 3 Battery Voltage LEDs:** Show amount of battery power available. LEDs are always ON when using AC power. Test battery button must be pressed to show battery power when using battery power **ONLY**.
- 4 ON/OFF Battery Button:**
IMPORTANT: Battery power **automatically** turns **ON** when MAX Megatron Toroid Box **AC POWER Switch** is turned **ON**.
To turn OFF ALL POWER to operator:
 1. Turn OFF **AC POWER Switch** on MAX Megatron Toroid Box. Battery power **remains ON**.
 2. **WAIT** for 15 seconds.
 3. **Press and HOLD** (approx. 5 seconds) the **RED ON/OFF BATTERY** button until MAX BC-7 LEDs turn **ON**, then release button. LEDs will turn **OFF**.
- 5 Replace Battery LED:** Replace battery when lit.
- 6 TEST Battery Button:** Press to show amount of battery power available when using battery power **ONLY** (Battery voltage LEDs will light respectively).
- 7 Battery IN Error LED:** Lights when there is a battery connection problem. Make sure battery plug #1 is plugged into BATTERY IN port or there is no damaged or loose wires.

- A MOTOR OVERLOAD LED:** Excessive current being drawn by motor when lit.
- B ERD LED:** ERD sensor has been activated when lit.
- C ERD Sensitivity Knob:** 16 selectable sensitivity settings of ERD sensor.
- D ERD Sensitivity LED:** MAX sensitivity reached when lit.
- E Jog LEFT/RIGHT Buttons:**
Push and **HOLD** buttons accordingly to move the gate (release the button to stop gate). **WARNING:** Avoid moving gate while using Jog buttons.
- F INPUTS:**

Jog LT/RT inputs: Can connect to an External Open/Close Key switch. Connect a single key switch to control dual gate operators, See page 34.

GND input: Low Voltage Common connection.

Entrapment Protection Sensor Inputs

Edge 1-MONITORED CLOSING direction ONLY input: Connects to a **NORMALLY CLOSED (N.C.)** Sensing Edge or Photocell.

Closing direction activation: gate will reverse to full open position and reset close timer.

Opening direction activation: gate will **NOT** be monitored during opening cycle.

Edge 2-LEARNED MONITORED OPENING/CLOSING direction input: Connects to a **NORMALLY CLOSED (N.C.)** Sensing Edge or Photocell. Input **MUST** be "**LEARNED**" before it can **MONITOR** a connected sensor (see page 18).

Closing direction activation: gate will **REVERSE** to full open position but will **NOT** reset close timer. Another command is required for gate to resume operation.

Opening direction activation: gate will **REVERSE** 2 inches and **STOP**. Another command is required for gate to resume operation.

Photo Cell-LEARNED MONITORED OPENING/CLOSING direction input: Connects to a **NORMALLY CLOSED (N.C.)** Sensing Edge or Photocell. Input **MUST** be "**LEARNED**" before it can **MONITOR** a connected sensor (see page 18).

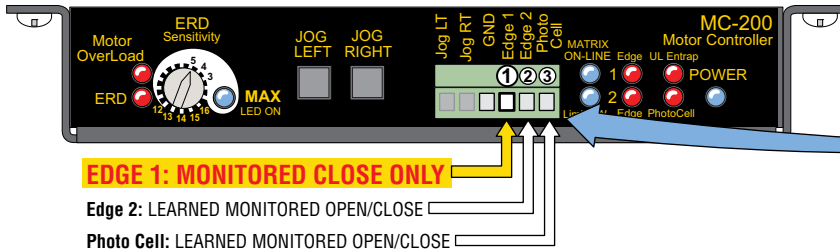
Closing direction activation: gate will **STOP**. Another command is required for gate to resume operation.

Opening direction activation: gate will **STOP**. Another command is required for gate to resume operation.

DUAL GATE OPERATORS NOTE: Connect **EACH** photocell/sensing edge to the **corresponding** gate operator's **MC-200**. See page 9.

WIRING OPERATOR

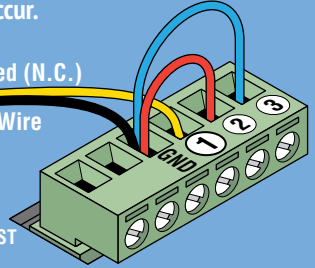
ENTRAPMENT PROTECTION WIRING



Jumper UNUSED Entrapment Protection Inputs or a fault will occur.

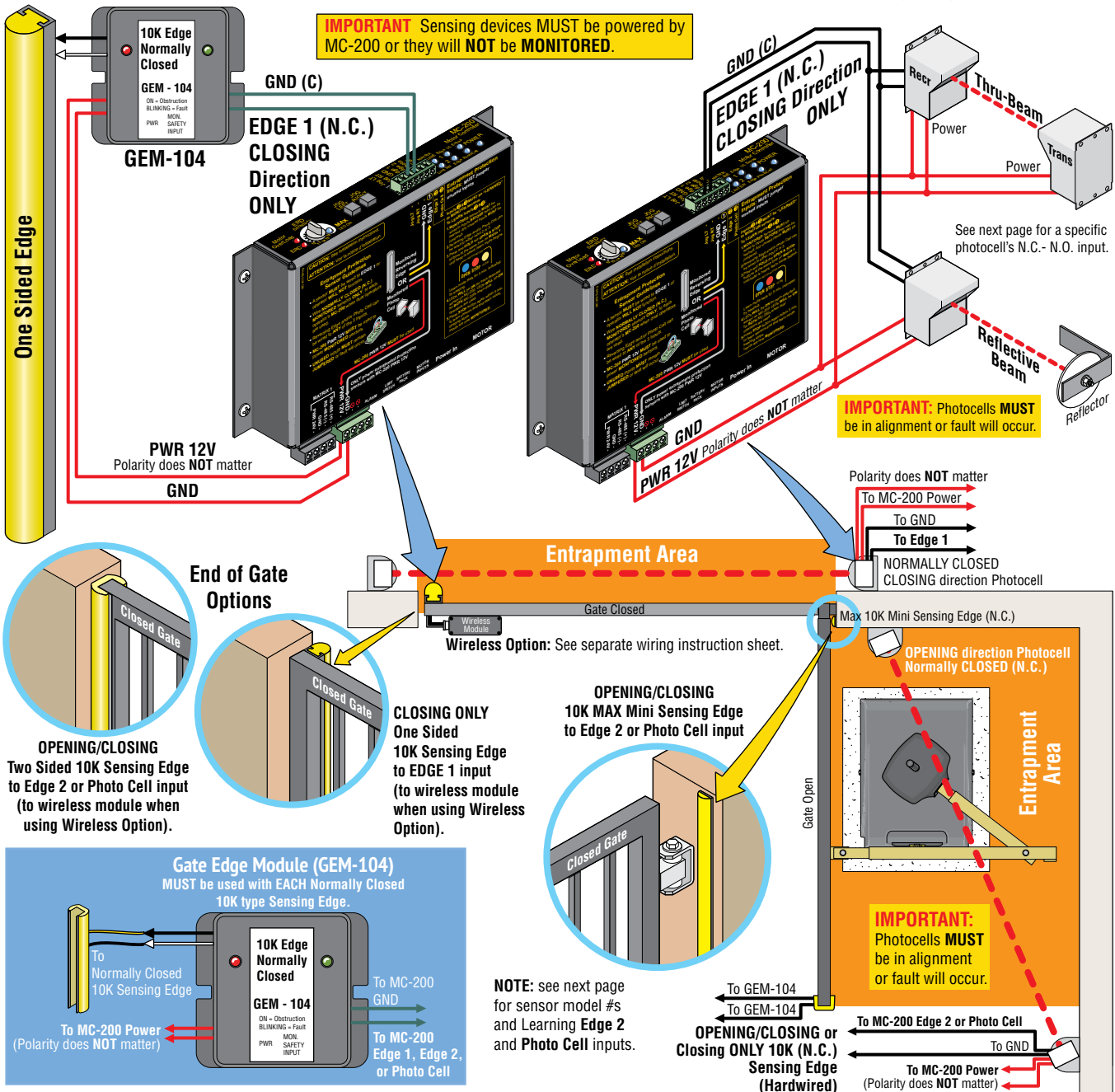
Normally Closed (N.C.)
Sensor Wire

Example: Inputs 2 & 3 are NOT used and MUST be jumpered to GND.



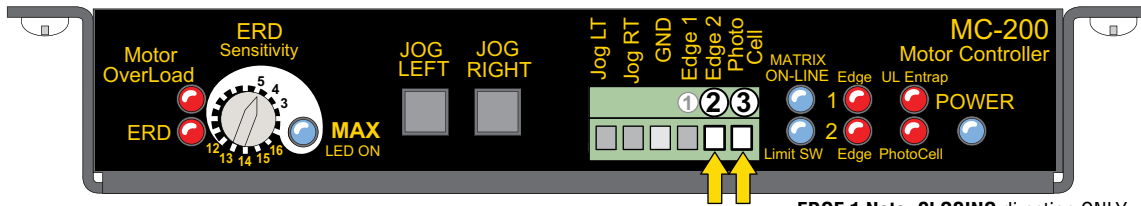
Typical Wiring For:

a 10K Normally Closed (N.C.) Sensing EdgeAND/OR a Normally Closed (N.C.) Photo Cell



DUAL GATE OPERATORS NOTE: Connect EACH photocell/sensing edge to the corresponding gate operator. See page 9.

WIRING OPERATOR



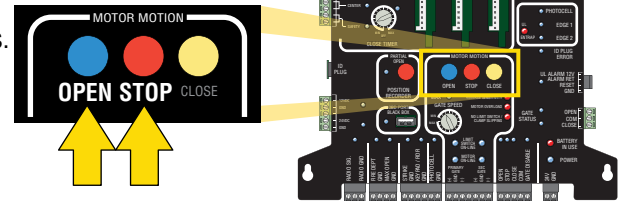
EDGE 1 Note: CLOSING direction ONLY.

Inputs ② & ③ MUST be “LEARNED” to MONITOR OPENING/CLOSING direction sensors.

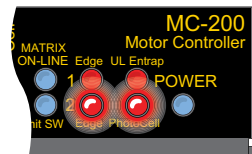
To LEARN inputs ② & ③:

1. **MONITORED** Sensors **MUST** be wired to inputs **BEFORE** they can be learned. Any unused inputs **MUST** be jumpered, see previous page.
2. A Sensing Edge or Photo Cell can be wired to either input 2 or 3.

3. Press and **HOLD** the **STOP** button & then the **OPEN** button together on Matrix 1 until beep is heard, learn mode begins. **NOTE: DO NOT** press the **OPEN** button before the **STOP** button or learn mode will **NOT** function.



4. LEDs **WILL** be **ON** for each detected sensor on MC-200. LEDs **WILL** be **ON** for **BOTH** MC-200s when dual operators are used. If an LED is not on and it should be, wiring to sensor is bad, photocells are out of alignment, photocells are wired wrong - N.C. or N.O. depending on which photocells are used (see below) or sensor is bad etc. and must be corrected. When all LEDs are **ON** that should be **ON**, proceed to next step.



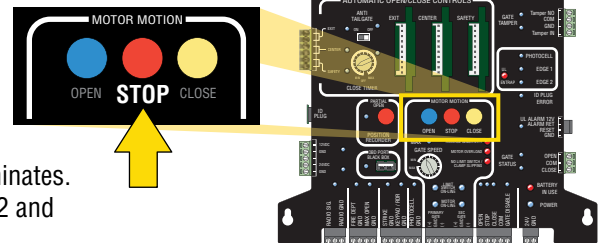
Example shows that sensors are **DETECTED** on inputs **Edge 2** and **Photo Cell**.

5. Press **STOP** button again within 5 min. to learn sensors and end learn mode, beeping stops.

Wired Inputs are now **MONITORED**.

If **STOP** button is not pressed within 5 min. learn mode terminates.

If no sensors are detected then factory default setting (Edge 2 and



UL 325 2016 Compliant **MONITORED** Normally Closed Entrapment Protection Devices:

Normally Closed Definition: When Power is off, relay contacts are OPEN. When Power is on, relay contacts are CLOSED.

Photo Cells:

Model RG Miller Edge Reflecti-GUARD Reflective-Beam Type (Normally Closed)

Model PG Miller Edge Prime-GUARD Thru-Beam Type with battery operated transmitter (Normally Closed)

Model EMX-IRB-MON EMX Thru-Beam Type (Normally Closed)

Model EMX-IRB-RET EMX Reflective-Beam Type (**MUST** be wired to **Normally Open**)

Model E3K-R10K4-NR OMRON Photo Electric Sensor Reflective-Beam Type (**MUST** be wired to **Normally Open**) will work with 12V

Model 60-2728-1 Allen Bradley Reflective-Beam Type (**MUST** be wired to **Normally Open**)

Direct-wired 10K Sensing Edge:

Model 10K Sensing Edge with GEM-104 Module Miller Edge (Normally Closed)

MAX 10K Mini Edge Maximum Controls (Normally Closed) Requires a Miller Edge GEM-104 module

MAX 10K Edge 1 Maximum Controls (Normally Closed) Requires a Miller Edge GEM-104 module

Sensing Edge Wireless Transmitter/Receiver:

Model MGL-K20 Miller Edge Monitored Gate Link Transmitter and Receiver

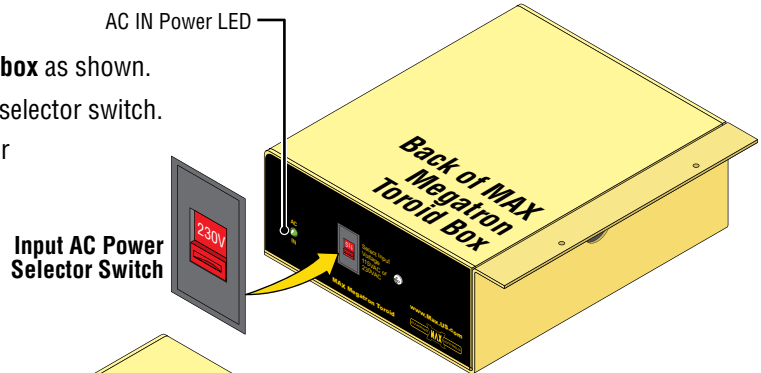
WIRING OPERATOR

INPUT AC POWER

Wire input AC power wire to the **MAX Megatron Toroid box** as shown.
Choose either **115V** or **230V** setting on input AC power selector switch.

NOTE: AC power wire is required for **EACH** gate operator when using dual gate operators.

CAUTION: Make sure circuit breaker is OFF from incoming AC input wire **BEFORE** wiring!

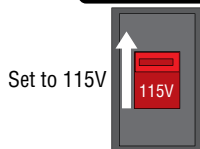


CAUTION: If power selector switch is set for **115V** but input power is actually **230 V**, 7 Amp Fuse will blow.

Input AC Power Options

Single Phase 115VAC Only

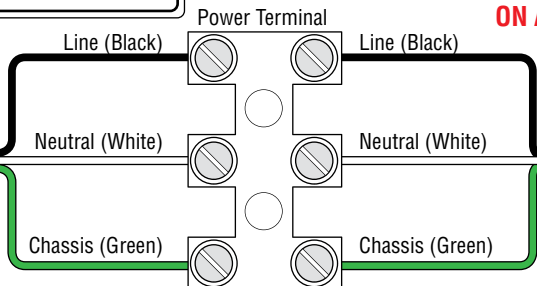
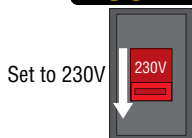
115VAC



115 OR 230VAC Power Wire

Single Phase 230VAC Only

230VAC



DO NOT TURN POWER ON AT THIS TIME.

IMPORTANT NOTE: Make sure there are **NO** exposed bare wires at the power terminal connection.

Operator MUST be Properly GROUNDED

Any of the Chassis Grounds can be used. They are located next to the gear reducer. **DO NOT** remove any existing green ground wires.

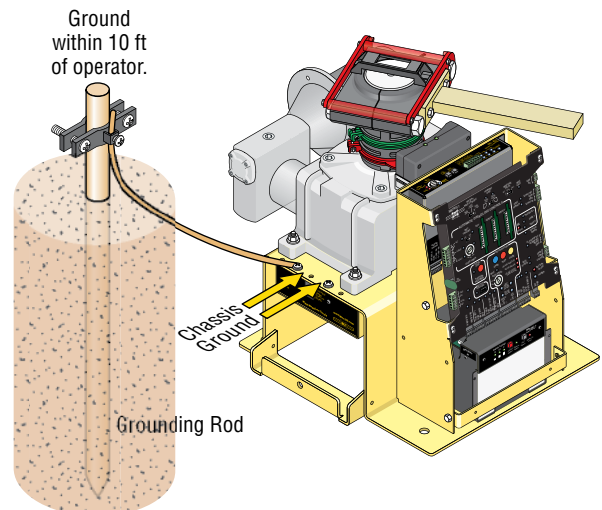
WARNING

connect chassis to ground rod for lightning protection

Proper grounding of this gate operator is a requirement for **LIGHTNING PROTECTION** in lightning prone areas. To be effective, ground connections should be made with a minimum **12 AWG, 600 volt** insulated wire

to a ground point within **10 feet** of the gate operator. The ground point must be at an **electrical panel**, a **metallic cold water pipe** that runs in the earth, or a **grounding rod**.

NOTE: Consult city codes for AC line wiring.
Beware of existing underground services.



