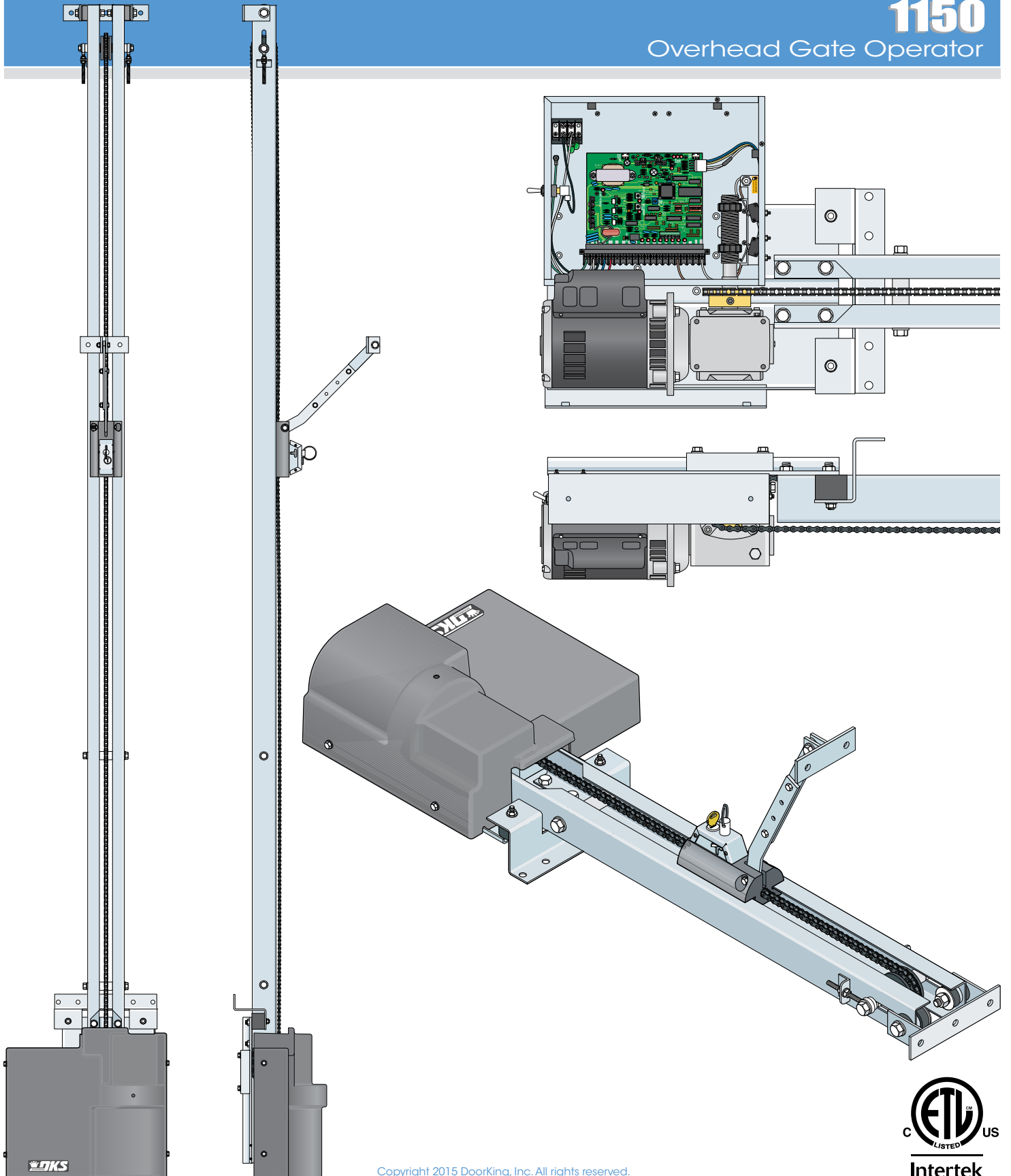
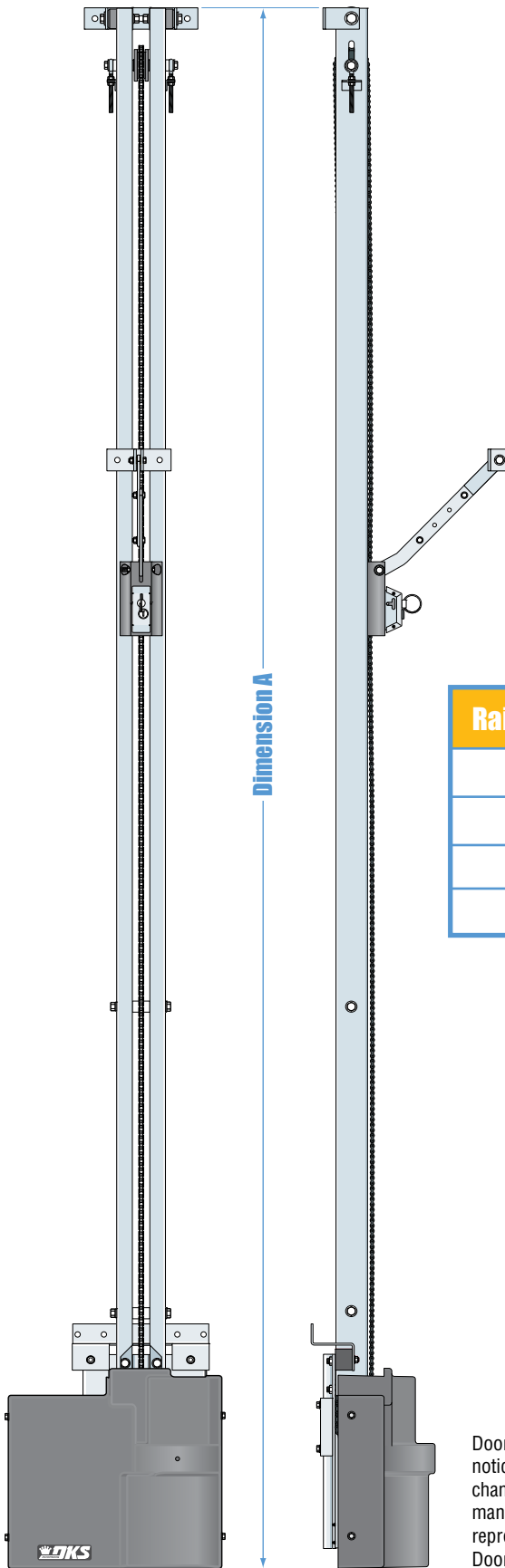


Owner's Manual

1150 Overhead Gate Operator



SPECIFICATIONS

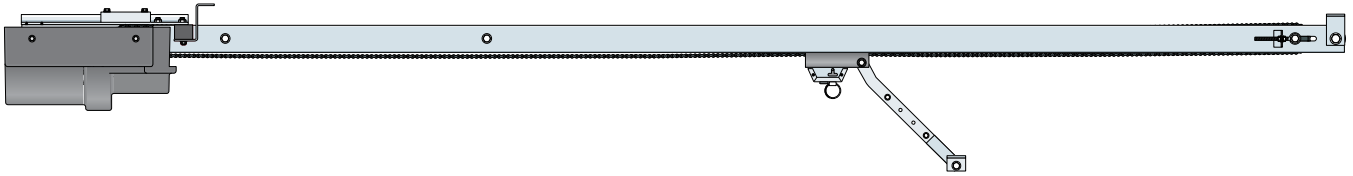


- Class of Operation** _____ Model 1150 - UL325 Class II, III and IV
Type of Gate _____ Vehicular high traffic overhead gates only.
Horsepower/ Voltage / Phase _____ ½ HP - 115 VAC - 60 Hz. Single-Phase
Current _____ 5.4 Amps
Max Gate Dimensions _____ Height - 14 Feet, Width - 25 Feet
Gear Reduction _____ 40:1 Worm gear in a continuous oil bath.
Chain Type _____ #40
Cycles Per Hour _____ Continuous Duty
Speed _____ Approximately 10 inches per second
Entrapment Protection _____ **Primary** - Inherent entrapment sensing system (Type A)
Secondary - Provision for connection of a non-contact and/or contact sensor (Type B1 and/or B2)

Rail Part Number	Max. Gate Height	Dimension A
1150-225	8 feet	12 feet 5 inches
1150-226	10 feet	14 feet 5 inches
1150-227	12 feet	16 feet 5 inches
1150-228	14 feet	18 feet 5 inches