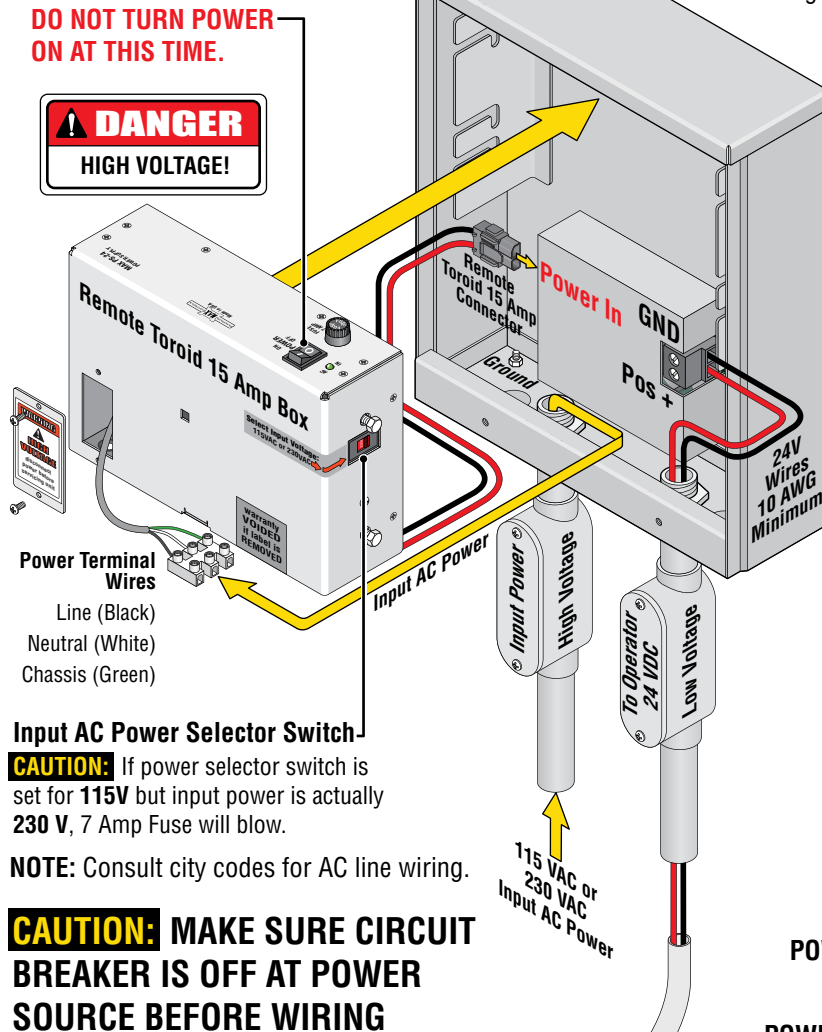
WIRING OPERATOR

LOW VOLTAGE REMOTE POWER SUPPLY KIT - OPTIONAL

A **MAX Magic Box Kit** (sold separately) is required to remotely install a **Remote Toroid 15 Amp box** at the AC power source. Plug in Remote Toroid 15 Amp connector to **Power In** at MAX Magic Box. Wire input AC power to the Toroid 15 Amp box. Choose either **115V** or **230V** setting on input AC power selector switch. Run 24V low voltage wires (not included) from the **MAX Magic Box** connection to the gate operator and wire to **POWER/SOLAR IN connector** (Polarity Matters!). Remove the Remote Toroid 15 Amp connector from the BC-7 battery module **POWER/SOLAR IN** port. Plug the Magic Box **POWER/SOLAR IN** connector into the **POWER/SOLAR IN** port.

At MAX Magic Box

NOTE: A MAX Magic Box kit is required for **EACH** gate operator when using dual gate operators.

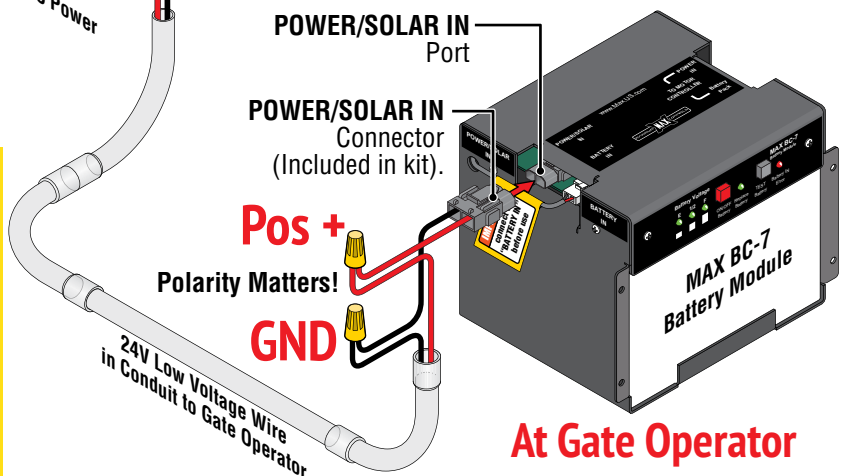


MAX Magic Box MUST be Properly GROUND

IMPORTANT: MAX Magic Box and Gate Operator **MUST EACH** be Properly **GROUND**. Proper grounding is a requirement for **LIGHTNING PROTECTION** in lightning prone areas. To be effective, ground connections should be made with a **minimum 12 AWG, 600 volt insulated wire** to a ground point within **10 feet** of the **MAX Magic Box** and gate operator. The ground point must be at an **electrical panel**, a **metallic cold water pipe** that runs in the earth, or a **grounding rod**.

NOTE: Beware of existing underground services.

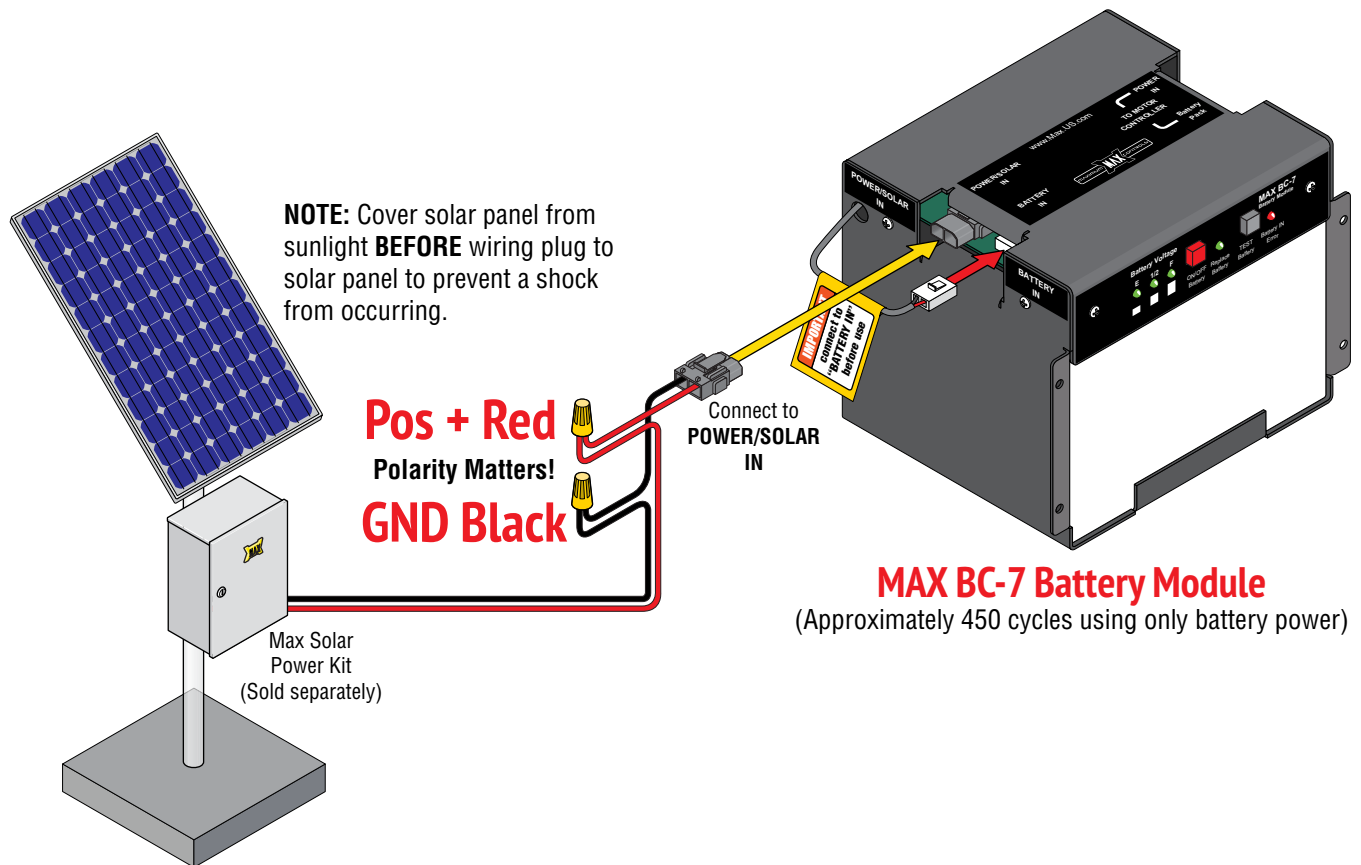
IMPORTANT NOTE: Maximum Control's remote power supply technology does **NOT** utilize the battery power from the MAX BC-7 Battery Module during **NORMAL** gate operation. Battery power is reserved for back-up power **ONLY** when an **AC power failure** occurs. As a result, battery life is **NOT** shortened. This low voltage system can **CONTINUOUSLY** cycle the gate during **NORMAL** gate operation, perfect for high traffic gate applications.



WIRING OPERATOR

SOLAR POWER CONNECTION - OPTIONAL

Refer to Solar application guide.



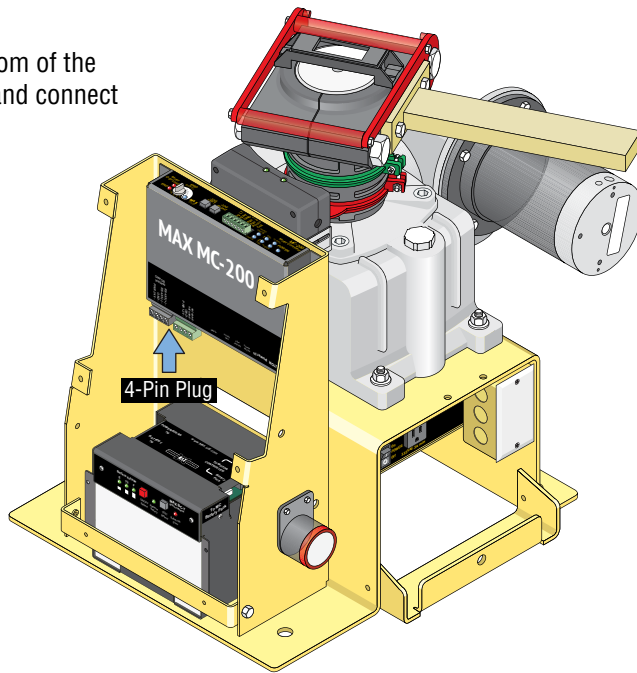
WIRING OPERATOR

SECONDARY OPERATOR TO MATRIX 1

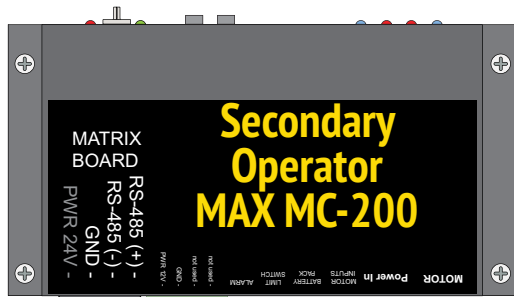
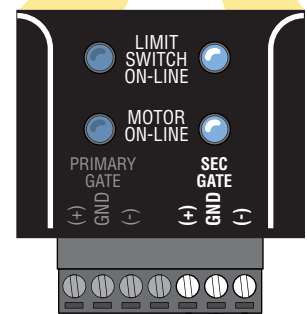
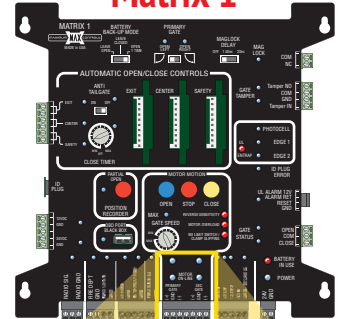
Unplug 4-Pin plug from the bottom of the **MAX MC-200 motor controller** and connect RS-485 wires as shown below.

NOTE: The Alarm Shut-Off is located on the Primary gate operator **ONLY**. There is **NO** alarm shut-off button on the secondary gate operator.

Secondary Gate Operator (NO Matrix 1)



Primary Gate Operator Matrix 1



4-Pin Plug

NO 24V to Matrix 1

3 Wires to Matrix 1

Connect (3) three RS-485 wires from the **SECONDARY operator's MAX MC-200 motor controller** to the **Matrix 1 - SEC GATE**.

- Pos (+) to Pos (+)
- Neg (-) to Neg (-)
- Gnd to Gnd
- **DO NOT** connect PWR 24V.

22 AWG Min. 3-conductor twisted pair, shielded cable



WIRING OPERATOR

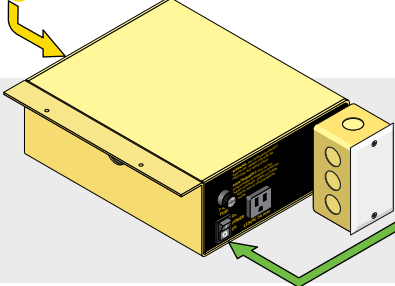
TURN ON/OFF OPERATOR POWER

Operator should have **Input AC power wired** to Toroid Box, **24V & RS-485** wired between Matrix 1 and MC-200.
TURN POWER ON. Certain LEDs should normally turn ON accordingly:

A Located on back of box.

**DO NOT CYCLE GATE OPERATOR
AT THIS TIME**

1



**Turn AC Power
Switch ON**

Battery power **automatically** turns ON.

MAX Megatron Toroid Box

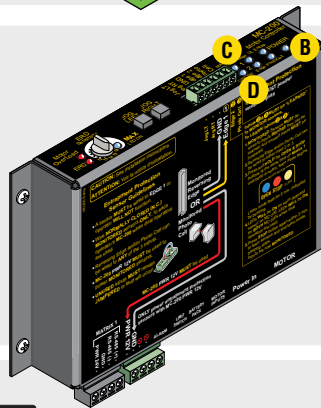
A AC IN LED:

Normal - Turns ON.

Error - Not ON. Check AC power.
7 Amp Fuse blown. Replace fuse.

Input AC selector switch **MUST** be set to **CORRECT** input AC power.

2



MAX MC-200 Motor Controller

B POWER LED:

Normal - Turns ON.

Error - Not ON. Check **POWER IN** plug on bottom of MC-200.

C Matrix On-Line LED:

Normal - Turns ON.

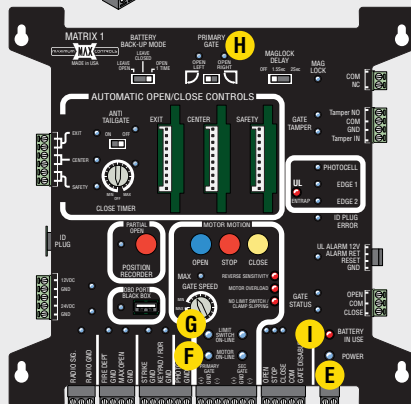
Error - Not ON. Check **RS-485** wiring to Matrix 1.

D Limit SW On-Line LED:

Normal - Turns ON.

Error - Not ON. Check **LIMIT SWITCH** plug.

3



Matrix 1

E POWER LED:

Normal - Turns ON.

Error - Not ON. Check **24V** wiring from MC-200 **Primary**.

F Motor On-Line PRIMARY LED:

Normal - Turns ON.

Error - Not ON. Check **RS-485** wiring to **Primary** MC-200.

G Limit SW On-Line PRIMARY LED:

Normal - Turns ON.

H PRIMARY GATE OPEN RIGHT OPEN LEFT LED:

Normal - Turns ON either LED according to switch setting.

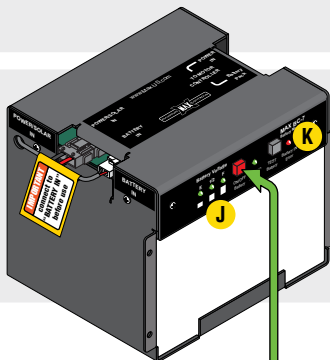
Error - Not ON. Check **LIMIT SWITCH** plug on bottom of MC-200.

I BATTERY IN USE LED:

Normal - Not ON.

Error - Flashes on and off. Battery not plugged in to **BATTERY IN** port on BC-7 Battery Module.

4



MAX BC-7 Battery Module

J BATTERY VOLTAGE LEDs:

Normal - 3 LEDs turn ON - Fully charged batteries.

Batteries need charging - LEDs will turn on in sequence until batteries are fully charged. Batteries are **NOT** necessary when AC power is available.

K BATTERY IN ERROR LED:

Normal - Not ON.

Error - Turns ON. Battery not plugged in to **BATTERY IN** port.

To turn OFF ALL POWER:

1. Turn OFF **AC POWER** Switch on MAX Megatron Toroid Box. Battery power **remains ON**.

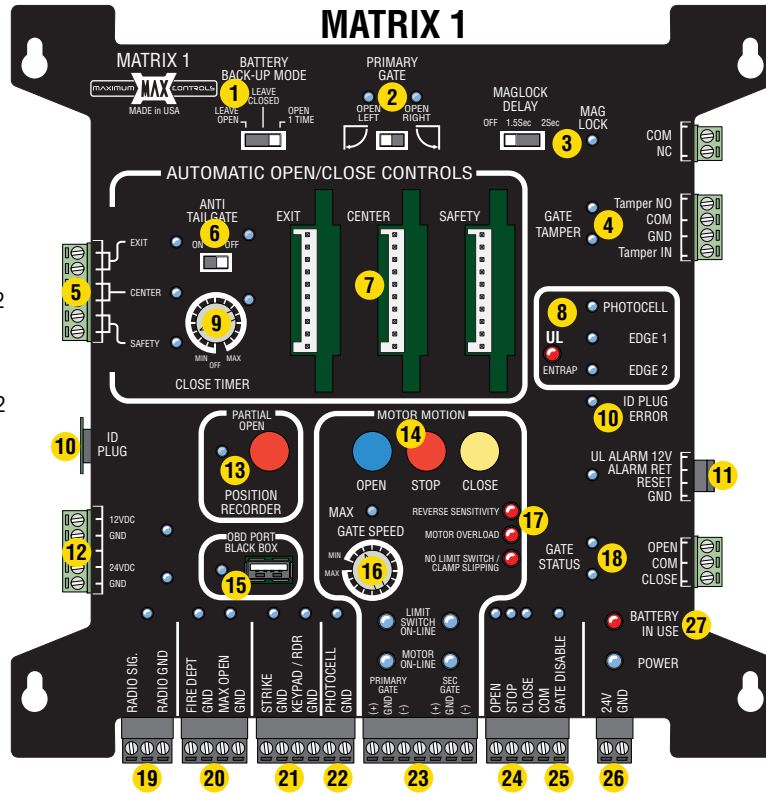
2. **WAIT** for 15 seconds.

3. Press and **HOLD** (approx. 5 seconds) the **RED ON/OFF BATTERY** button until MAX BC-7 LEDs turn **ON**, then release button. LEDs will turn **OFF**.