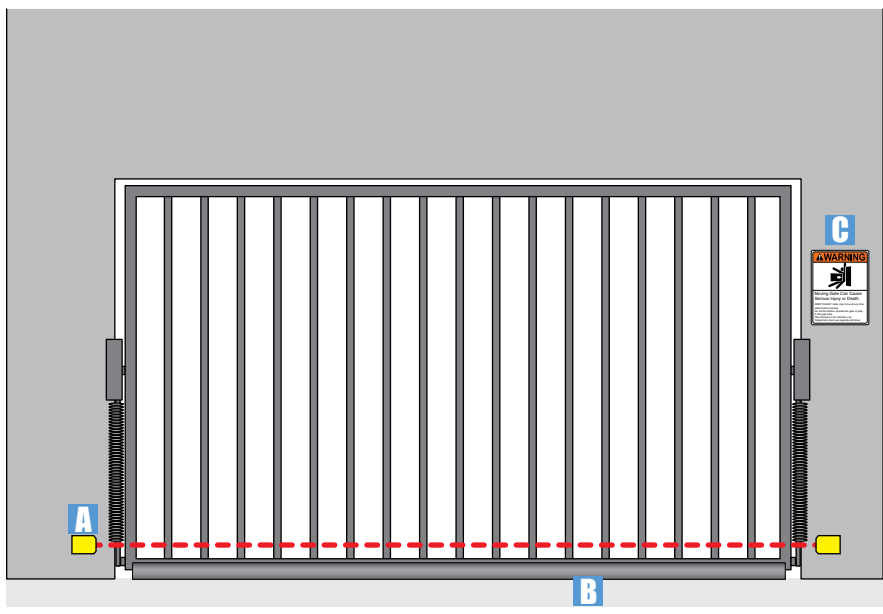
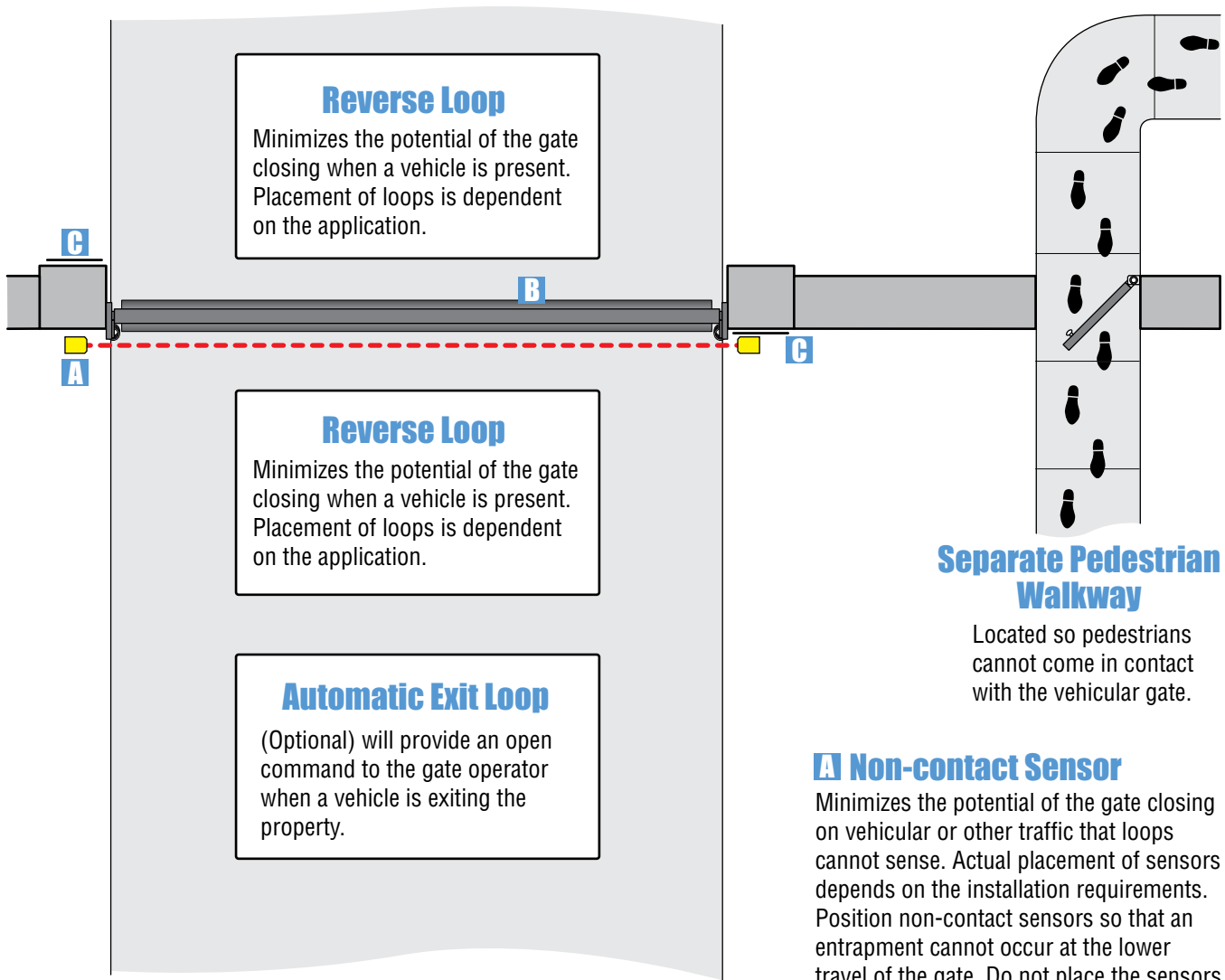
DoorKing, Inc. reserves the right to make changes in the products described in this manual without notice and without obligation of DoorKing, Inc. to notify any persons of any such revisions or changes. Additionally, DoorKing, Inc. makes no representations or warranties with respect to this manual. This manual is copyrighted, all rights reserved. No portion of this manual may be copied, reproduced, translated, or reduced to any electronic medium without prior written consent from DoorKing, Inc.

TABLE OF CONTENTS



SPECIFICATIONS	1
Overhead Gate Protection	3
Gate Construction	4
Important Safety Instructions	4
Instructions regarding intended installation:	4
Important Notices	5
UL325 Entrapment Protection	6
Glossary	7
SECTION 1 - INSTALLATION	8
1.1 Attach Rails to Powerhead	8
1.2 Manual Release and Chain Connection	8
1.3 Adjust Chain Tension	9
1.4 Attach Gate Bracket	9
1.5 Attach Header Bracket	9
1.6 Mount Powerhead and Finish Installation	10-11
SECTION 2 - WIRING	12
2.1 Conduit Requirements	12
2.2 High Voltage Wire Run	13
2.3 High Voltage Terminal Connection	13
2.4 Main Terminal Description	14
2.5 Control Wiring	15
2.6 Secondary Entrapment Protection Wiring	16
2.7 Loop Detector Wiring	17
SECTION 3 - ADJUSTMENTS	18
3.1 Circuit Board Adjustments	18
3.2 DIP-Switch Descriptions and Functions	19
3.3 Limit Sensor Adjustments	20
3.4 Inherent Reverse Sensors Adjustment	21
SECTION 4 - TECHNICAL INSTRUCTIONS	22
4.1 Maintenance Schedule	22
4.2 Diagnostics Check	22-23
4.3 Troubleshooting	23-24
4.4 Accessories	25
1150 Wiring Schematic	26

Overhead Gate Protection



A Non-contact Sensor

Minimizes the potential of the gate closing on vehicular or other traffic that loops cannot sense. Actual placement of sensors depends on the installation requirements. Position non-contact sensors so that an entrapment cannot occur at the lower travel of the gate. Do not place the sensors so high that a person could be trapped under the gate without activating the sensor.

B Contact Sensor

Minimizes the potential of the gate closing on vehicular or other traffic that loops cannot sense. Install the contact sensors at the bottom edge of the gate. Additional contact sensors may be added for additional protection where entrapment zones exist.

C Warning Signs

Permanently mounted and easily visible from either side of the gate.



Gate Construction

Vehicular gates should be constructed and installed in accordance with ASTM F2200; Standard Specification for Automated Vehicular Gate Construction. For a copy of this standard, contact ASTM directly at 610-832-9585; service@astm.org; or www.astm.org.

Important Safety Instructions

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 gate. **NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.**
4. Test the operator monthly. The gate MUST reverse on contact with a rigid object or stop or reverse 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!**

Instructions regarding intended installation:

- Install the gate operator only if:
 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 ¼ 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.
 4. Guarding is supplied for exposed rollers.
- 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.
- 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.
- 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, pressure relief valve or reduce reversing sensitivity to compensate for a damaged gate.
- 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 warning placard shall be placed adjacent to the controls.
 3. An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed.
 4. No other activation device shall be connected.
- Controls intended for user activation must be located at least ten feet (10') 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 should have a security feature to prevent unauthorized use.
- 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.
- A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
- For gate operators utilizing a non-contact sensor:
 1. See the 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 in the opening direction.
 3. One or more non-contact sensors shall be located where the risk of entrapment or obstruction exist, such as the perimeter reachable by a moving gate or barrier.

- For gate operators utilizing contact sensors:
 1. One or more contact sensors shall be located where the risk of entrapment or obstruction exist, 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 contact sensor 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 obstructions. A wireless contact sensor shall function under the intended end-use conditions.
 6. One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).

Important Notices

Vehicular gate operator products provide convenience and security. However, gate operators must use high levels of force to move gates and most people underestimate the power of these systems and do not realize the potential hazards associated with an incorrectly designed or installed system. These hazards may include:

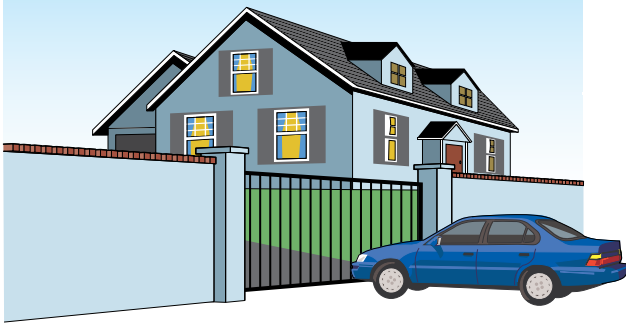
- Pinch points
- Entrapment areas
- Reach through hazards
- Absence of entrapment protection devices
- Improperly located access controls
- Absence of vehicle protection devices
- Absence of controlled pedestrian access

In addition to these potential hazards, automated vehicular gate systems must be installed in accordance with the UL-325 Safety Standard and the ASTM F2200 Construction Standard. Most lay persons are unaware of, or are not familiar with, these standards. If an automated vehicular gate system is not properly designed, installed, used and maintained, serious injuries or death can result. Be sure that the installer has instructed you on the proper operation of the gate and gate operator system.

Be sure that the installer has trained you about the basic functions of the required reversing systems associated with your gate operating system and how to test them. These include reversing loops, inherent reversing system, electric edges, photoelectric cells, or other external devices.

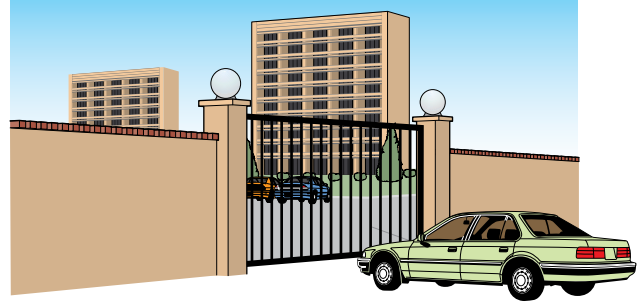
- This Owner's Manual is your property. Keep it in a safe place for future reference.
- Be sure that all access control devices are installed a minimum distance of 10 feet away from the gate and gate operator, or in such a way that a person cannot touch the gate or gate operator while using the device. If access control devices are installed in violation of these restrictions, immediately remove the gate operator from service and contact your installing dealer.
- Loops and loop detectors, photo-cells or other equivalent devices must be installed to prevent the gate from closing on vehicular traffic.
- The speed limit for vehicular traffic through the gate area is 5 MPH. Install speed bumps and signs to keep vehicular traffic from speeding through the gate area. Failure to adhere to posted speed limits can result in damage to the gate, gate operator, and to the vehicle.
- Be sure that all persons who will use the gate system are familiar with the proper use of the gate and gate operator and are familiar with the possible hazards associated with the gate system.
- Be sure that warning signs are permanently installed on both sides of the gate in an area where they are fully visible to traffic.
- It is your responsibility to periodically check all entrapment protection devices. If any of these devices are observed to function improperly, remove the operator from service immediately and contact your installing or servicing dealer.
- Follow the recommended maintenance schedule.
- Do not allow children to play in the area of the operator or to play with any gate-operating device.
- To remove the gate operator from service, operate the gate to the full open position and then shut off power to the operator at the service panel.

UL325 Entrapment Protection



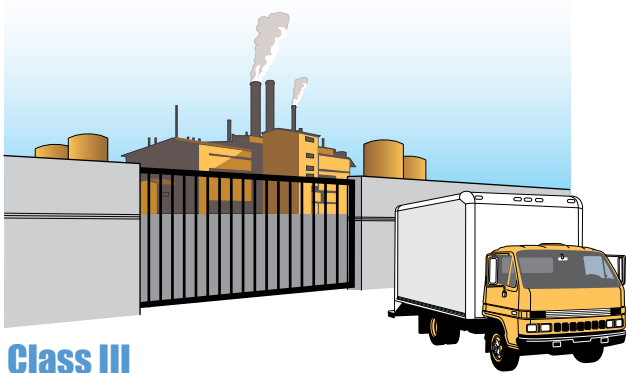
Class I

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



Class II

A vehicular gate operator (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 III

A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.



Class IV

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

This table illustrates the entrapment protection requirements for each of the four UL325 classes.

UL325 Classifications	Horizontal Slide, Vertical Lift, Vertical Pivot		Swing and Vertical Barrier (arm)	
	Primary Protection	Secondary Protection	Primary Protection	Secondary Protection
Class I and II	A	B1, B2 or D	A or C	A, B1, B2, C or D
Class III	A, B1 or B2	A, B1, B2, D or E	A, B1, B2 or C	A, B1, B2, C or D
Class IV	A, B1, B2 or D	A, B1, B2, D or E	A, B1, B2, C or D	A, B1, B2, C, D or E

- A** - Inherent entrapment protection system.
- B1** - Provision for connection of, or supplied with, a non-contact sensor (photoelectric sensor or the equivalent). When used as the PRIMARY device, must be monitored.
- B2** - Provision for connection of, or supplied with, a contact sensor (edge device or the equivalent). When used as the PRIMARY device, must be monitored.
- C** - Inherent adjustable clutch or pressure relief device.
- D** - Provision for connection of, or supplied with, an actuating device requiring continuous pressure to maintain opening or closing motion of the gate.
- E** - An inherent audio alarm.

Glossary

GATE - A moving barrier such as a swinging, sliding, raising, lowering, or the like, barrier, that is a stand-alone passage barrier or is that portion of a wall or fence system that controls entrance and/or egress by persons or vehicles and completes the perimeter of a defined area.

RESIDENTIAL VEHICULAR GATE OPERATOR – CLASS I - A vehicular gate operator (or system) intended for use in a home of one-to four single family dwelling, or garage or parking area associated therewith.

COMMERCIAL / GENERAL ACCESS VEHICULAR GATE OPERATOR - CLASS II - A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotels, garages, retail store, or other building servicing the general public.

INDUSTRIAL / LIMITED ACCESS VEHICULAR GATE OPERATOR - CLASS III - A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

RESTRICTED ACCESS VEHICULAR GATE OPERATOR - CLASS IV - A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

VEHICULAR BARRIER (ARM) OPERATOR (OR SYSTEM) - An operator (or system) that controls a cantilever type device (or system), consisting of a mechanical arm or barrier that moves in a vertical arc, intended for vehicular traffic flow at entrances or exits to areas such as parking garages, lots or toll areas.

VEHICULAR HORIZONTAL SLIDE-GATE OPERATOR (OR SYSTEM) - A vehicular gate operator (or system) that controls a gate which slides in a horizontal direction that is intended for use for vehicular entrance and exit to a drive, parking lot, or the like.

VEHICULAR SWING-GATE OPERATOR (OR SYSTEM) - A vehicular gate operator (or system) that controls a gate which moves in an arc in a horizontal plane that is intended for use for vehicular entrance and exit to a drive, parking lot, or the like.

SYSTEM - In the context of these requirements, a system refers to a group of interacting devices intended to perform a common function.

WIRED CONTROL - A control implemented in a form of fixed physical interconnections between the control, the associated devices, and an operator to perform predetermined functions in response to input signals.

WIRELESS CONTROL - A control implemented in means other than fixed physical interconnections (such as radio waves or infrared beams) between the control, the associated devices, and an operator to perform predetermined functions in response to input signals.

INHERENT ENTRAPMENT PROTECTION SYSTEM - A system, examples being a motor current or speed sensing system, which provides protection against entrapment upon sensing an object and is incorporated as a permanent and integral part of the operator.