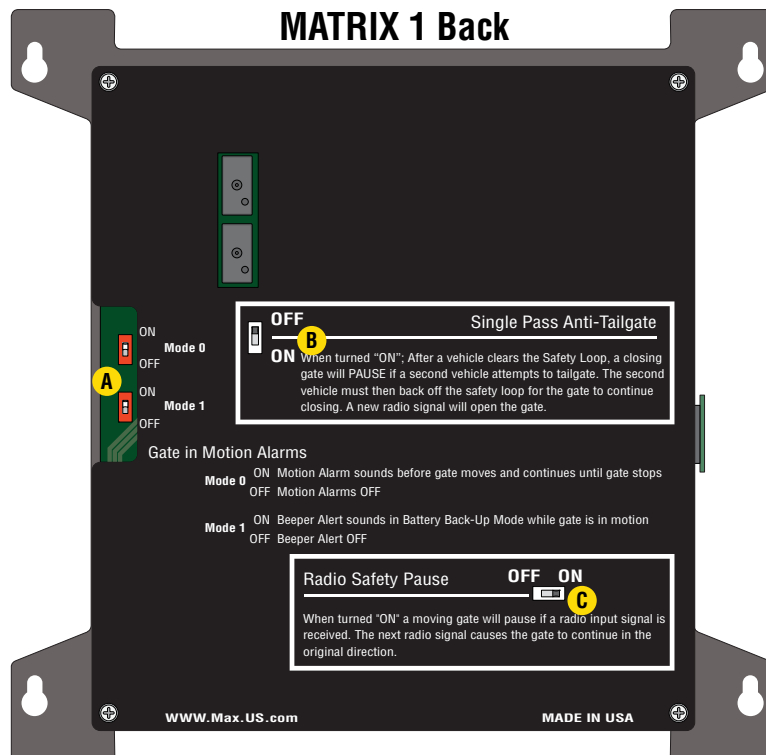
MATRIX 1

MATRIX 1 OVERVIEW

- 1 Battery Back-Up Mode - Page 26
- 2 Primary Gate - Page 26
- 3 Maglock - Page 29
- 4 Gate Tamper - Page 30
- 5 In-Ground Loop Connection - Page 29
- 6 Anti Tailgate - Page 27
- 7 Loop Detectors - Page 29
- 8 UL Entrapment LEDs - Page 30
- 9 Close Timer - Page 26
- 10 ID Plug & ID Plug Error LED - Page 30
- 11 UL Alarm / Alarm Reset Input - Page 30, 32 & 42
- 12 Radio Power - Page 28
- 13 Partial Open - Page 31
- 14 Stop Button (Alarm Shut-Off) - Page 30, 32 & 42
- 15 OBD Port Black Box - Page 28
- 16 Selectable Gate Speed Control - Page 26
- 17 ERD & Motor Overload LEDs - Page 33
- 18 Gate Status - Page 32
- 19 Radio Relay - Page 28
- 20 Emergency Vehicle/Max Open Inputs - Page 30
- 21 Normal Opening Devices - Page 25
- 22 Close direction Photocell (N.O.) - Page 25 & 32
- 23 Operators Communication LEDs - Page 22 & 33
- 24 OPEN/STOP/CLOSE Connection - Page 32
- External Alarm Reset Connection - Page 32
- 25 Gate Disable - Page 31
- 26 Matrix 1 Power - Page 33
- 27 Battery in Use - Page 33



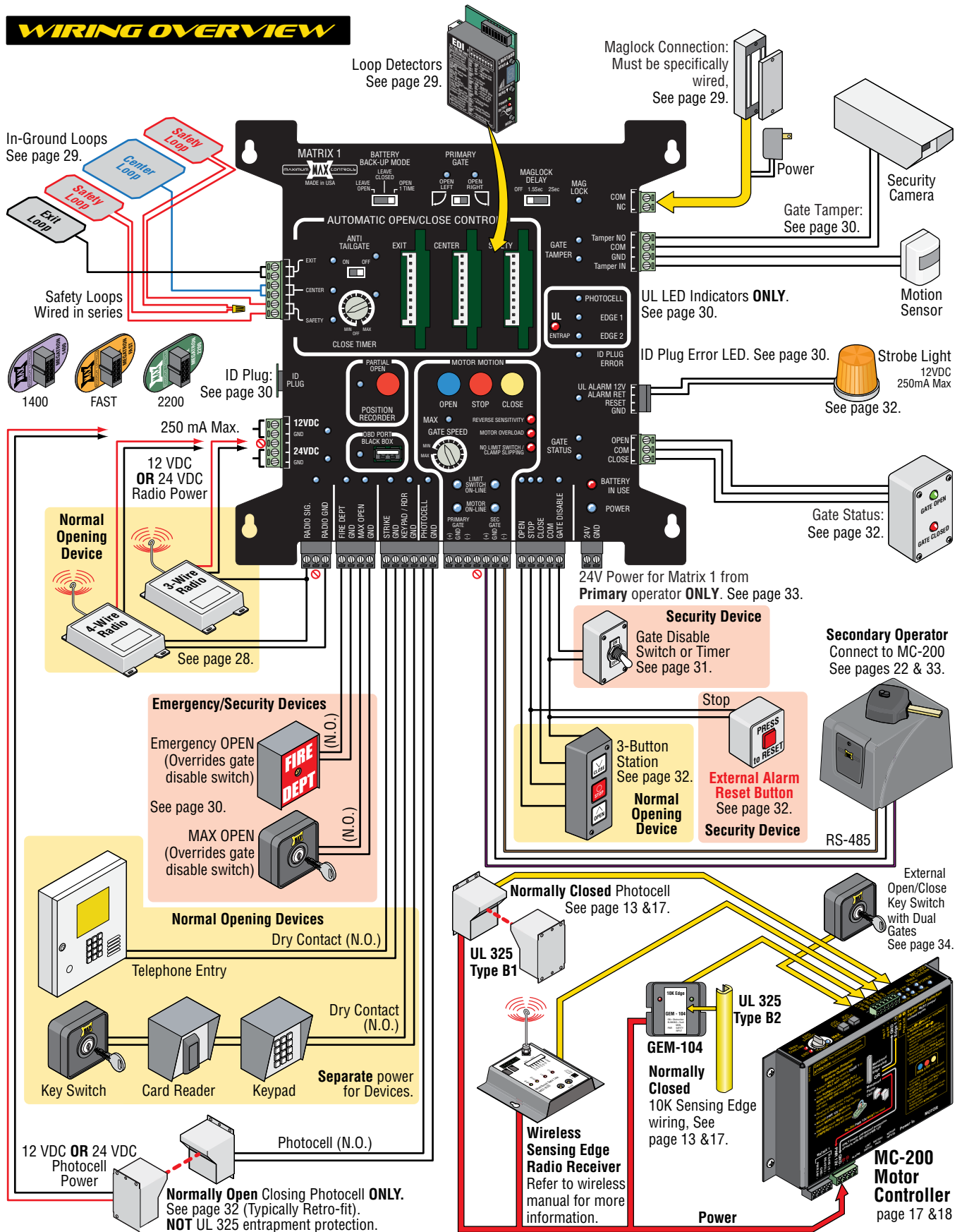
MATRIX 1 Back



- A Gate in Motion Alarms - Page 28
- B Single Pass Anti-Tailgate - Page 27
- C Radio Safety Pause - Page 29

MATRIX 1

WIRING OVERVIEW

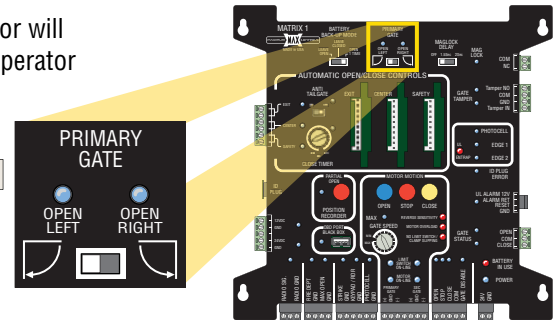
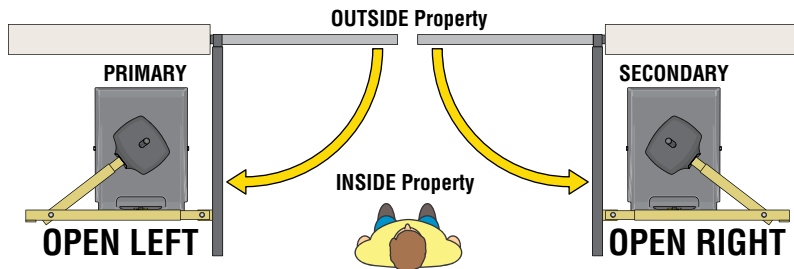


MATRIX 1

MATRIX 1

PRIMARY GATE - OPEN LEFT / OPEN RIGHT

Set the **Primary** gate operator with **Primary Gate** setting. Secondary operator will automatically be set to the opposite opening direction as the primary gate operator when using dual gates.



GATE CLOSE TIMER

The **Close Timer** has 16 selectable settings for **automatic gate close time**.

Knob at OFF position: close timer OFF.

1st click clockwise - Knob at MIN position: 1/2 sec...

2nd click clockwise: 1 sec...

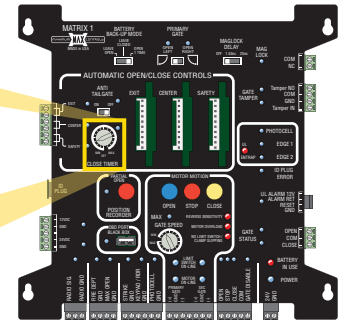
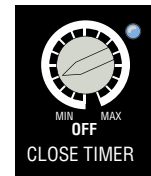
3rd click: 4 sec...

4th click: 8 sec...

5th click: 12 sec (4 sec increments for each successive click up to 60 sec **MAX**)

NOTE: 1/2 sec **MIN** position is recommended for **High Traffic areas**.

LED turns ON for
MAX setting ONLY



SELECTABLE GATE SPEED CONTROL

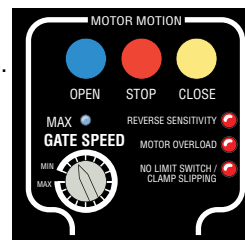
The **Gate Speed** knob has 16 selectable settings to choose from.

MAX Megatron 1400/2200 speed varies approx. 11.5 sec to 20 sec.

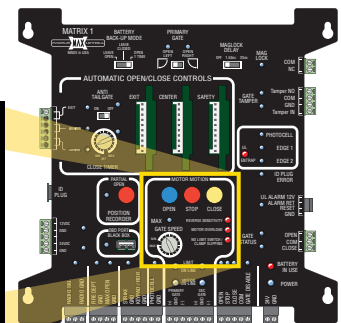
MAX Megatron FAST speed of dual gates varies approx. 6 sec to 14 sec.

The speed will vary depending on the weight and length of the specific gate(s). Make sure gate speed is appropriate for the size and length of the gate(s).

NOTE: The **Auto Gate Sync** feature provides synchronous opening and closing between bi-parting gates (dual gate operators).



LED turns ON for
MAX setting ONLY



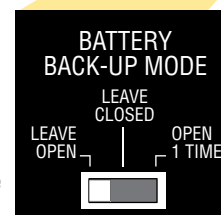
BATTERY BACK-UP MODE

The **Battery Back-Up Mode** setting will determine how the gate operator will function during an AC power failure. Gate operator with a full battery charge should cycle a 2000 lbs gate (battery power ONLY) approximately 450 times.

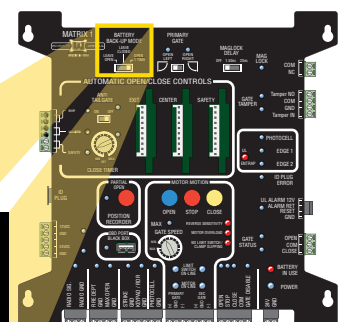
LEAVE OPEN - The gate operator will continue to cycle the gate normally until the battery power can no longer cycle the gate. When this happens, the gate will open to **OPEN** position until power is restored, then gate will automatically close.

LEAVE CLOSED - The gate operator will continue to cycle the gate normally until the battery power can no longer cycle the gate. When this happens, the gate will close if not already in the **CLOSE** position, where it will remain until power is restored. Enough battery power is retained for a **LIMITED** time to operate emergency vehicle entry (Using opening devices connected to **FIRE DEPT** and/or **MAX OPEN** inputs to **FULLY** open gate).

OPEN 1 TIME - The gate operator **automatically OPENS** gate and **REMAINS** in the **OPEN** position. A open/close command or loop event is needed to close gate.



FIRE DEPT/MAX OPEN Inputs

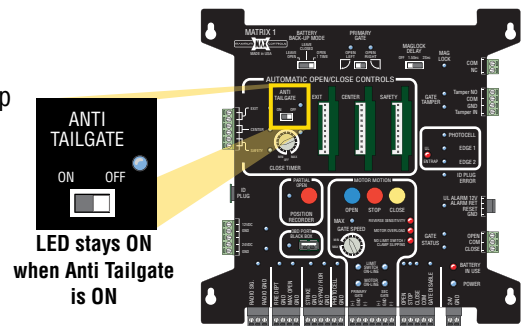


MATRIX 1

ANTI TAILGATE

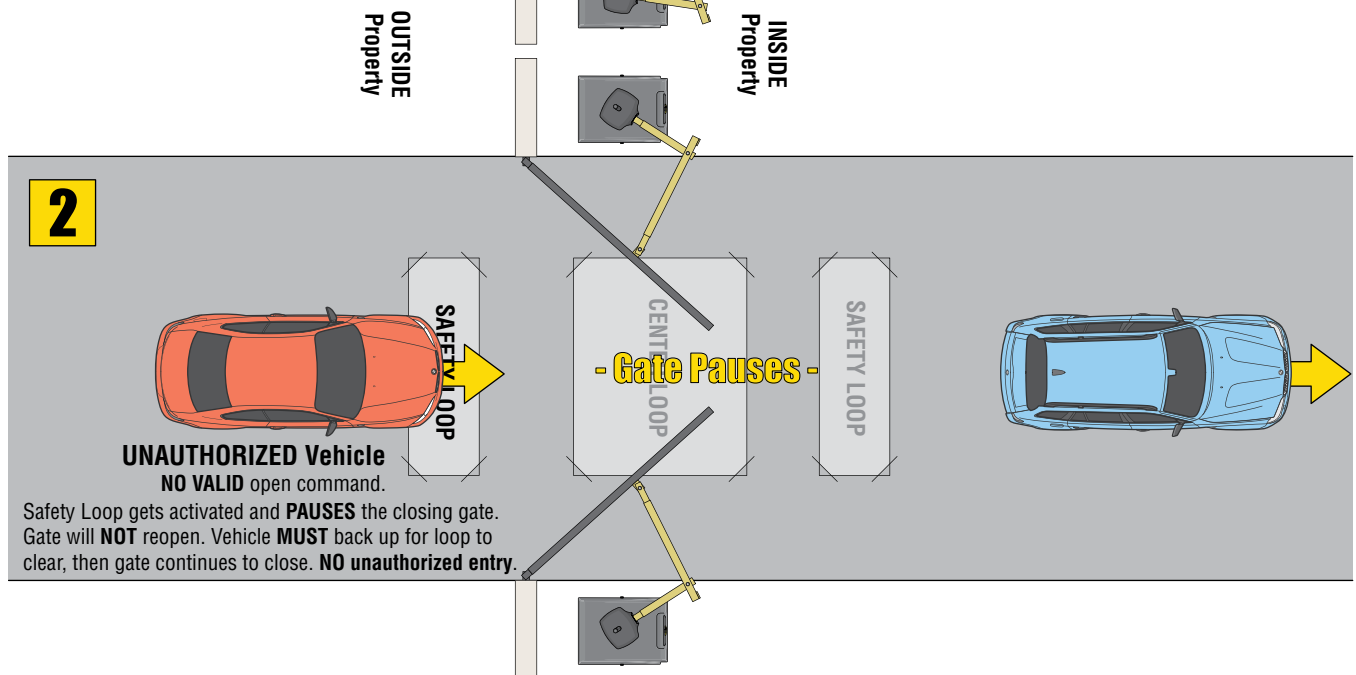
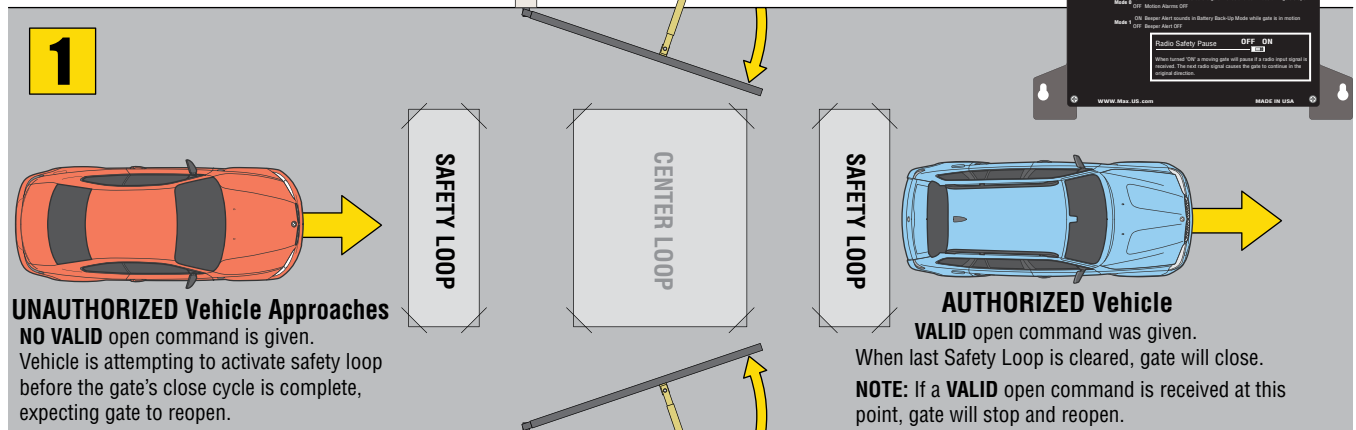
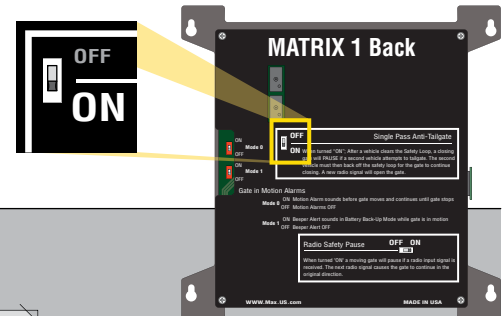
Turned OFF - Close timer will close the gate. If an in-ground **safety** or **exit** loop gets activated during the close cycle, gate will **REVERSE** to the open position.

Turned ON - (In-ground loops required) Gate will close after **all the in-ground loops have been cleared** no matter how long the close timer is set for. If an in-ground safety loop gets activated during the close cycle, gate will **REVERSE** to the open position.



SINGLE PASS ANTI-TAILGATE

Turned ON - (In-ground loops required) Gate will close after all the in-ground loops have been cleared no matter how long the close timer is set for. When an in-ground safety loop gets activated during the close cycle, gate will **PAUSE** and **NOT** reopen. When loop is cleared, gate will continue to close **preventing UNAUTHORIZED** entry.



MATRIX 1

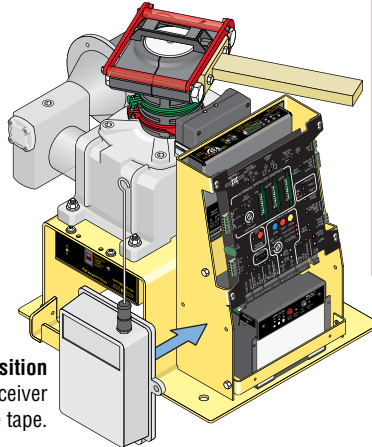
RADIO RECEIVER

Connect a 3-wire or 4-wire radio receiver to Matrix 1.
Choose 12V or 24V, 250 ma max. power.

CLOSE TIMER ON - Each time the remote button is pressed **during the Close Timer countdown** (gate is open) causes the timer to reset and begin again. When close timer countdown is complete, gate will close.

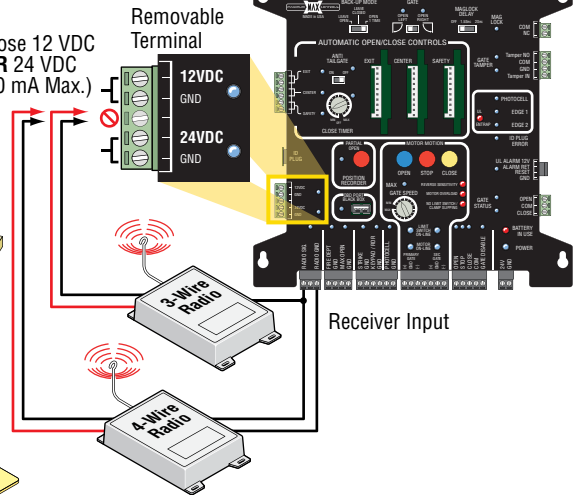
CLOSE TIMER OFF - Sequence when pressing remote button:

- Press **One Time** - gate **OPENS** . . .
- Press **Again** - gate **STOPS** . . .
- Press **Again** - gate **CLOSES** . . .
- Press **Again** - gate **STOPS** . . .
- Sequence repeats when button is pressed again.



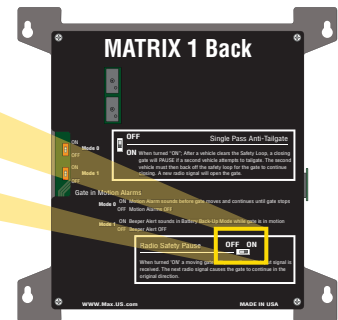
Radio Receiver Mounting Position
Existing holes are for Multi-Code radio receiver or mount using velcro adhesive tape.

Choose 12 VDC
OR 24 VDC
(250 mA Max.)



RADIO SAFETY PAUSE

Turned ON - The radio transmitter (remote control) can **PAUSE** a **MOVING** gate by pressing the remote button. Pressing the remote button again will cause the gate to **CONTINUE** in the **SAME** direction. This process can be repeated as many times as desired.

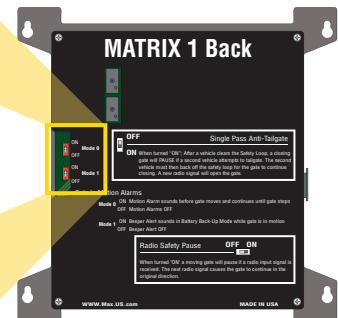
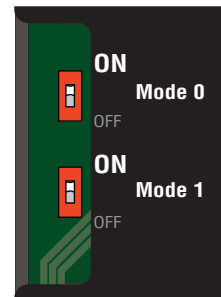


GATE IN MOTION ALARMS

MODE 0 - Turned ON - Alarm will sound **BEFORE** and **DURING** gate cycle to alert surrounding area.

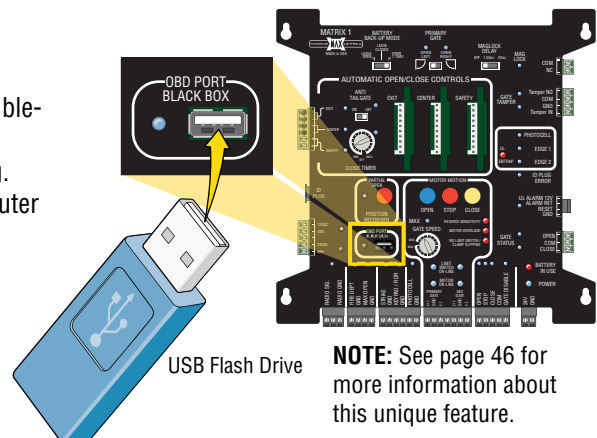
NOTE: A strobe light can be connected to **UL ALARM** connection that will flash **ON** and **OFF** when the alarm is sounding. See page 32.

MODE 1 - Turned ON - Alarm will beep when using **ONLY** battery power **DURING** gate cycling. This brings to attention that only battery power is being used and **NOT** normal AC power.



OBD PORT BLACK BOX

On Board Diagnostics (OBD) port will download a simple .txt file to troubleshoot gate operator errors and to view normal transaction logs. Plug a USB flash drive into port. LED will flash while file is downloading. When LED stops flashing, remove flash drive and plug it into any computer with an available USB port and simple text reader software (typical). The operator's event history is stored as a simple .txt file. Contained in the file is a log of the most recent **1000 events**. Quickly identify and diagnose a complex or intermittent problem. The file can even be e-mailed to the factory for on site diagnosis if necessary. The files will be stored as an ongoing **event history** of the transactions that occur at the gate operator.



NOTE: See page 46 for more information about this unique feature.

MATRIX 1

MAGLOCK

Maglock **MUST** be connected as shown.

MAGLOCK DELAY: You **MUST** select a time delay when using a maglock.

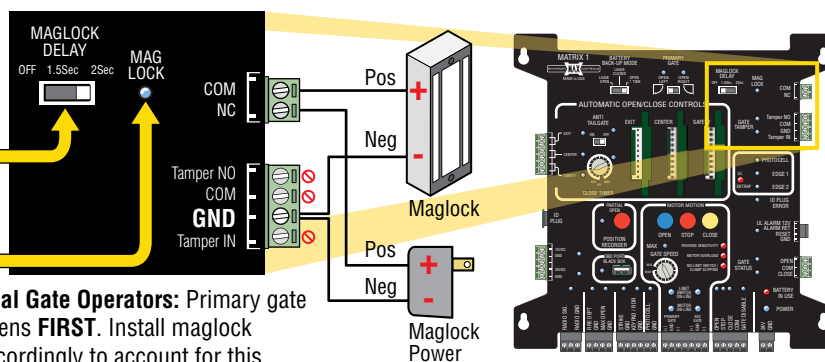
Maglock power disengages 1.5 sec **or**
2 sec **before** gate starts opening.

MAGLOCK LED (Monitors Maglock):

ON - Locked **OFF** - Unlocked
Flashing - Problem with Module

Flashing - Problem with Maglock Power.

Dual Gate Operators: Primary gate opens **FIRST**. Install maglock accordingly to account for this.



LOOP DETECTORS

Matrix 1 will accept third party loop detectors in the 3 ports. Each loop detector has a corresponding in-ground loop that must be connected for the loop system to operate (see below). Power down Matrix 1 **BEFORE** connecting loop detectors. Refer to your chosen loop detector's instruction sheet for specific information about loop detector.

Plug-In Loop Detectors

Reno
Loop Detector
(Plug-In)
LED always
blinks steadily
during
operation

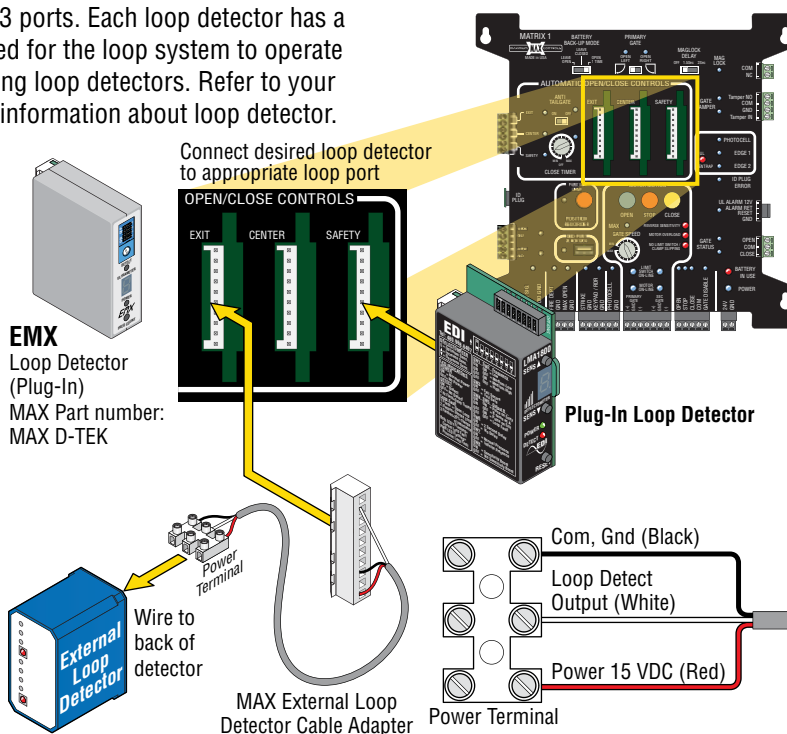
EDI Loop Detector (Plug-In)

EDI
Loop Detector
Low Current
Draw
(Plug-In)

EMX
Loop Detector
(Plug-In)
MAX Part number:
MAX D-TEK

Connect desired loop detector

Plug-In Loop Detector



External Loop Detectors

Third party external loop detectors can be used if desired with the **MAX External Loop Detector Cable Adapter**. (1) One is included with the operator but more can be purchased if needed.

IN-GROUND LOOP CONNECTION

Connect each in-ground loop wires to the appropriate input. Lead wires should be twisted together 6 twists per foot minimum.

See page 14 for in-ground loop installation.

Safety loop wires must be wired in series.

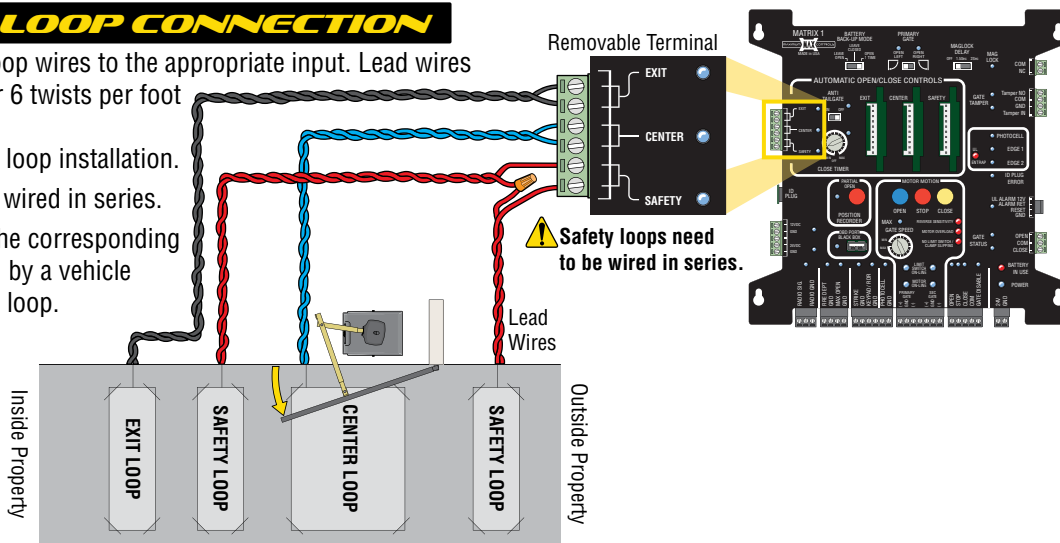
Each LED will light when the corresponding loop detector get activated by a vehicle passing over its in-ground loop.

LEDs will flash when there is an error with the corresponding loop detector.

NOTE: Reno H2 detector always blinks steadily during normal operation.

Removable Terminal

 **Safety loops need to be wired in series.**



MATRIX 1

ID PLUG

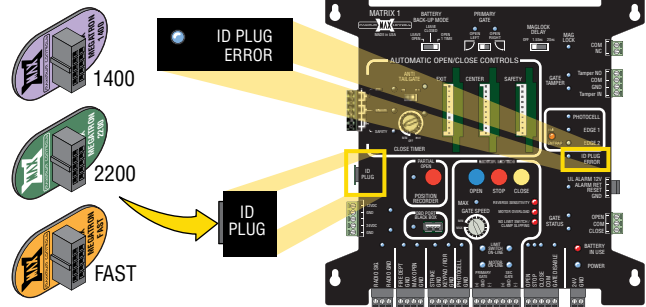
AN **ID Plug** comes standard on Matrix 1. It identifies the model of gate operator and **MUST** be plugged in or the Matrix 1 **WILL NOT** function.

Purple is for the MAX Megatron 1400.

Green is for the MAX Megatron 2200.

Orange is for the MAX Megatron FAST.

ID PLUG ERROR LED: Will light when ID PLUG is missing.

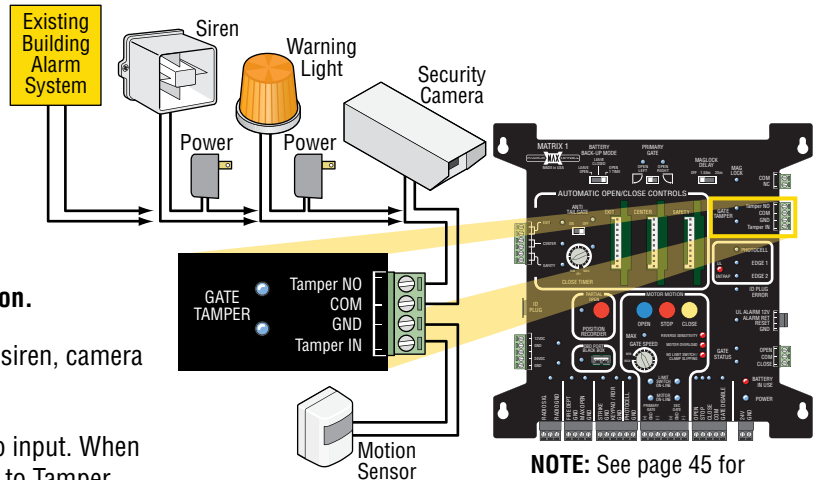


GATE TAMPER

The **GATE TAMPER** can be used for various functions such as turning a warning light, siren or camera on when the gate is tampered with (Vandalized Gate). The gate operator defines a "Vandalized Gate" as **UNAUTHORIZED** movement of the gate. This can occur if the red release handle clamp is lifted and gate is manually moved from the **closed position** or the gate is forced open from the **closed position without authorization**.

TAMPER NO/Com Relay: Connect a warning light, siren, camera or an existing alarm system to relay.

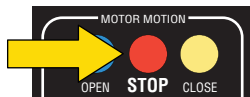
TAMPER IN/GND Input: Connect a sensor device to input. When Tamper In/GND gets triggered, device that is wired to Tamper relay (NO/Com) will activate.



NOTE: See page 45 for more information about this unique feature.

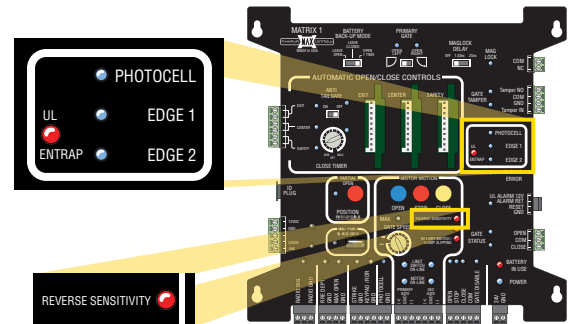
UL ENTRAPMENT LEDS

UL ENTRAPMENT LEDS will indicate when a **OPENING DIRECTION** Photocell and/or Sensing Edge(s) have been activated. If alarm gets triggered, press **STOP** button on Matrix 1 to turn alarm off.



NOTE: **UL safety approved devices** are wired to the MC-200 motor controllers **ONLY**. DO NOT wire them to the Matrix 1.

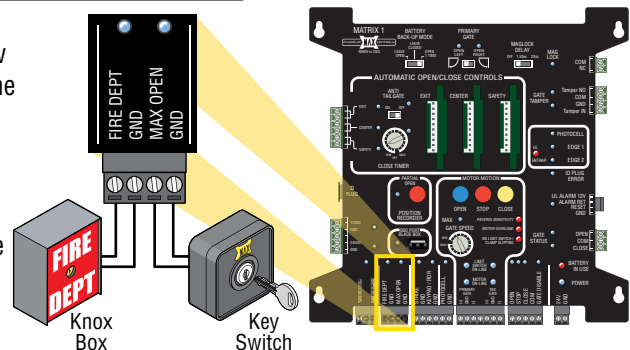
REVERSE SENSITIVITY LED: Will light when the gate encounters an obstruction triggering the ERD sensor.



EMERGENCY VEHICLE/MAX OPEN INPUTS

FIRE DEPT Input: Should be connected to a knox box device to allow the proper authorities to gain emergency access when necessary. The input will override the **GATE DISABLE** input and allow **EMERGENCY** personnel **FULL 24/7** access. Gate fully opens.

MAX OPEN Input: Can be connected to a key switch and used as an **ADDITIONAL** input from the FIRE DEPT input. The input will override the **GATE DISABLE** input and allow **SECURITY** personnel **FULL 24/7** access. Gate fully opens.



MATRIX 1

GATE DISABLE

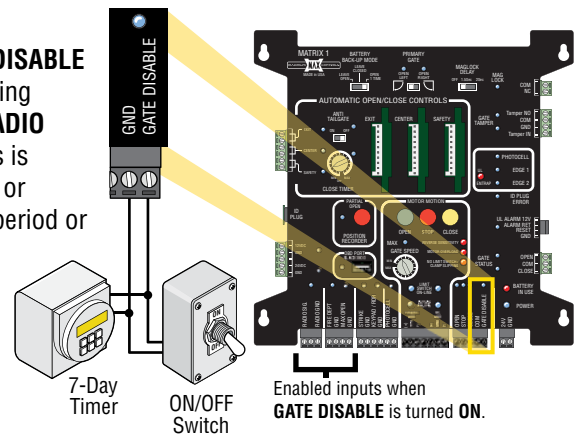
An ON/OFF switch or 7-Day timer devices can be connected to the **GATE DISABLE** input. When these devices are turned ON, they will **DISABLE** normal opening devices such as keypad, exit loop etc. The **FIRE DEPT/ MAX OPEN** and **RADIO** inputs will remain enabled when **GATE DISABLE** has been turned ON. This is useful when the gated area needs to be secured from ALL but emergency or authorized vehicle entry. Some examples are: Residential home vacation period or during closed hours of a business when no one can monitor the property.

When GATE DISABLE is turned ON: The operator will beep for **3 minutes BEFORE arming itself**. This allows time to turn ON **GATE DISABLE** and leave the property before it is armed.

When FIRE DEPT/MAX OPEN gets activated: Gate opens and **GATE TAMPER** relay will activate immediately.

When RADIO Input gets activated: Gate opens and **GATE TAMPER** relay will activate **after 3 min**. This allows time to turn OFF **GATE DISABLE** or disarm an existing building alarm system if connected.