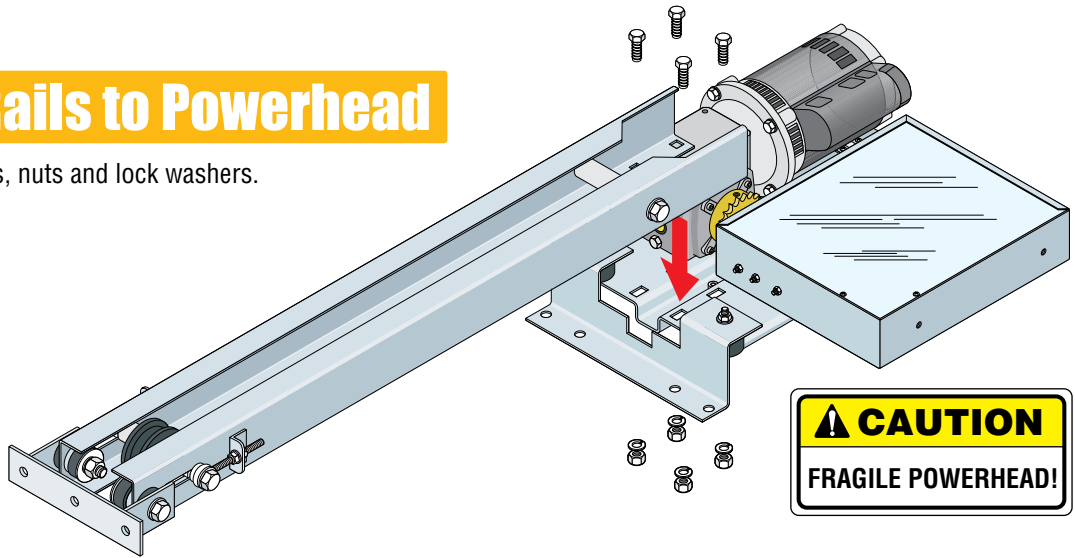
EXTERNAL ENTRAPMENT PROTECTION DEVICE - A device, examples being an edge sensor, a photoelectric sensor, or similar entrapment protection device, which provides protection against entrapment when activated and is not incorporated as a permanent part of an operator.

ENTRAPMENT - The condition when an object is caught or held in a position that increases the risk of injury.

SECTION 1 - INSTALLATION

1.1 Attach Rails to Powerhead

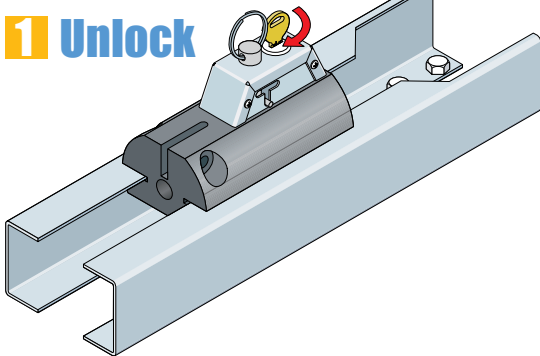
Secure rails with 4 bolts, nuts and lock washers.



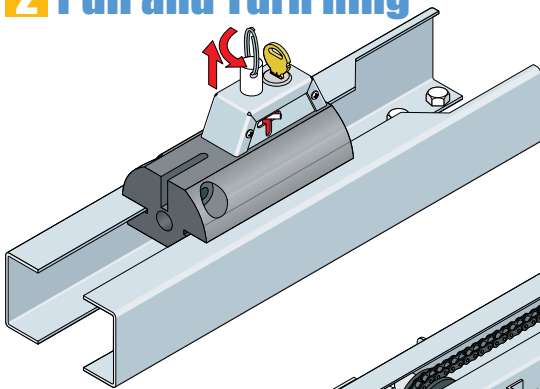
1.2 Manual Release and Chain Connection

Cut wire ties and route chain around gear reducer's sprocket and through unlocked carriage assembly (To unlock assembly, use key to unlock release ring, pull ring up and rotate 45° to release spring loaded chain catch). Connect chain together with double master link.

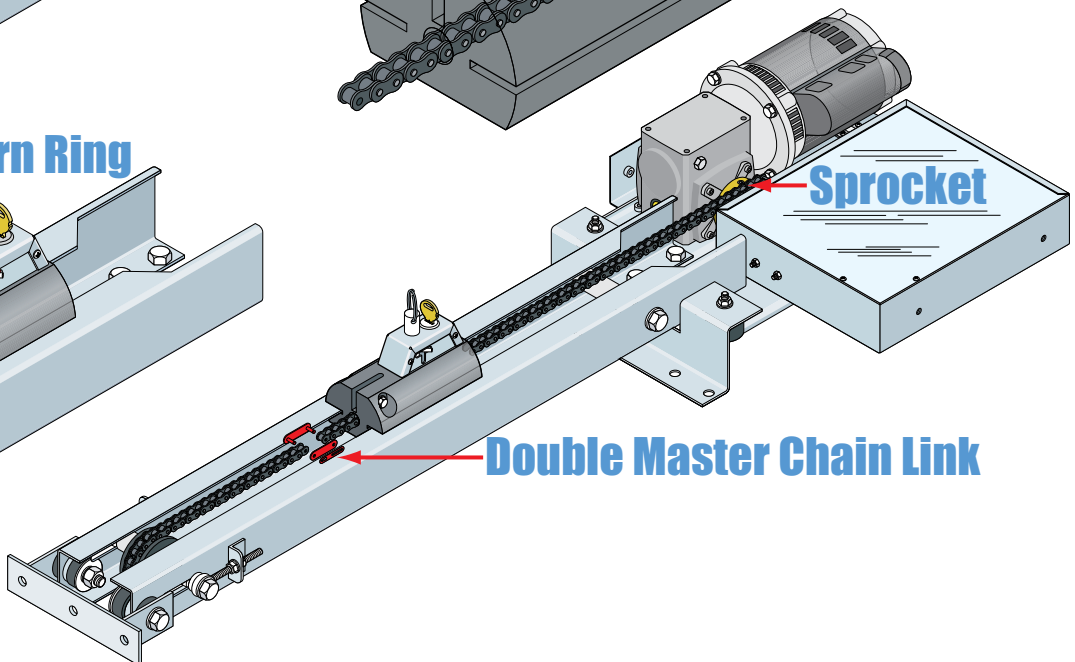
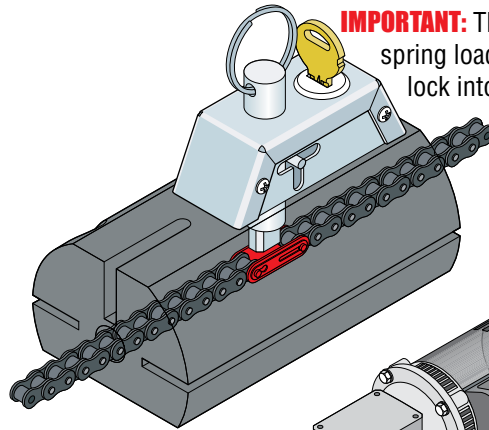
1 Unlock



2 Pull and Turn Ring

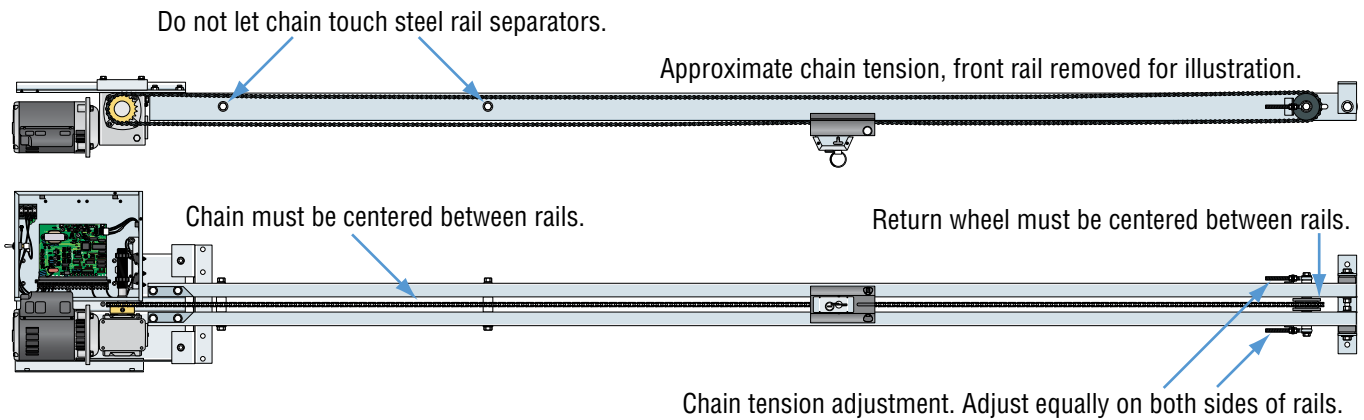


IMPORTANT: The carriage assembly's spring loaded chain catch will only lock into place in the double master chain link.



1.3 Adjust Chain Tension

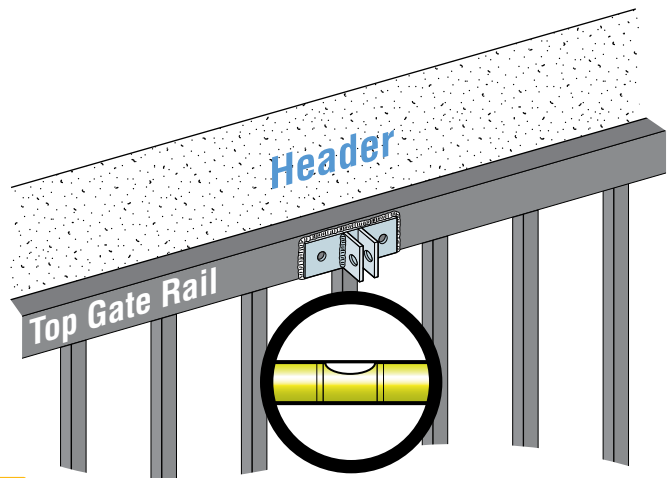
Do not overtighten chain. Make adjustments equally on both sides of rails. Chain will need final adjustment after operator has been mounted. Chain will stretch over time and will need to be tightened.



1.4 Attach Gate Bracket

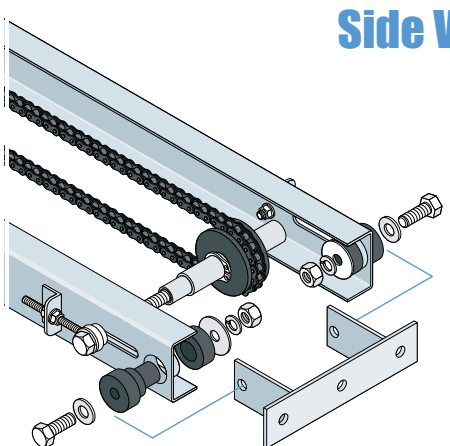
Install the gate bracket on the top rail of the gate by bolting or welding. **Bracket must be mounted level and centered on gate!**

Check all local building codes and ordinances to ensure compliance.



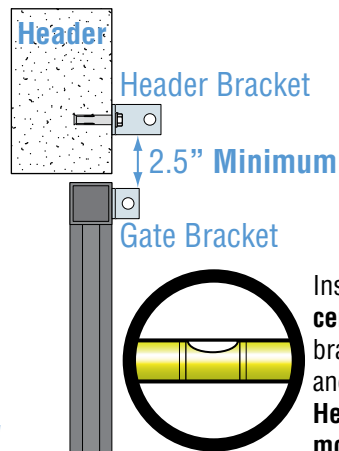
1.5 Attach Header Bracket

Center the header bracket above the top of the gate bracket a **minimum** of 2.5 inches from the bottom of the header bracket. Check the gate's opening swing path, some gates will swing open higher than the bottom of the header and could hit the rails if they are mounted too low. **Header bracket must be securely mounted.**