IMPORTANT: It is **NOT** recommended activating the **GATE DISABLE device** while persons are present inside the property.



NOTE: See page 46 for more information about this unique feature.

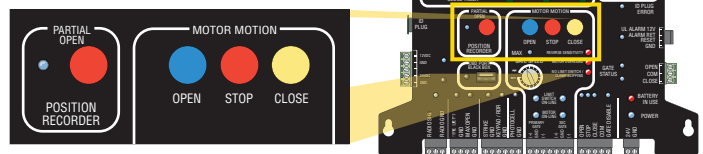
PARTIAL OPEN

A gate can be set to partially open by recording the **PARTIAL OPEN** gate cycle. LED will stay lit when **PARTIAL OPEN** is ON.

IMPORTANT: Limit switches **MUST** be **learned BEFORE** Partial Open can be recorded.

To RECORD PARTIAL OPEN:

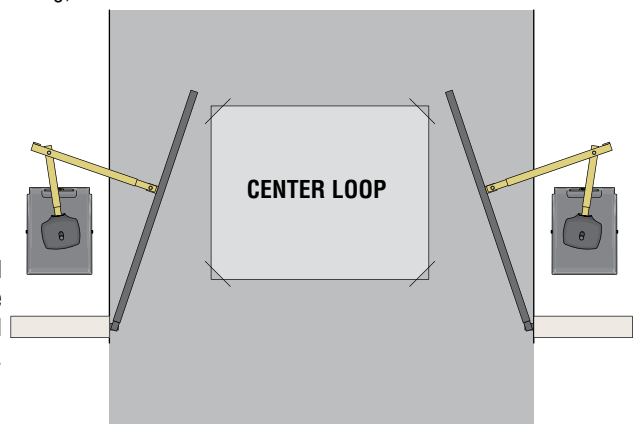
1. With gate in **CLOSED** position, press and release **PARTIAL OPEN** button to START recording. Blue LED starts flashing.
2. Press 3-button station **OPEN** button to start gate's open cycle.
3. Press 3-button station **STOP** button when gate is in desired partial open position (Beyond center loop).
4. Press **PARTIAL OPEN** button AGAIN to STOP recording. Blue LED stops flashing, open position has been recorded. LED remains **ON**.



To ERASE PARTIAL OPEN recording:

Press and **HOLD PARTIAL OPEN** button for 5 sec. LED turns **OFF**.

CAUTION: Gates partial **OPEN** position **MUST** be outside the Center Loop when in-ground loops have been installed.



NOTE: The **FIRE DEPT** and/or **MAX OPEN** connected devices will always **FULLY** open gates even when the partial open is being used.

MATRIX 1

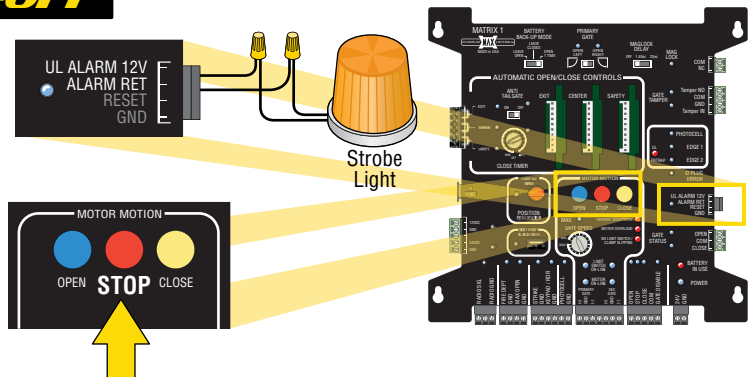
UL ALARM / ALARM SHUT-OFF

A **UL ALARM** (strobe light) can be connected. It will turn **ON** when the **GATE IN MOTION - Mode 0 and/or Mode 1** are turned **ON** (see page 28).

Press **STOP BUTTON** to Shut-OFF activated strobe light.

Press **STOP BUTTON** to Shut-OFF an activated alarm.

STROBE LIGHT NOTE: 12VDC - 250 mA max.



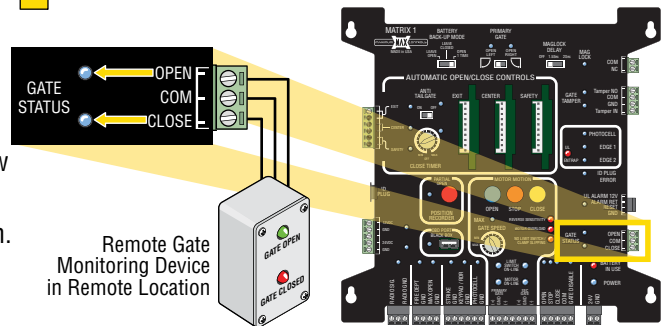
GATE STATUS MONITORING

GATE STATUS LEDs will turn **ON** when gate is in the **OPEN** or **CLOSED** position.

Connect a gate monitoring device to **GATE STATUS** relays to show if gate is in the OPEN or CLOSED position.

OPEN/COM Relay: Activates when gate gets to the OPEN position.

CLOSE/COM Relay: Activates when gate gets to the CLOSED position.

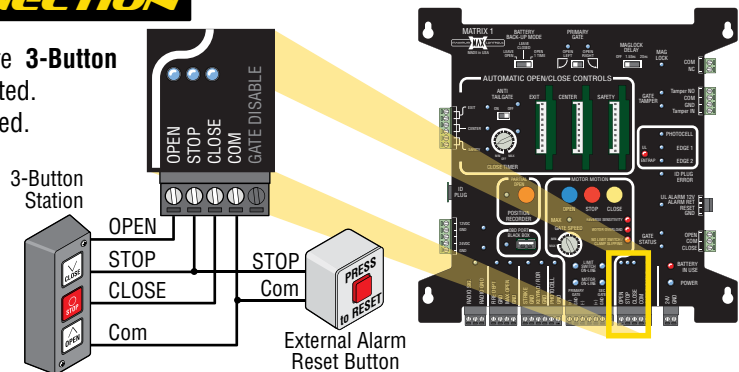


OPEN / STOP / CLOSE CONNECTION

The **OPEN/STOP/CLOSE** inputs will allow a standard 4-wire **3-Button Station** and a **External Alarm RESET Button** to be connected. Corresponding LEDs will light when each button is activated.

External Alarm Reset Button

An external Alarm Reset button needs to be installed in a secure place and connected as shown to quickly **SHUT-OFF** a sounding alarm. Otherwise alarm can only be shut-off by the **STOP BUTTON** on the Matrix 1 (see Alarm Shut-Off above).

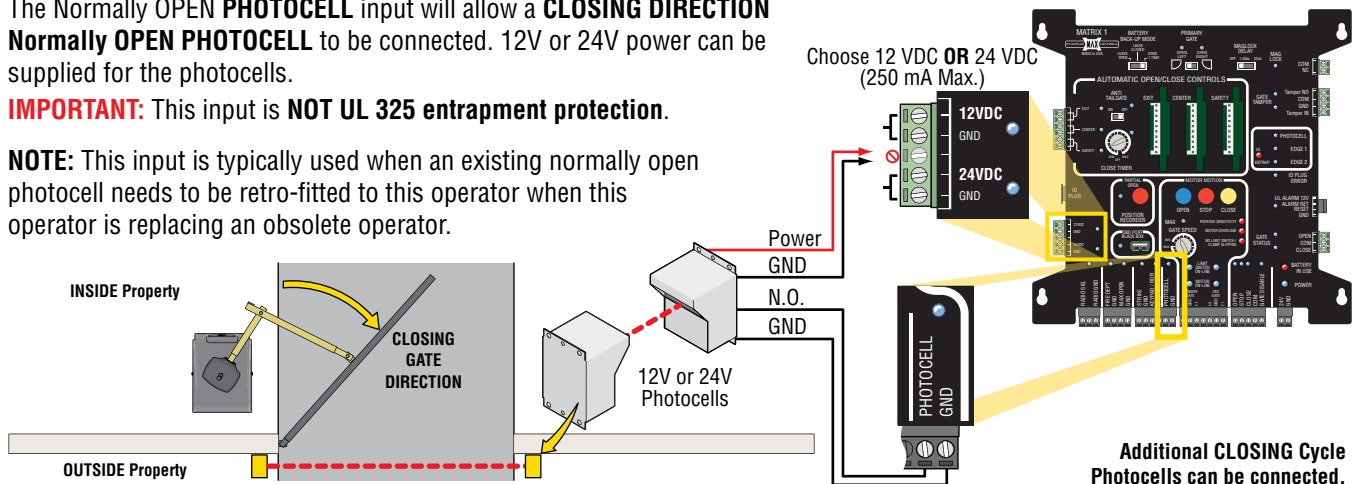


CLOSING PHOTOCELL CONNECTION

The Normally OPEN **PHOTOCELL** input will allow a **CLOSING DIRECTION Normally OPEN PHOTOCELL** to be connected. 12V or 24V power can be supplied for the photocells.

IMPORTANT: This input is **NOT UL 325 entrapment protection**.

NOTE: This input is typically used when an existing normally open photocell needs to be retro-fitted to this operator when this operator is replacing an obsolete operator.



MATRIX 1

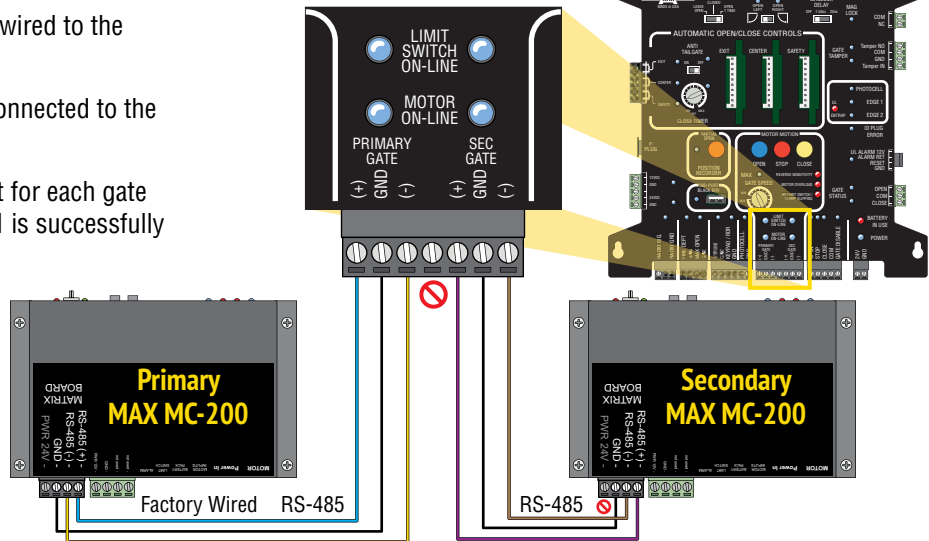
GATE OPERATORS COMMUNICATION LEDS

PRIMARY operator's MC-200 has been wired to the **PRIMARY GATE (Factory Wired)**.

SECONDARY operator's MC-200 gets connected to the **SEC GATE (+, GND, -)**. See page 22.

LIMIT SWITCH ON-LINE LEDs: will light for each gate operator's **limit switch** that the **Matrix 1** is successfully communicating with.

MOTOR ON-LINE LEDs: will light for each gate operator's **MC-200 Motor Controller** that the **Matrix 1** is successfully communicating with.

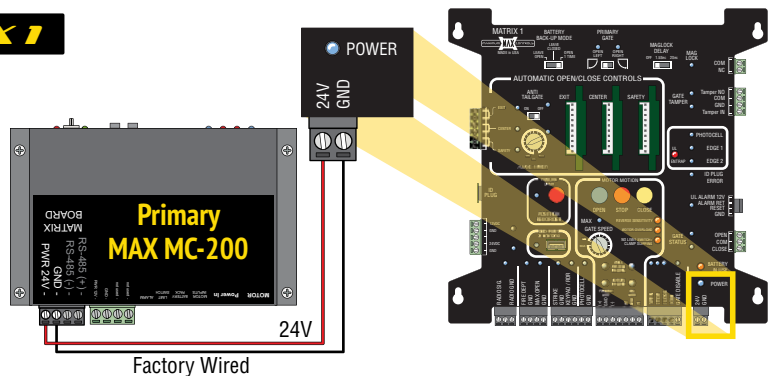


24V POWER FOR MATRIX 1

24VDC POWER from **PRIMARY** operator **ONLY**.

POWER LED: Will light when 24V low voltage power is connected.

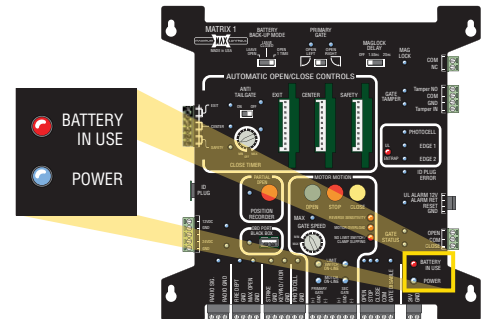
NOTE: DO NOT power any external devices using this connection. This power is reserved for Matrix 1 **ONLY**.



BATTERY IN USE LED

BATTERY IN USE LED will light when operator is using **ONLY** battery back-up power. The **GATE IN MOTION Alarm** can be set up to sound alarm when operator is using **ONLY** battery power **DURING** gate cycling. This brings to attention that only battery power is being used and **NOT** normal AC power. See page 28.

LED Flashing NOTE: **BATTERY IN USE** and **POWER** LEDs flash together when the battery is not plugged into the BATTERY IN port of the MAX BC-7 Battery Module. Make sure battery plug is correctly installed and there is no damaged or loose wires.



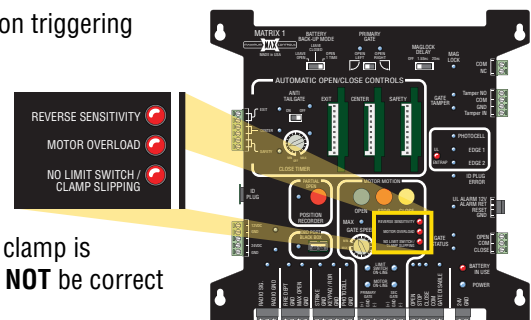
MOTOR MOTION LEDS

REVERSE SENSITIVITY LED: Will light when the gate encounters an obstruction triggering the ERD sensor.

MOTOR OVERLOAD LED: Will light when excessive current is being drawn by motor caused by damaged gate hardware or gate is too heavy.

NO LIMIT SWITCH/CLAMP SLIPPING LED: Will light when either limit switch does **NOT** activate from it's learned positions.

NO LIMIT SWITCH/CLAMP SLIPPING LED: Will light when the release handle clamp is slipping on the output shaft. The learned gate **OPEN** and **CLOSE** positions will **NOT** be correct when the limit tabs keep changing position.

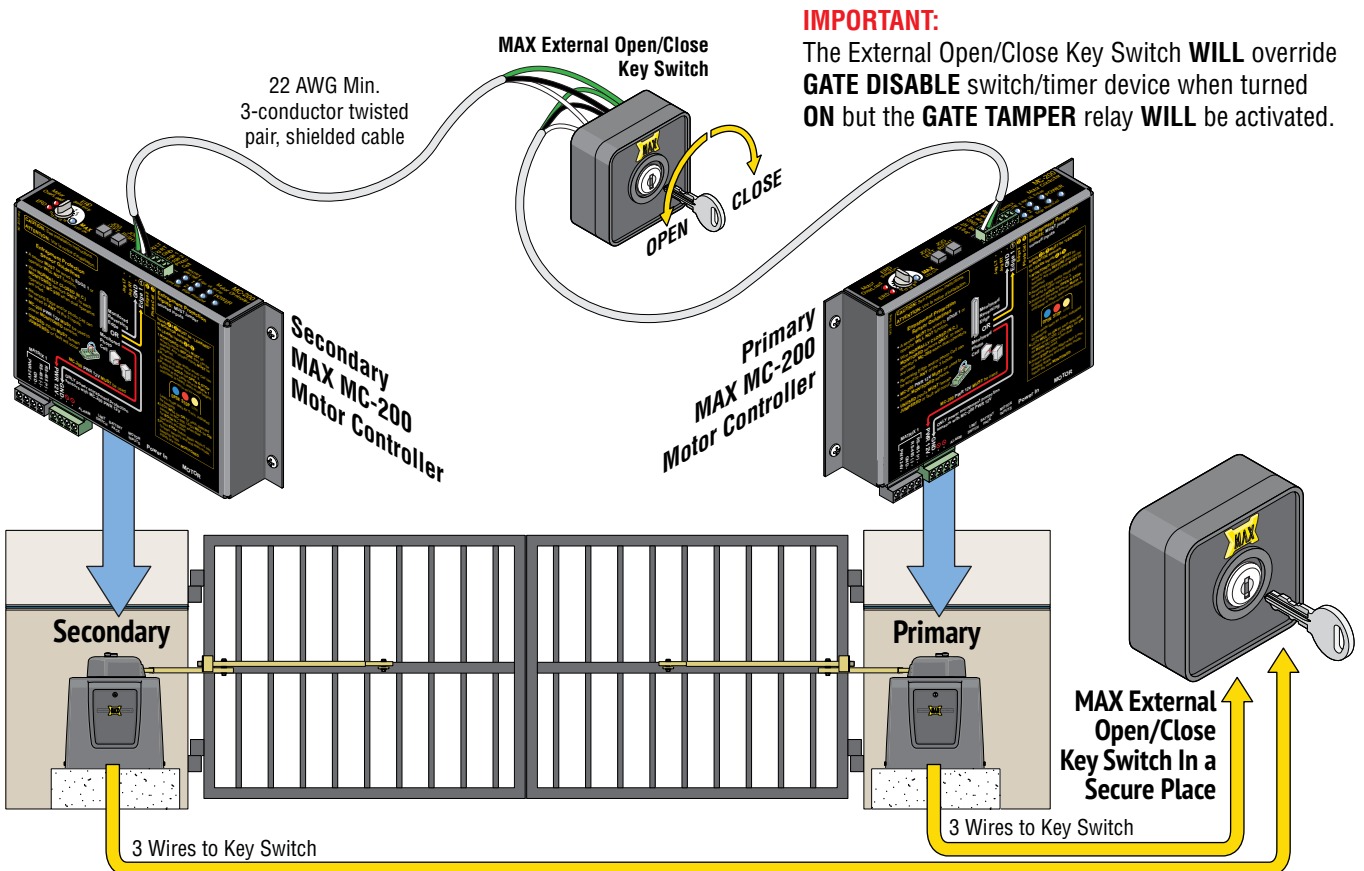
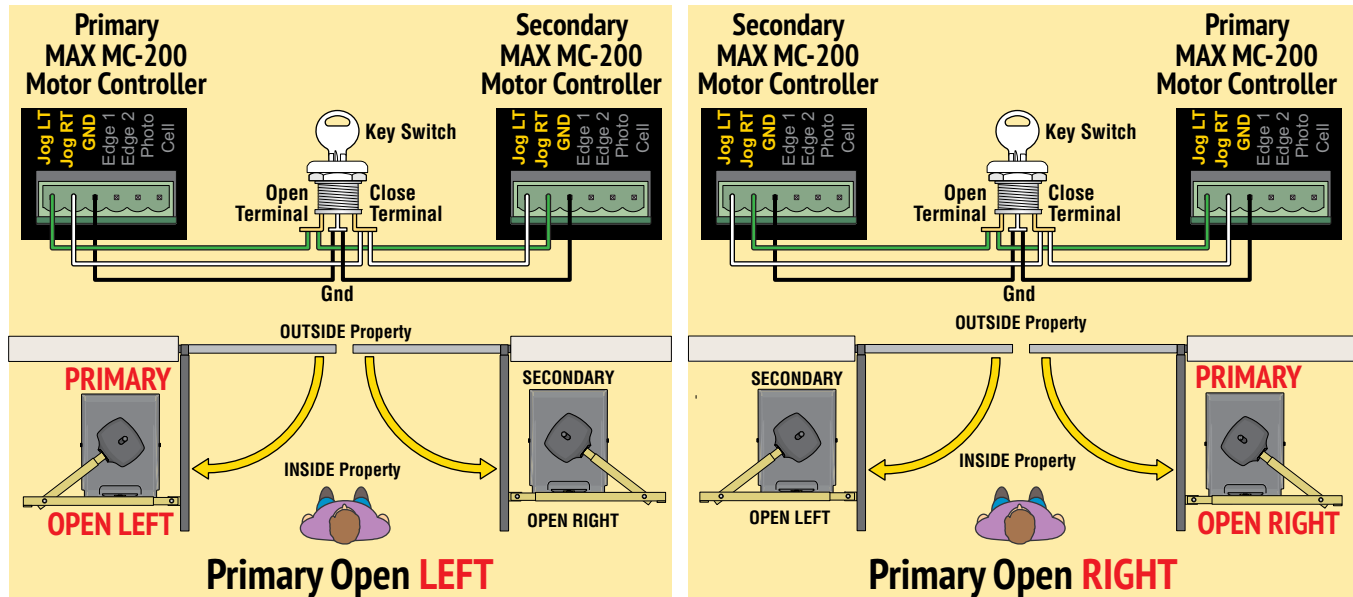


MATRIX 1

EXTERNAL OPEN/CLOSE KEY SWITCH - OPTIONAL

An Optional **External Open/Close Key Switch** can be connected that allows **dual gate operators** to be **electronically moved** open or closed at the same time by wiring both operators to the external key switch.