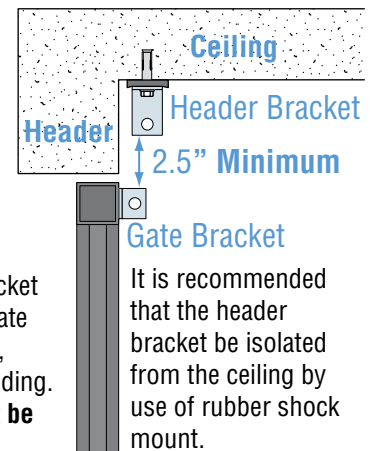


Header Bracket Assembly

Side View of Gate Opening

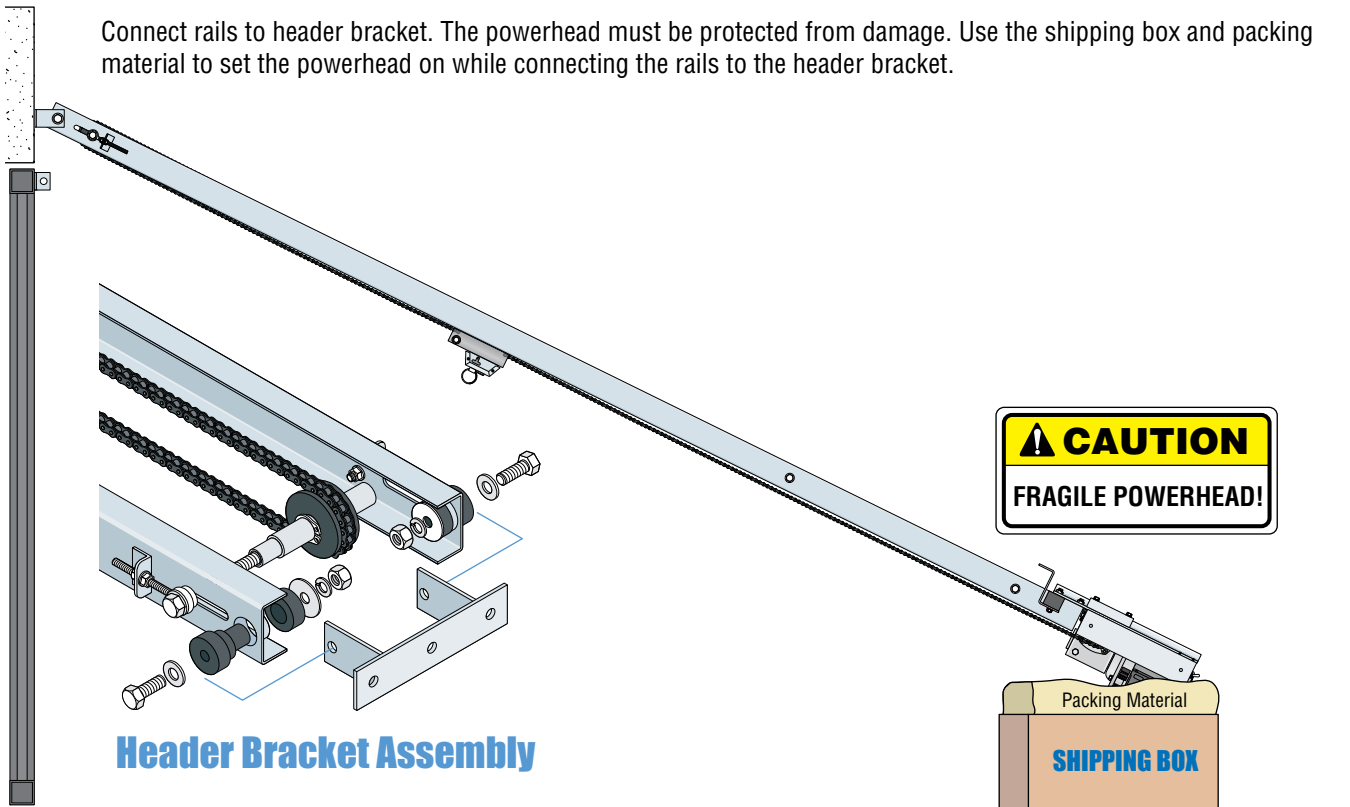


Alternate Mounting

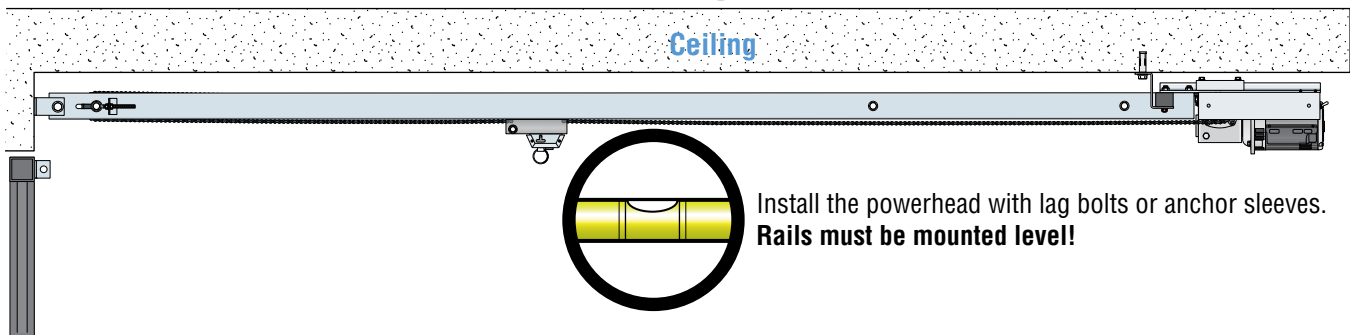


1.6 Mount Powerhead and Finish Installation

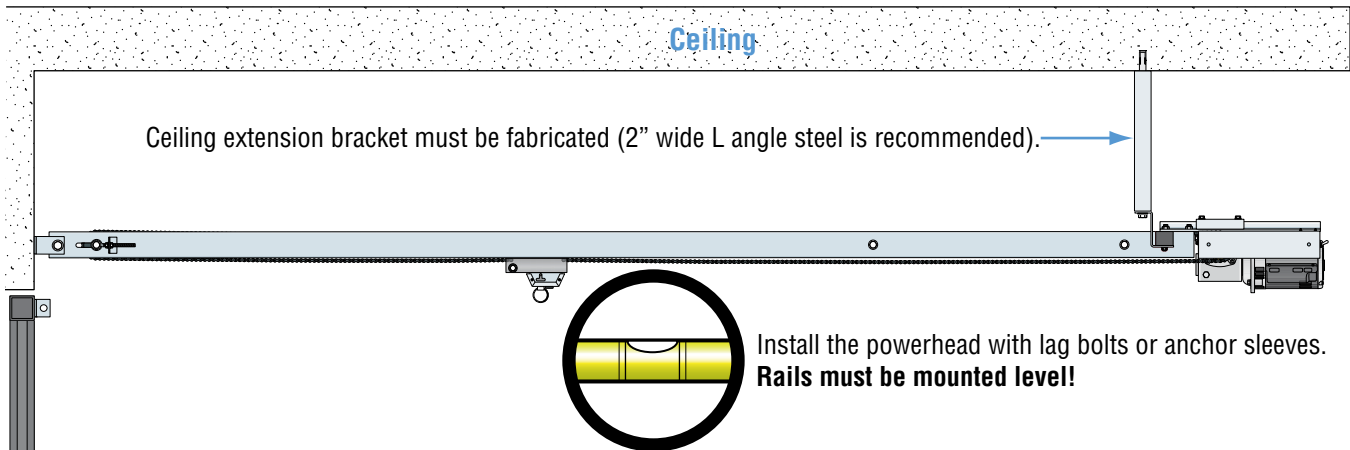
Connect rails to header bracket. The powerhead must be protected from damage. Use the shipping box and packing material to set the powerhead on while connecting the rails to the header bracket.



Mount Powerhead Directly to Ceiling

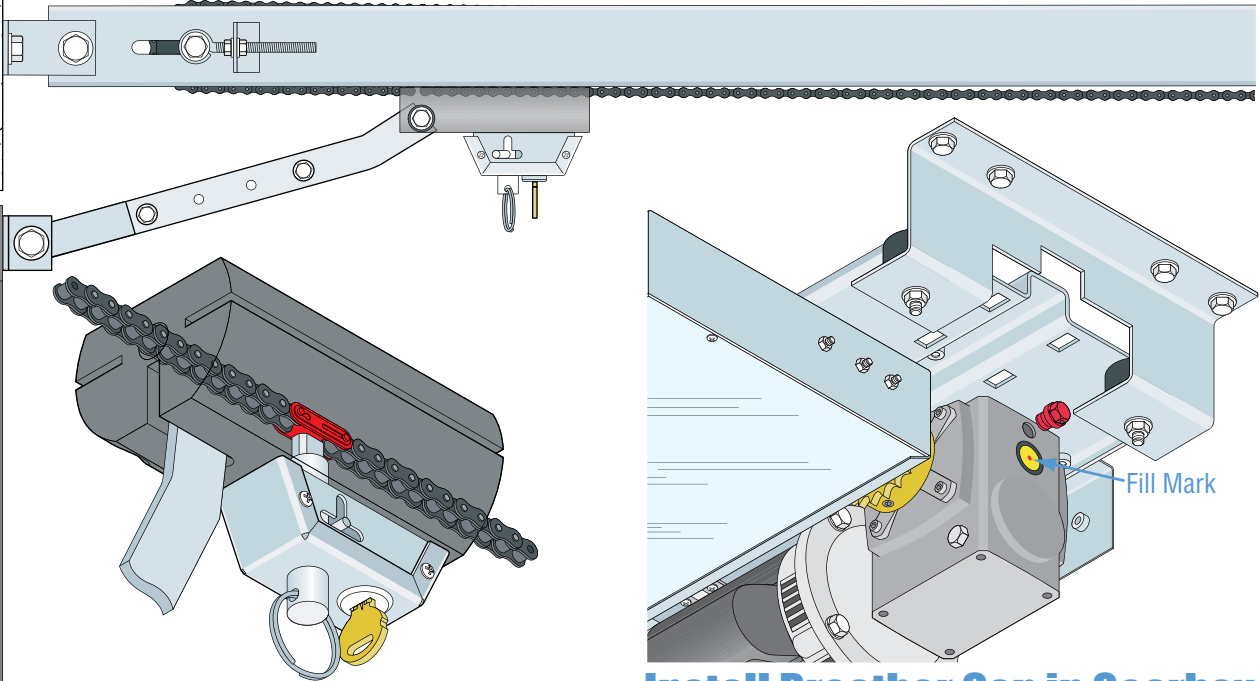


Mount Powerhead Using a Ceiling Extension Bracket



Connect Carriage Arm

Carriage assembly must be unlocked. After connecting the arm, manually raise and lower the gate, be sure the gate is operating smoothly and is not binding anywhere. Any interference must be corrected now.



IMPORTANT: The carriage assembly's spring loaded chain catch will only lock into place in the double master chain link.

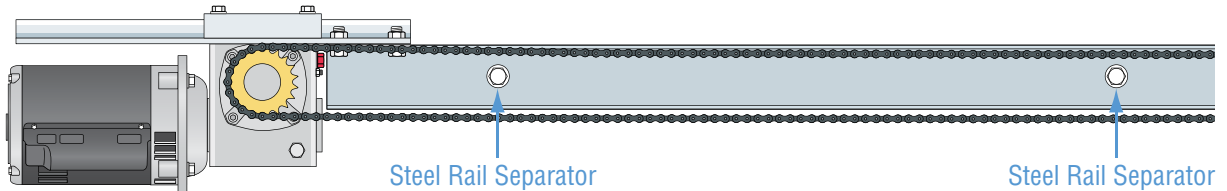
Install Breather Cap in Gearbox

Install breather cap **after** operator has been mounted. Check oil level, use Mobil SHC-629 synthetic gear oil or equivalent.

IMPORTANT: Gearbox should be filled to fill mark only. Do not overfill.

Final Chain Adjustment

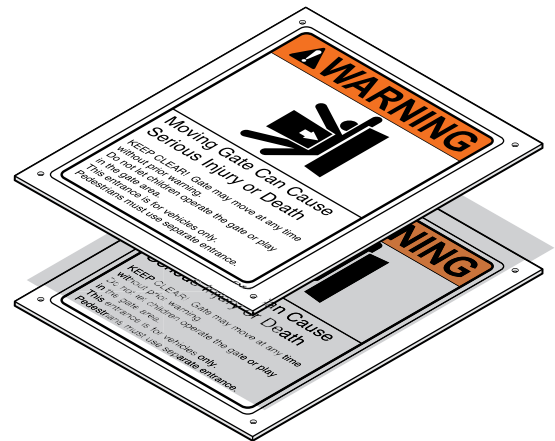
Check that the chain is not rubbing on the steel rail separators. Final tension adjustment might be needed.



Installation of Warning Signs

This DoorKing Overhead Gate Operator is shipped with two warning signs. The purpose of the warning sign is to alert uninformed persons, and to remind persons familiar with the gate system, that a possible hazard exists so that appropriate action can be taken to avoid the hazard or to reduce exposure to the hazard.

- Permanently install the supplied warning signs in locations so that the signs are visible by persons on both sides of the gate.
- Use appropriate hardware such as wood or sheet metal screws (not supplied) to install the warning signs.



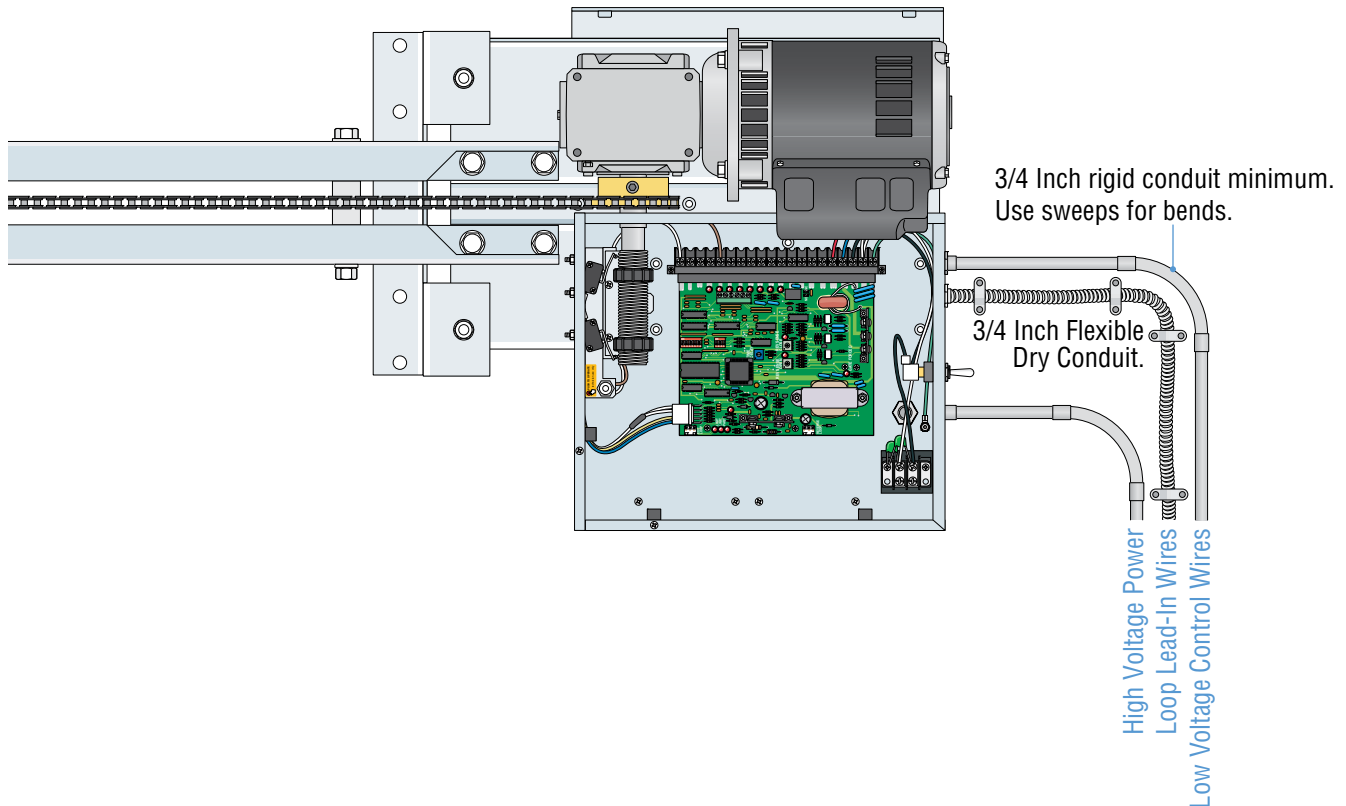
SECTION 2 - WIRING

Before attempting to connect any wiring to the operator, be sure that the circuit breaker in the electrical panel is in the OFF position. Permanent wiring must be installed to the operator as required by local electrical codes. It is recommended that a licensed electrical contractor perform this work.

Since building codes vary from city to city, we highly recommend that you check with your local building department prior to installing any permanent wiring to be sure that all wiring to the operator (both high and low voltage) complies with local code requirements.

THIS GATE OPERATOR MUST BE PROPERLY GROUNDED!!

2.1 Conduit Requirements



- The conduit requirements are for a typical overhead gate operator installation. **The conduit requirements for your application may vary from this depending on your specific needs.**
- Use only sweeps for conduit bends. Do not use 90° connectors as this will make wire pulls very difficult and can cause damage to wire insulation.
- We suggest that minimum 3/4-inch conduit be used.
- Be sure that all conduits are installed in accordance with local codes.

2.2 High Voltage Wire Run

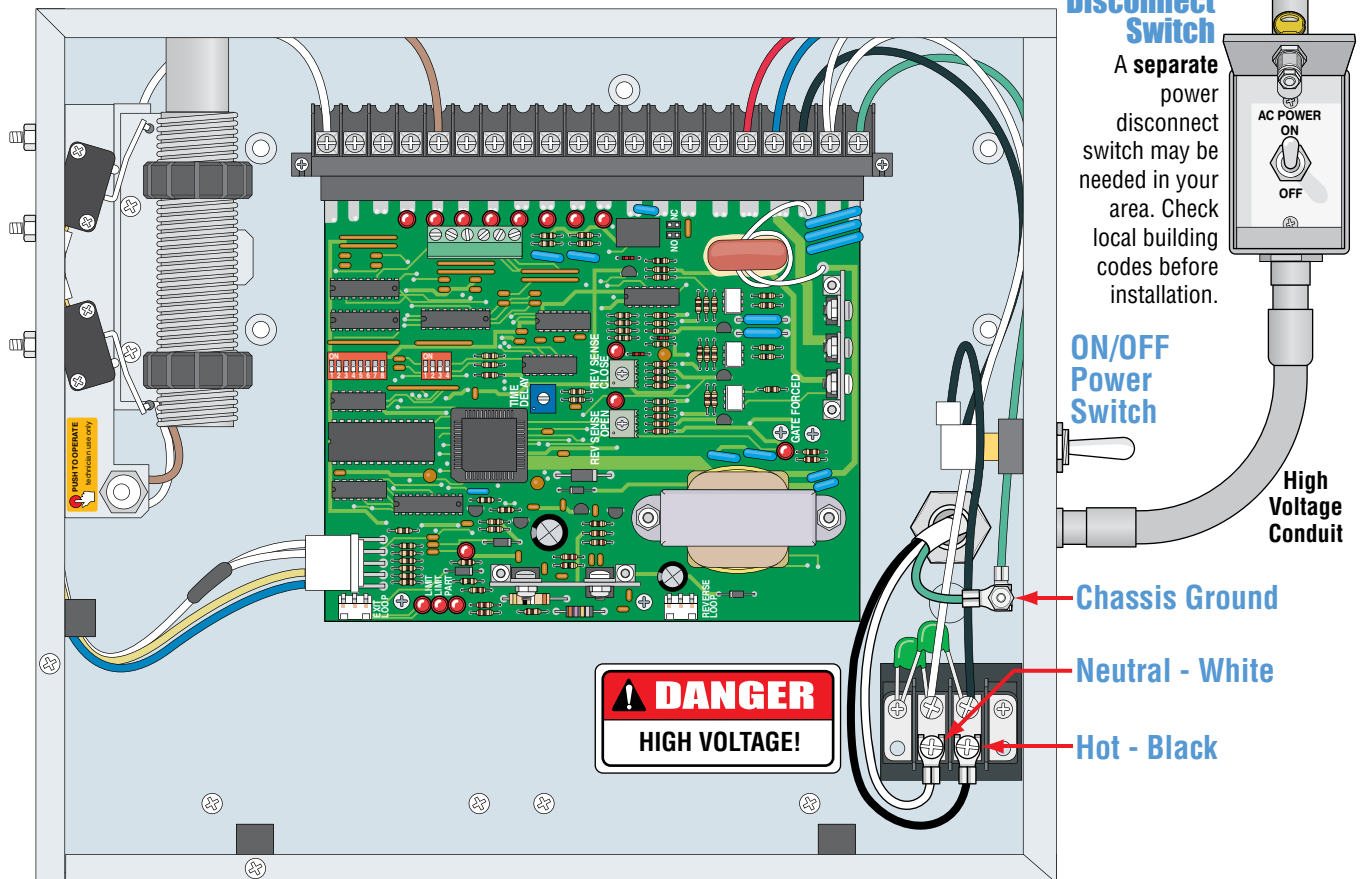
The distance shown in the chart is measured in Feet from the operator to the power source. If power wiring is greater than the maximum distance shown, it is recommended that a service feeder be installed. When large gauge wire is used, a separate junction box must be installed for the operator connection. The wire table is based on stranded copper wire. Wire run calculations are based on a power source with a 3% voltage drop on the power line, plus an additional 10% reduction in distance to allow for other losses in the system.

This table illustrates the high voltage wire size and distance limitations.

Model Type	Voltage Required	Amps Required	Wire Size / Max Distance in Feet			
			12 AWG	10 AWG	8 AWG	6 AWG
1150	115	5.4	170	275	460	685