Connect (3) three wires from each **MAX MC-200 Motor Controllers** to an **External Open/Close Key Switch** depending on your specific installation, see below.

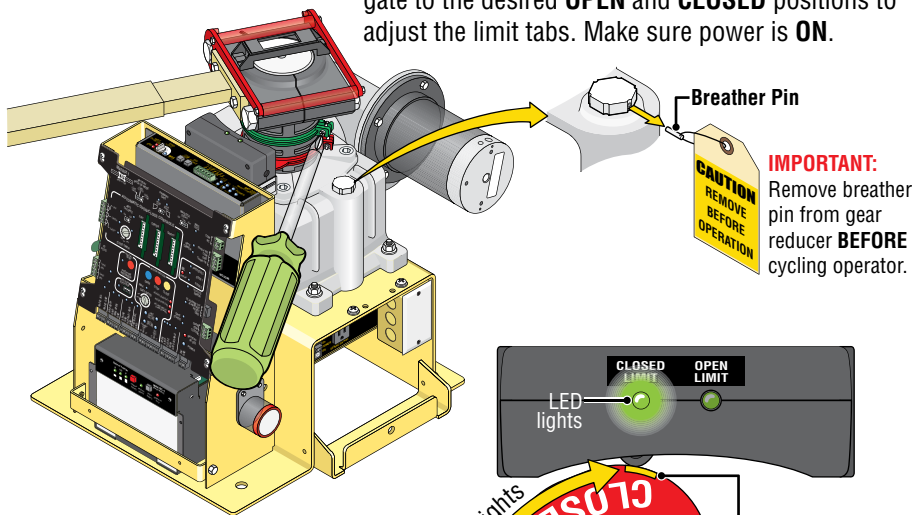


ADJUSTMENTS

OPEN AND CLOSE LIMITS

The limit tabs need to be set **BEFORE** the gate can be cycled or **DAMAGE** could occur.

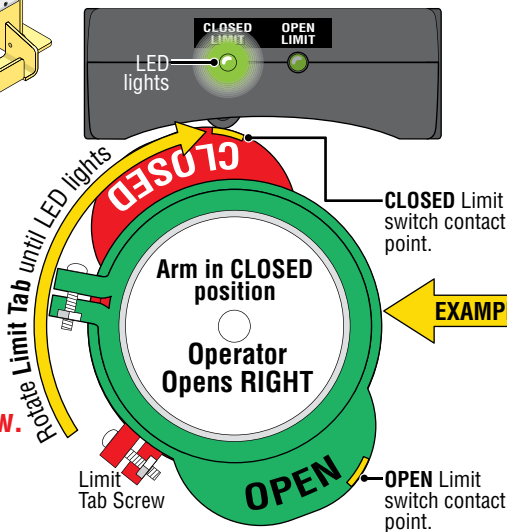
IMPORTANT: Manually Release arm and move the gate to the desired **OPEN** and **CLOSED** positions to adjust the limit tabs. Make sure power is **ON**.



ADJUST LIMITS:

Manually Release Arm

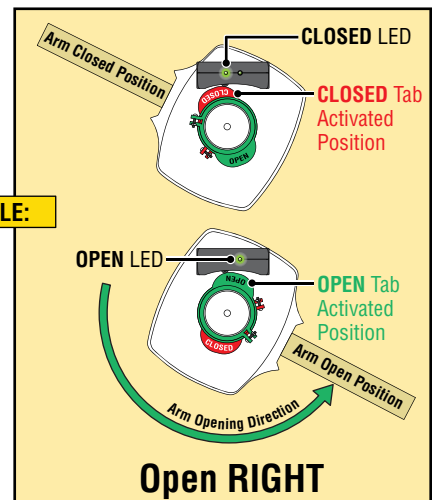
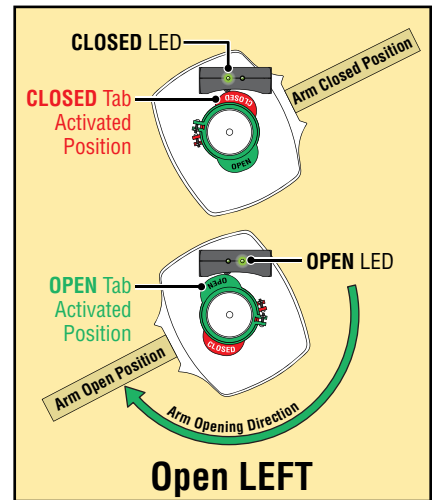
1. Move gate to **OPEN** position.
2. Loosen open limit tab screw.
3. Rotate open limit tab until open LED lights.
4. **TIGHTEN open limit tab screw.**
5. Move gate to **CLOSED** position.
6. Loosen closed limit tab screw.
7. Rotate closed limit tab until closed LED lights.
8. **TIGHTEN closed limit tab screw.**



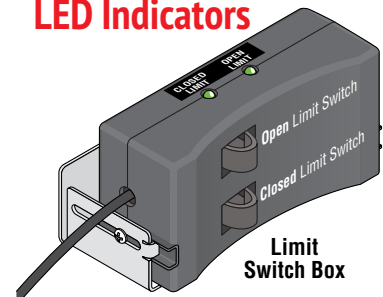
CAUTION

Make sure **OPEN/CLOSE** limit rings are tightened after adjustment or slippage could occur.

Approximate **OPEN** and **CLOSED** limit tab positions.



LED Indicators



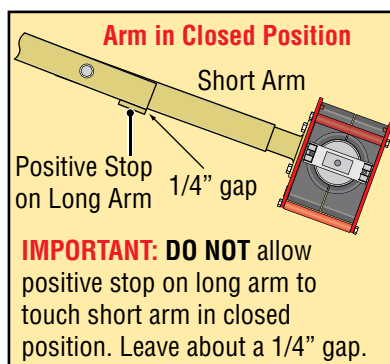
IMPORTANT: LEDs **MUST** light up when gate reaches **OPEN** and **CLOSE** positions or operator **WILL NOT** learn gate positions. If gate positions are not learned, gate cycling speed will **remain** slow during normal operation.

"Fine Tune" Limits Adjustment



Push and **HOLD** the **JOG LEFT** or **JOG RIGHT** buttons accordingly on the **MAX MC-200** motor controller to move the gate (release the button to stop gate). This allows gate to be moved back and fourth without leaving the operator to "fine tune" the open and close gate positions if desired.

WARNING: Avoid the moving arm while "Fine Tune" adjusting.



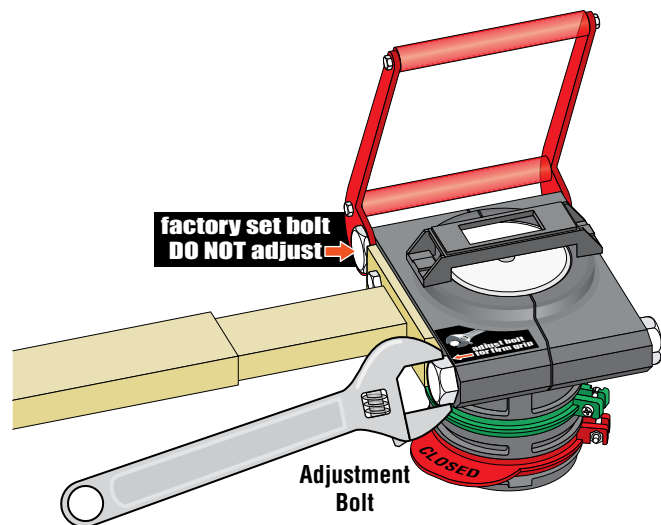
ADJUSTMENTS

RELEASE HANDLE CLAMP

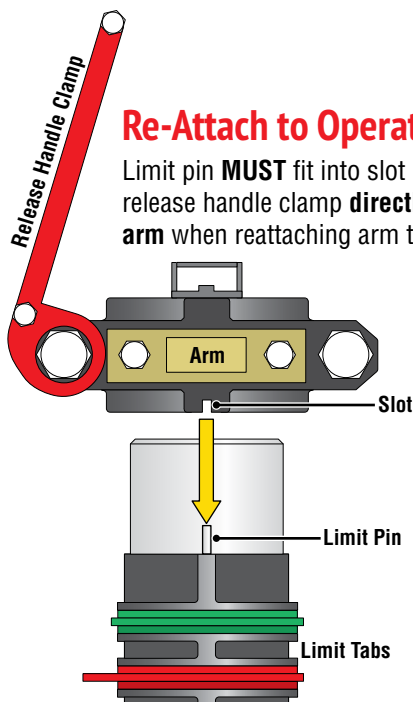
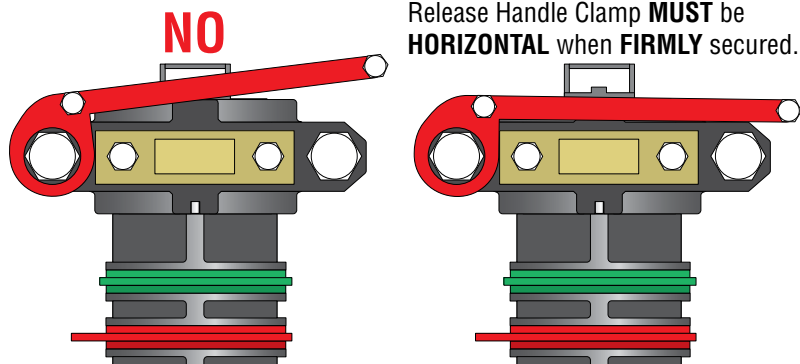
Adjustment:

Tighten the Adjustment bolt until desired result is achieved. The release handle clamp has been factory adjusted and **SHOULD NOT** need any adjustment.

IMPORTANT: The red handle **MUST BE FIRMLY** secure in the **HORIZONTAL** position.

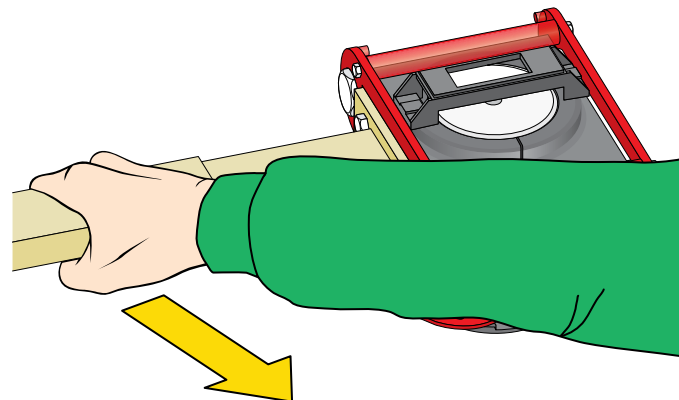


IMPORTANT: The arm **MUST NOT** slip when the gate is cycling or the gate **OPEN** and **CLOSE** limit positions will **NOT** be **LEARNED**. Gate speed will remain slow if gate positions are **NOT** learned.



Re-Attach to Operator:

Limit pin **MUST** fit into slot in bottom of release handle clamp **directly under the arm** when reattaching arm to operator.



After Release Handle Clamp is in the SECURE HORIZONTAL position:

Pull the arm. **NO** slippage should occur. If it does, readjust.

NOTE: When limit tabs are already set and the release handle is put back in the secure position but the gate is **NOT** in the full open or close position, the operator will **automatically** re-align the gate's open and close tabs. **No readjustment is necessary.**

ADJUSTMENTS

REVERSE SENSOR (ERD)

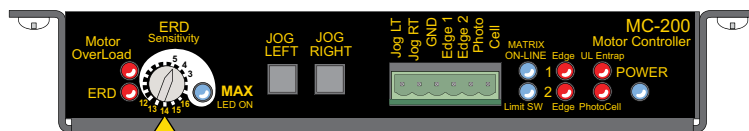
This operator is equipped with an **ERD Sensor - Electronic Reversing Device** (Type A) that functions as entrapment protection according to UL 325 standards. **The gate will reverse direction after encountering an obstruction in either the OPEN or CLOSE gate cycle.**

When the gate encounters an obstruction during the **CLOSE** cycle, it will reverse to the open position and **PAUSE** the gate. An input command (press remote button or exit loop) is needed **BEFORE** the gate will reset and close again.

When the gate encounters an obstruction during the **OPEN** cycle, it will reverse approximately 6 inches and **PAUSE** the gate. An input command (press remote button or exit loop) is needed **BEFORE** the gate will reset and open again.

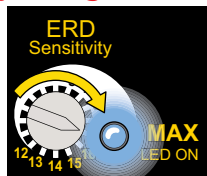
For the **ERD Sensitivity** to function correctly:

- **THE RELEASE HANDLE CLAMP MUST NOT SLIP** when the gate encounters an obstruction.
- Limit switches must be learned **BEFORE** adjusting the ERD Sensitivity.

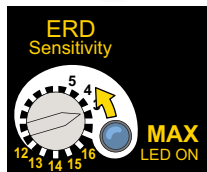


16 sensitivity setting positions.
NO mechanical hard stop for knob.

Adjusting ERD Sensitivity

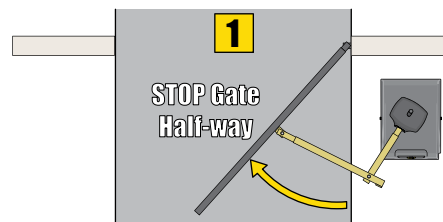


A. Turn knob until blue LED lights up.
Max sensitivity reached, Position 1.
"1" - Maximum sensitivity setting.
Too sensitive for most gates. (LED lights)

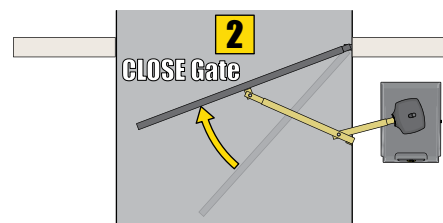


B. Turn knob **counter-clockwise** to reduce sensitivity during ERD testing as needed.
(LED remains OFF for all but position 1)

TIP: While Adjusting ERD.....



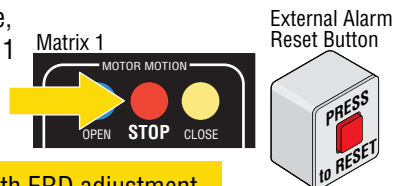
Position gate half-way open and **STOP** gate.
This gate position will put the most amount of resistance on the ERD sensor when gate cycles.



CLOSE gate. If ERD sensor triggers, reduce sensitivity. If sensor does **NOT** trigger, sensitivity is set correctly.

Testing ERD Sensitivity

Allow the gate to strike an immobile object while **OPENING** and **CLOSING**. The gate **MUST** reverse direction after striking the object. Increase or decrease the **ERD Sensitivity** as needed. Repeat this process until the correct sensitivity is achieved. If alarm sounds while performing this procedure, press **STOP BUTTON** on Matrix 1 or externally mounted **Alarm Reset button** to shut-off alarm.



IMPORTANT: When satisfied with ERD adjustment, cycle the gate 3 or 4 times to make sure that the ERD sensor does not **falsely trigger** during normal gate operation. Readjust if this happens.

"Min" ERD Position 16 Setting

When solid gates are installed in:

- Unusually high wind areas
- Uphill opening gate
- Heavy gate

ERD sensor can be set to **Min** (position 16) to keep the gate cycling normally in such extreme conditions.

CAUTION: Minimum sensitivity setting (position 16) results in gate exerting **MAXIMUM force** before reversing direction.

MAINTENANCE

QUALIFIED GATE OPERATOR TECHNICIAN

Maintenance and repair of the gate operator must be performed by a qualified professional gate operator technician.

The following services need to be periodically performed:

- Check and adjust the gate operator's force, speed, and sensitivity.
- Make sure all power (AC/DC) connections are corrosion free.
- Check all batteries for proper voltage.
- Check the incoming line voltage and confirm it is within 10% of its rating (115 or 230 volts).
- Verify battery backup functionality by turning off the power source (115 VAC and 230 VAC). Restore power after testing.
- Cycle gate system and lubricate with heavy-duty, high-performance lubricant where needed.
- Test all contact and non-contact sensors, in-ground vehicle loop detectors, keypad, telephone entry system or any other access control devices that are used to control the gate operator.
- Test the manual release feature.

MAKE SURE END USER/HOME OWNER KNOWS HOW TO PROPERLY REMOVE GATE OPERATOR FROM SERVICE AND WHO TO CONTACT FOR PROFESSIONAL ASSISTANCE.

Date Installed: _____

Installer/Company Name: _____

Phone Number: _____ Operator
Serial Number: _____

END USER / HOMEOWNER

Any repairs and modifications must be performed by a qualified professional gate operator technician. If the gate or gate operator ever malfunctions, end user/home owner needs to immediately remove the gate operator from service (manually position gate (see manual release) in a desired prolonged position and turn ALL power OFF to the gate operator). End user/home owner must call a qualified professional gate operator technician for any repairs and modifications.

The gate operator is virtually maintenance free to an end user/home owner, minimal maintenance is recommended to ensure reliable operation.

End user/home owner:

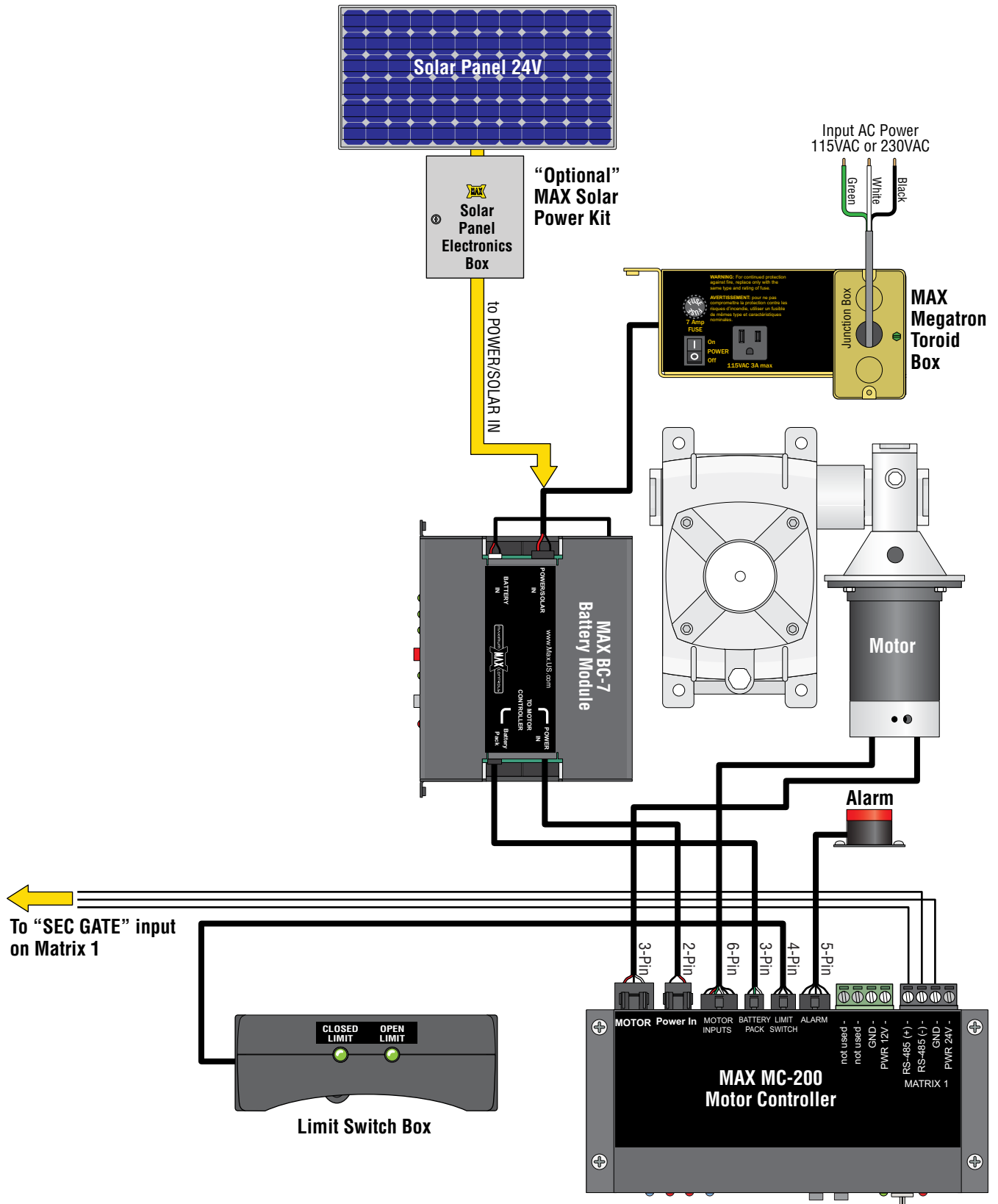
- Scheduled maintenance should be performed approximately every six months by a qualified professional gate operator technician, or when unusual noises are heard from the gate hinges and/or gate operator arm.
- DO NOT remove the operator cover to perform any normal maintenance.
- Lubricate gate hinges and gate operator arm periodically with heavy-duty, high-performance lubricant and clean up all excess lubricant.
- Make sure there are no vehicles or pedestrians in the path of the gate while performing maintenance.
- Make sure the person performing maintenance is the only person in control of all control devices in order to avoid possible involuntary activation of the gate operator. Gate operator MUST be removed from service while maintenance is performed.
- Keep any water from landscape watering hoses or sprinkler systems away from the gate and gate operator area.
- Keep the area around the gate and gate operator as clean as possible.
- Keep any debris away from the gate's swinging path.
- Test periodically (use caution) all safety sensors, in-ground vehicle loop detectors, keypad, telephone entry system or any other access control devices that are used to control the gate operator. Make sure everything is working properly.
- Solar panel must be cleaned periodically if solar power is being used.

MEGATRON PRIMARY WIRING SCHEMATIC



MAINTENANCE

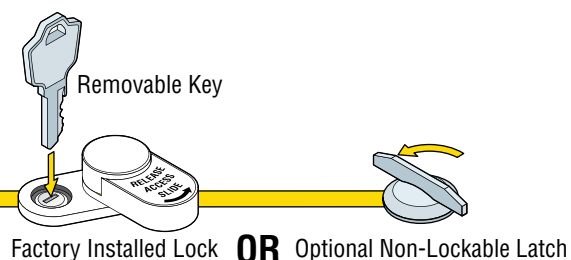
MEGATRON SECONDARY WIRING SCHEMATIC



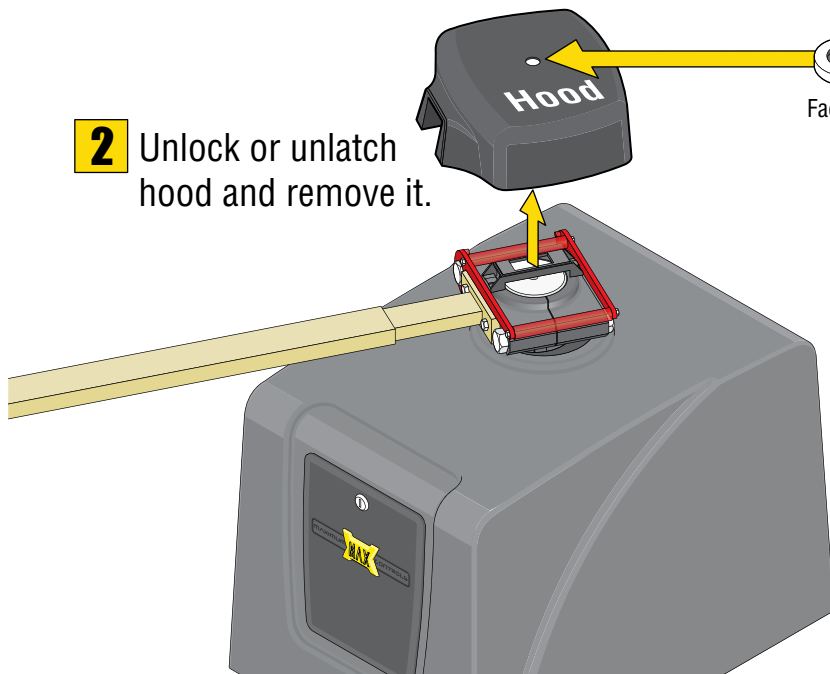
MAINTENANCE

MANUAL GATE RELEASE

- 1 Make sure **ALL** power is **OFF** to operator.

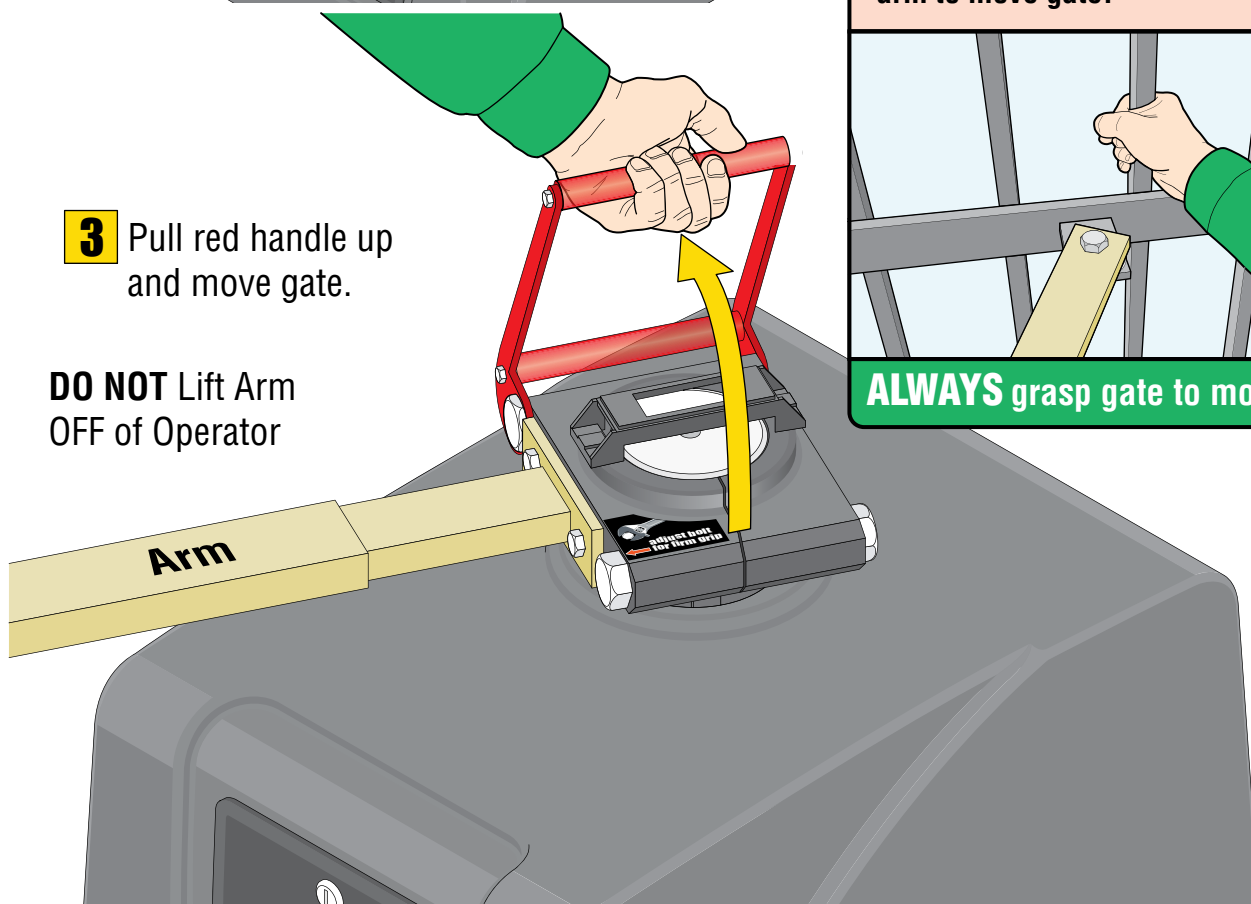


- 2 Unlock or unlatch hood and remove it.

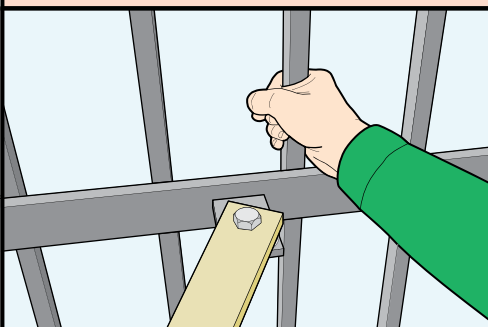
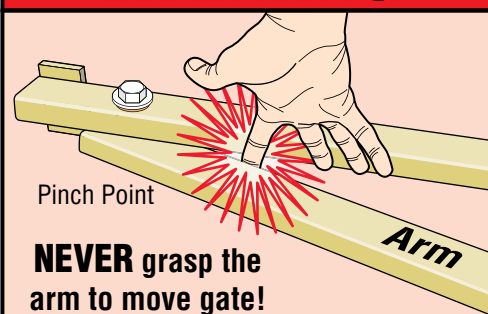


- 3 Pull red handle up and move gate.

DO NOT Lift Arm
OFF of Operator



WARNING



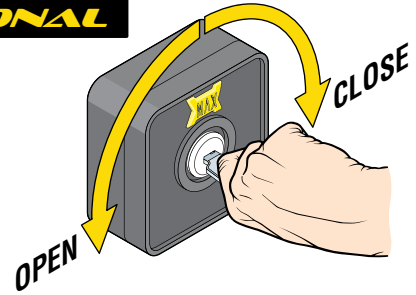
MAINTENANCE

ELECTRONIC GATE OPEN / CLOSE - OPTIONAL

The **OPTIONAL** external key switch device (sold separately) can open or close the gate electronically if the switch has been wired to the MC-200 motor controller.

Insert key on control box, turn and **HOLD** (in either direction) to **MOVE** gate.

CAUTION: Keep pedestrians and vehicles clear of the gate while it is moving.

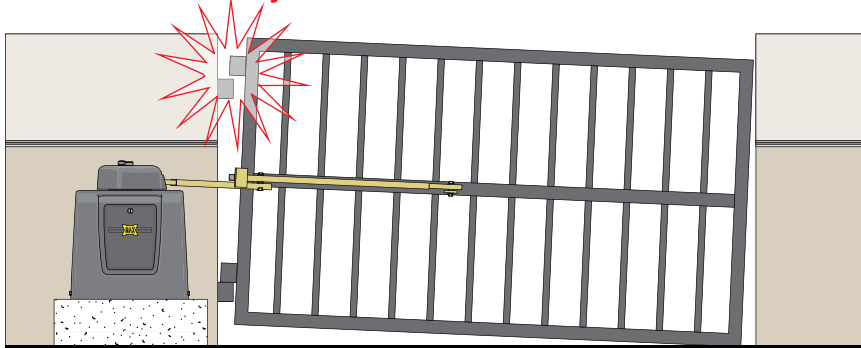


AUDIBLE ALARM

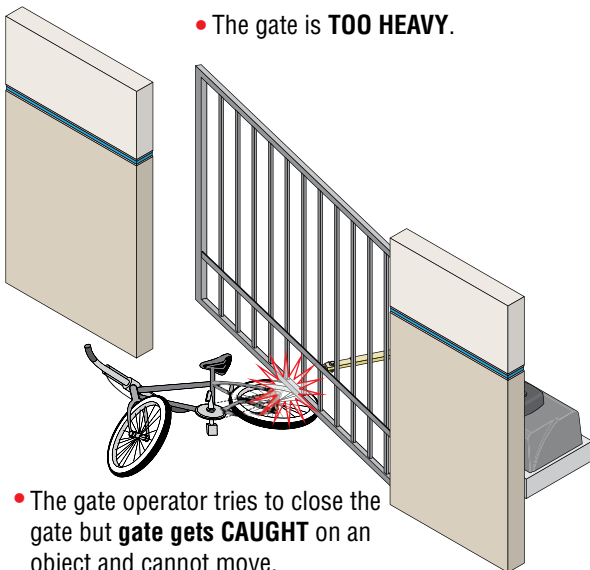
If the Alarm Sounds During Normal Gate Operation: When the gate encounters **TWO** consecutive obstructions before completing a gate cycle, the alarm will sound and the gate will **PAUSE** in the position where the second obstruction occurred. **CHECK THE GATE AREA FOR ANY PROBLEMS BEFORE** pressing the **STOP** button on the Matrix 1 or the externally mounted **Alarm Reset** button to shut off the alarm and reset the gate.

NOTE: Alarm will automatically shut-off after five minutes but **will not allow** gate to operate until the **STOP** button is pressed.

Some reasons why the alarm sounds:

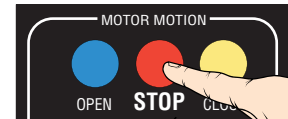


- **HINGES** are **TOO TIGHT** or **BROKEN**, gate **CANNOT** move freely.
- Gate is **STUCK** or **BENT** in an awkward position.
- A **FOREIGN OBJECT** is on the gate frame while the gate is moving.
- The gate is **TOO HEAVY**.

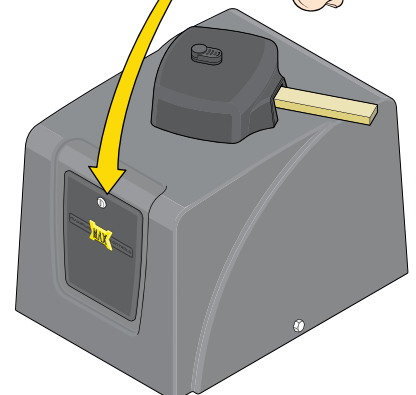


- The gate operator tries to close the gate but **gate gets CAUGHT** on an object and cannot move.

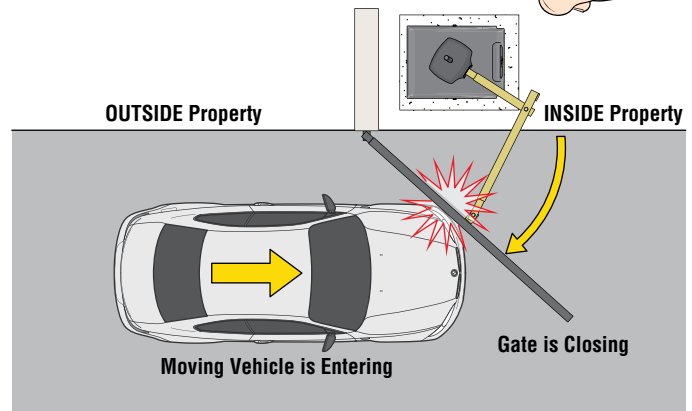
Alarm Shut-Off



Matrix 1
STOP Button



Externally Mounted
Alarm Reset Button
shuts-off alarm.

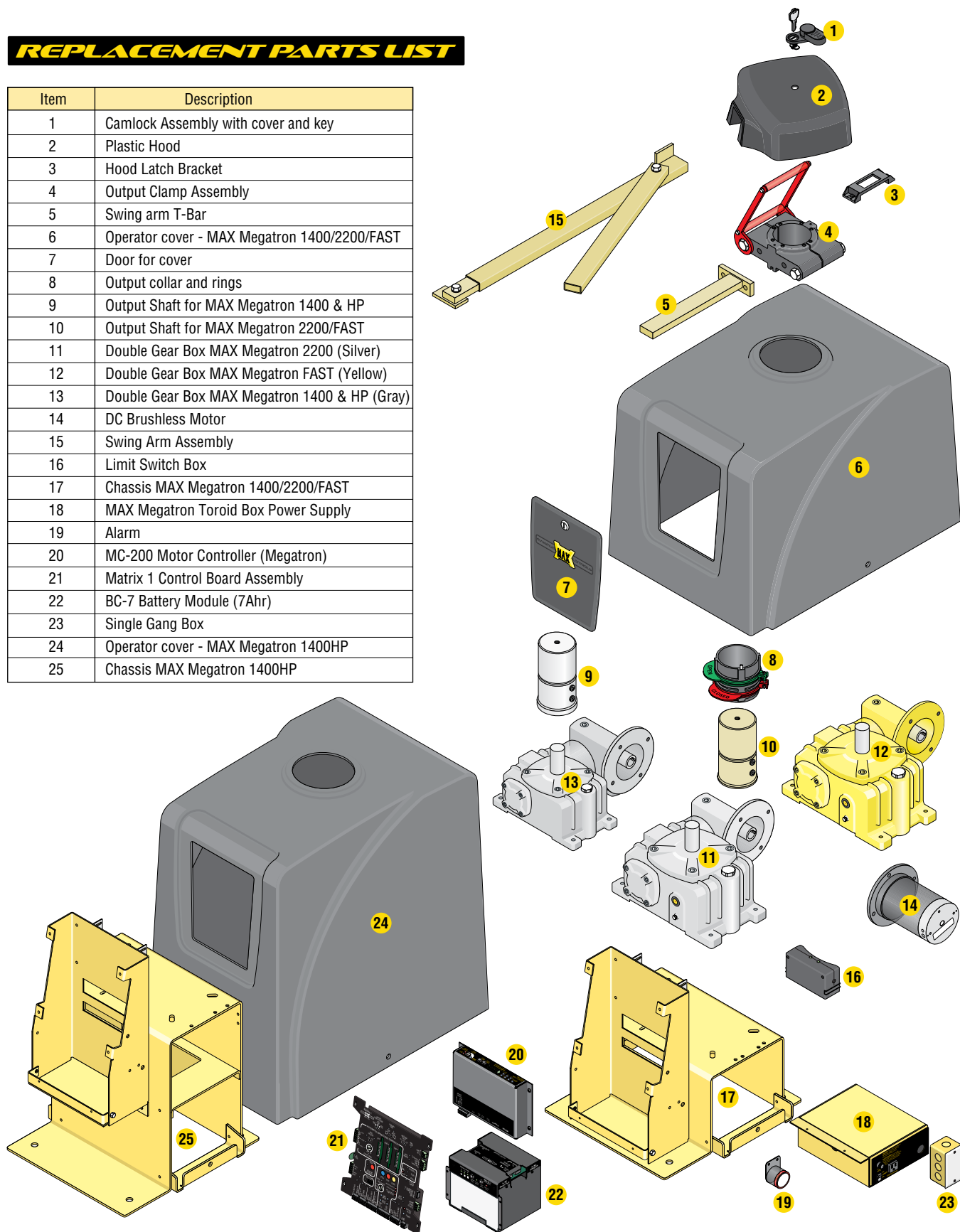


- The moving gate gets **PUSHED** by a moving **VEHICLE**.

MAINTENANCE

REPLACEMENT PARTS LIST

Item	Description
1	Camlock Assembly with cover and key
2	Plastic Hood
3	Hood Latch Bracket
4	Output Clamp Assembly
5	Swing arm T-Bar
6	Operator cover - MAX Megatron 1400/2200/FAST
7	Door for cover
8	Output collar and rings
9	Output Shaft for MAX Megatron 1400 & HP
10	Output Shaft for MAX Megatron 2200/FAST
11	Double Gear Box MAX Megatron 2200 (Silver)
12	Double Gear Box MAX Megatron FAST (Yellow)
13	Double Gear Box MAX Megatron 1400 & HP (Gray)
14	DC Brushless Motor
15	Swing Arm Assembly
16	Limit Switch Box
17	Chassis MAX Megatron 1400/2200/FAST
18	MAX Megatron Toroid Box Power Supply
19	Alarm
20	MC-200 Motor Controller (Megatron)
21	Matrix 1 Control Board Assembly
22	BC-7 Battery Module (7Ahr)
23	Single Gang Box
24	Operator cover - MAX Megatron 1400HP
25	Chassis MAX Megatron 1400HP



MAX MEGATRON WARRANTY

Maximum Controls LLC ("Manufacture") warrants the original purchaser of this product, for the purpose to which this product is originally installed, that the product is free from defect in materials and/or workmanship for a period of 8 years for the Brushless DC Motor and cover, 5 years for everything else with the exception of the batteries which are limited to a 1 year warranty. The performance of this product is dependent on compliance to the instructions, maintenance, operation, and testing clearly outlined in the user manual. Failure to comply completely with those instructions will void this warranty in its entirety. This warranty does not cover damage to the product caused by vandalism, water damage, direct hit lightning strike, or installation errors. This warranty does not include any labor charges that might be needed to troubleshoot, replace, or repair a problem.

If, during the limited warranty period, one of the components exhibits a defect in material and/or workmanship, please call 949-699-0220 before dismantling the product. Shipping instructions and an RMA (Return Material Authorization) Number will be issued by the factory service center when contacted. Do not send any product in for service without an RMA number. Shipping charges to and from the factory service center for warranty repairs are the responsibility of the customer. Repair or replacement of any warranty items is made at the sole discretion of the Manufacturer.

ALL IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY AND SUITABILITY FOR A PARTICULAR PURPOSE, ARE LIMITED TO 8 YEARS FOR THE BRUSHLESS MOTOR DC AND COVER, 5 YEARS FOR EVERYTHING ELSE WITH THE EXCEPTION OF THE BATTERIES WHICH ARE 1 YEAR. NO IMPLIED WARRANTIES WILL EXTEND BEYOND THE WARRANTIES LISTED ABOVE. Some states do not allow limitations on how long an implied warranty last so this limitation might not apply to you.

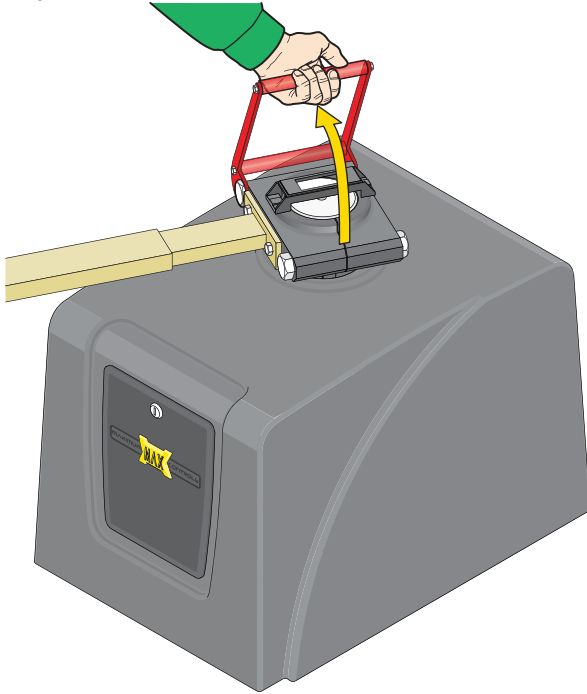
This Limited warranty does not cover any problems with or relating to, the gate, the gate hardware, including but not limited to hinges, rollers, brackets, entry devices etc. Any service call that determines the cause of a problem to be external to the product could result in a fee. Under no circumstances shall the manufacture be liable for consequential, incidental or special damages arising in connection with the use, or inability to use, this product. Under no circumstances will the Manufacture's liability for breach of warranty, breach of contract, negligence or strict liability exceed the cost of the product covered other liability in connection with the sale of this product.

MEGATRON OPTIONS / UNIQUE FEATURES

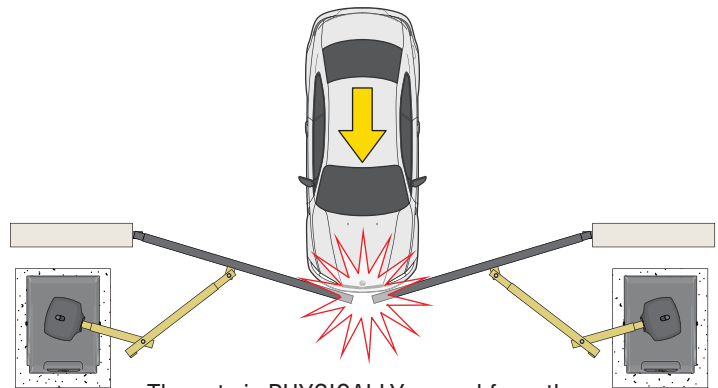
“Like NO other Gate Operator in the World”

GATE TAMPER FEATURE

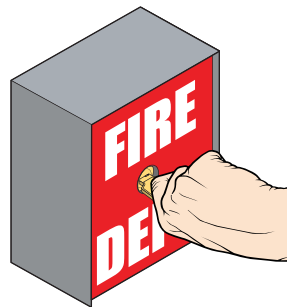
The **GATE TAMPER** feature will activate the relay when a number of security circumstances occur, making illegal entry almost impossible when the gate operator is connected to a existing building/home alarm system. The **GATE TAMPER** relay will activate when:



The red release handle clamp is lifted and the gate is pushed open from the **closed position without authorization**.



The gate is **PHYSICALLY** moved from the **closed position** with **EXTREME** force.



The **FIRE** switch is turned **ONLY** if the **GATE DISABLE** has been turned ON.

MEGATRON OPTIONS / UNIQUE FEATURES

“Like NO other Gate Operator in the World”

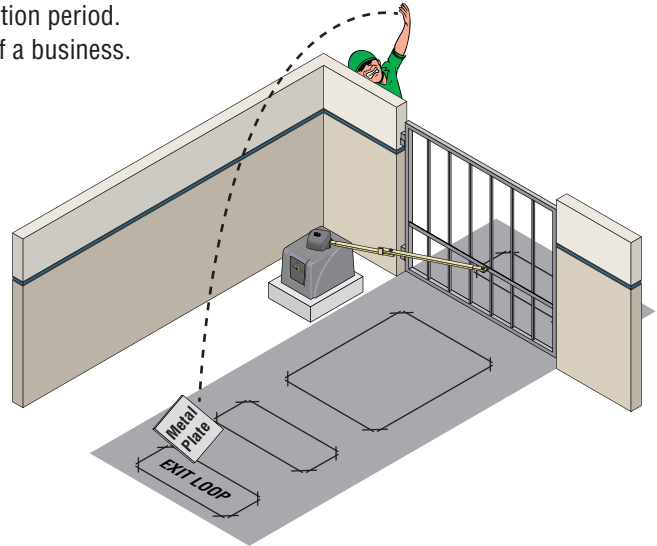
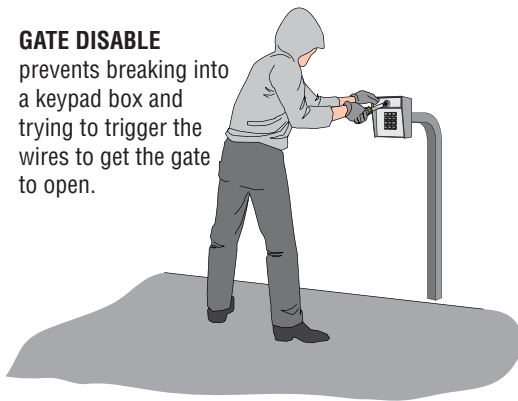
GATE DISABLE FEATURE

This unique **GATE DISABLE** feature is useful when the gated area needs to be secured from **ALL** but emergency and/or authorized vehicle entry. Some examples are:

- Residential home vacation period.
- During closed hours of a business.

The **GATE DISABLE** feature will allow the FIRE DEPT/MAX and RADIO inputs to operate but nothing else. It helps with some major security problems that can occur when no one is available to monitor the property.

GATE DISABLE prevents breaking into a keypad box and trying to trigger the wires to get the gate to open.



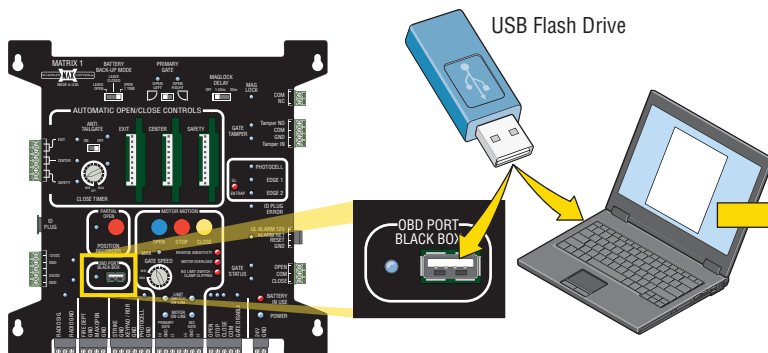
GATE DISABLE prevents trying to trigger the exit loop to get the gate to open.

IMPORTANT: It is **NOT** recommended activating **GATE DISABLE** while persons are present inside the property.

EVENT HISTORY DOWNLOAD

This unique **EVENT HISTORY** feature has an On Board Diagnostics (OBD) port to download a simple .txt file to troubleshoot gate operator errors and to view normal transaction logs. This file will log intermittent problems with the gate operator that can be difficult to solve. This file can even be e-mailed to the factory from out in the field at the job site for additional technical support if necessary.

The event history can store up to 1000 transactions.



Event History Text Document Sample

Event type clarification:

INFO: informational message only

WARNING: unusual event but doesn't cause system malfunction

ERROR: abnormal event, could cause system malfunction

ENTRAP: entrapment detection event

Event Report:

Fri 07/11/2014 10:59:41	INFO : Cycle Counter
Fri 07/11/2014 10:59:41	ENTRAP : SEC_MC: First ERD Detected
Fri 07/11/2014 10:59:37	INFO : Radio Input Deactivated
Fri 07/11/2014 10:59:36	INFO : Radio Input Activated
Fri 07/11/2014 10:58:54	INFO : PRI_MC: Fully Open Position Learned
Fri 07/11/2014 10:58:53	INFO : SEC_MC: Fully Open Position Learned
Fri 07/11/2014 10:57:40	INFO : PRI_CIO: Communication Established
Fri 07/11/2014 10:57:38	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:57:34	ENTRAP : PRI_MC: Photo Cell Activated
Fri 07/11/2014 10:57:21	INFO : Radio Input Deactivated
Fri 07/11/2014 10:57:21	INFO : Radio Input Activated
Fri 07/11/2014 10:56:46	WARNING: PRI_MC: Tamper Reported
Fri 07/11/2014 10:56:36	INFO : SEC_MC: Fully Open Position Unknown
Fri 07/11/2014 10:56:36	INFO : PRI_MC: Fully Open Position Unknown
Fri 07/11/2014 10:56:36	WARNING: PRI_MC: Tamper Reported
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Activated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Activated

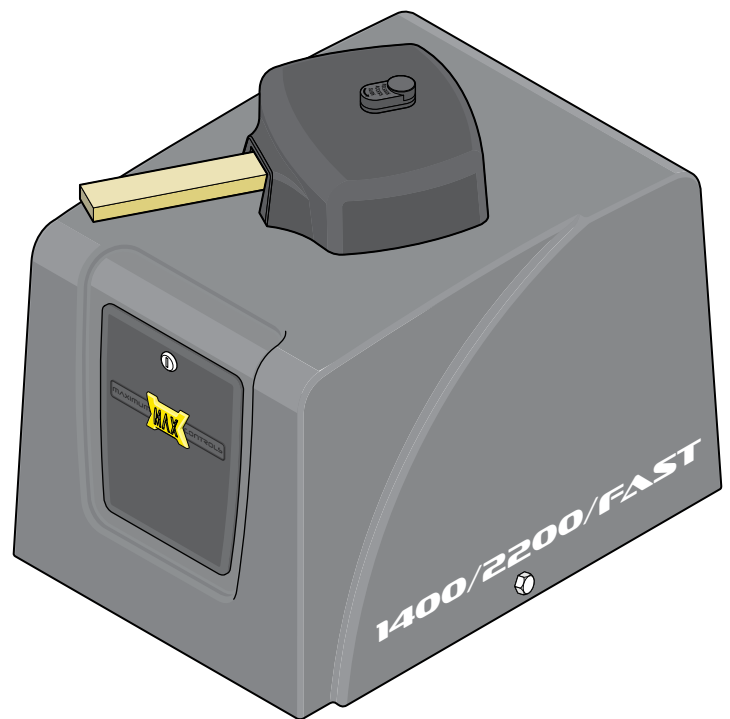
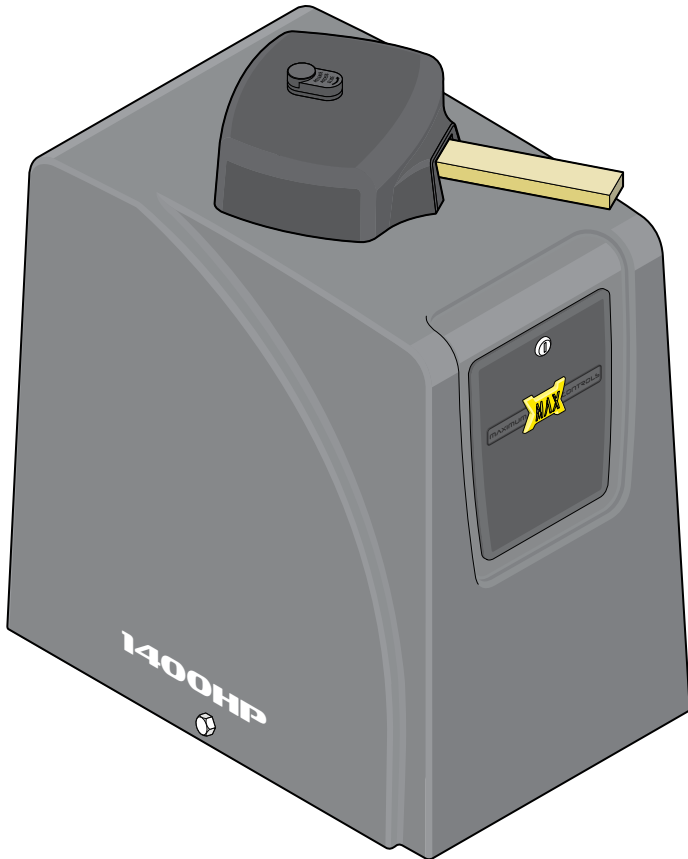


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SAFETY SENSORS REQUIRED

CONFORMS TO UL STD 325
UL CLASS - I, II, III, IV

CERTIFIED TO CAN/CSA STD
C22.2 NO. 247



Residential / Commercial Brushless DC Swing Gate Operators

Made in USA



Maximum Controls LLC.
27211 Burbank
Foothill Ranch, Ca 92610
Tel: (949) 699-0220