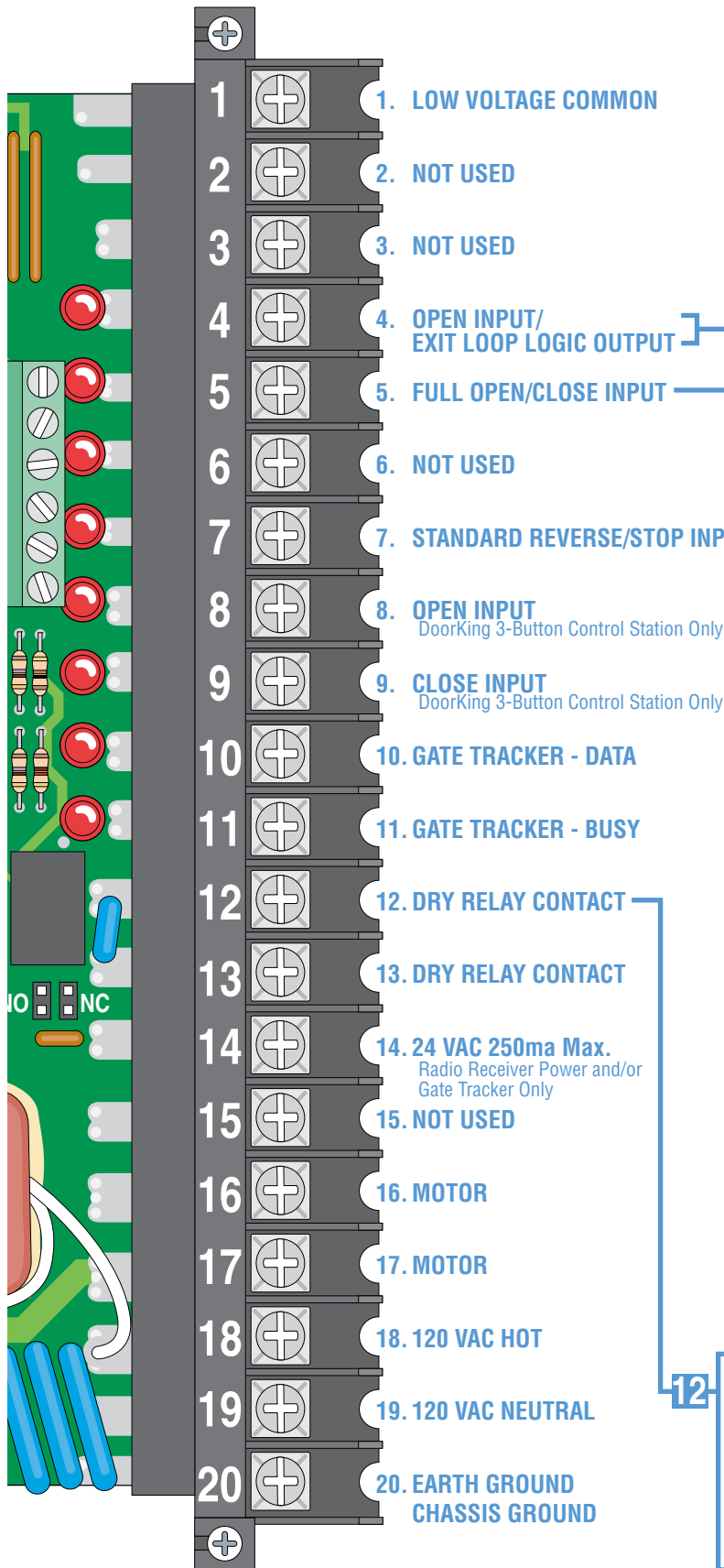
Never run high voltage and low voltage wires in the same conduit. Keep them in separate conduits.

2.3 High Voltage Terminal Connection



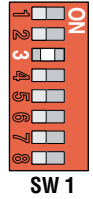
- Route incoming high voltage power through conduit and into the operator as shown.
- Be sure wiring is installed in accordance with local codes. Be sure to color code all wiring.
- Connect power wires as shown.
- It is recommended that a surge suppressor be installed on the high voltage power lines to help protect the operator and circuit board from surges and power fluctuations.

2.4 Main Terminal Description



• If SW 1, switch 3 is ON, this is an open input.

• If SW 1, switch 3 is OFF, this terminal becomes the logic output of the loop detector plugged into the exit loop plug (DoorKing Loop Detectors Only).

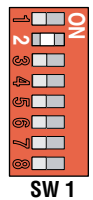


• When gate is closed, this input will open gate.

• When gate is open and auto close timer SW 1, switch 2 is turned ON, input will re-set and hold timer.

• When gate is open and auto close timer SW 1, switch 2 is turned OFF, input will close gate.

• When gate is closing, input will reverse gate.



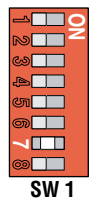
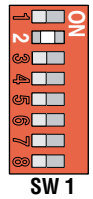
• When gate is closed or in the opening cycle, this input has no effect on gate operator.

• When gate is open and auto close timer SW 1, switch 2 is turned ON, input will re-set and hold timer.

• When gate is open and auto close timer SW 1, switch 2 is turned OFF, input will prevent gate from closing.

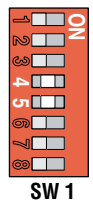
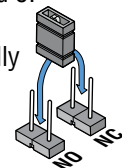
• When gate is closing and SW 1, switch 7 is turned OFF, input will reverse gate.

• When gate is closing and SW 1, switch 7 is turned ON, input will stop gate.



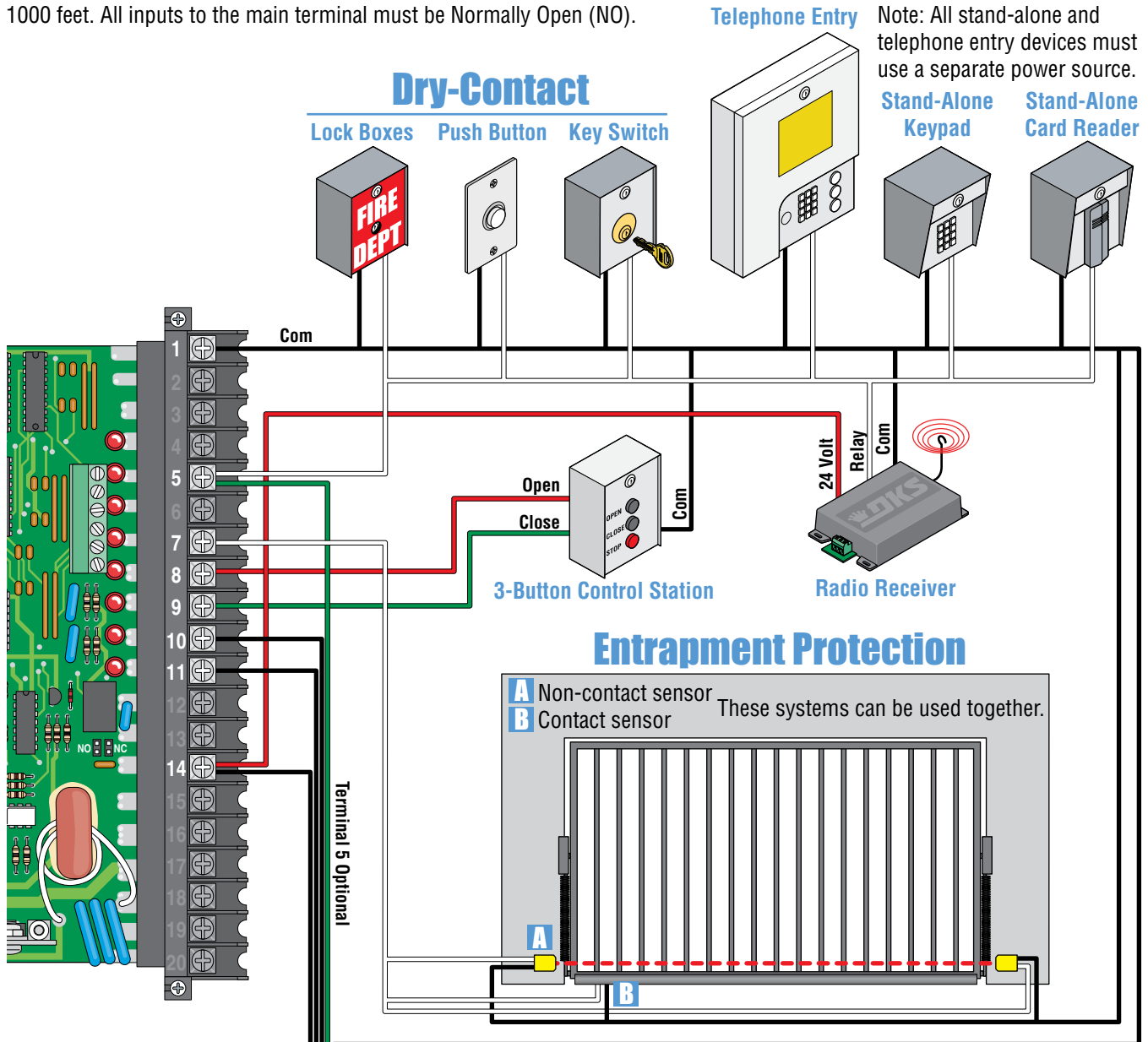
• Operation of relay is dependent on setting of SW 1, switches 4 and 5. Relay contacts can be set for Normally Open (NO) or Normally Closed (NC) operation.

Relay contact rating is 1 amp maximum at 24-volts DC.



2.5 Control Wiring

Controls must be installed far enough from the gate so that the user is prevented from coming in contact with the gate while operating the controls. Use 18 AWG wire for all low voltage wiring, maximum distance 3000 feet. Use a low voltage surge suppressor, DoorKing P/N 1878-010 if low voltage wire runs exceed 1000 feet. All inputs to the main terminal must be Normally Open (NO).



Gate Tracker

DoorKing Access Control System (Model 1833, 1835, 1837 or 1838) tracker system can be connected. This system can keep track of gate operator cycle count, shorted inputs, loop detector problems, any forced entry attempts, if the gate has struck anything during the open or close cycle, power interruptions, etc. For more detailed information refer to the Tracker Installation and Wiring Manual, DoorKing P/N 2351-010.

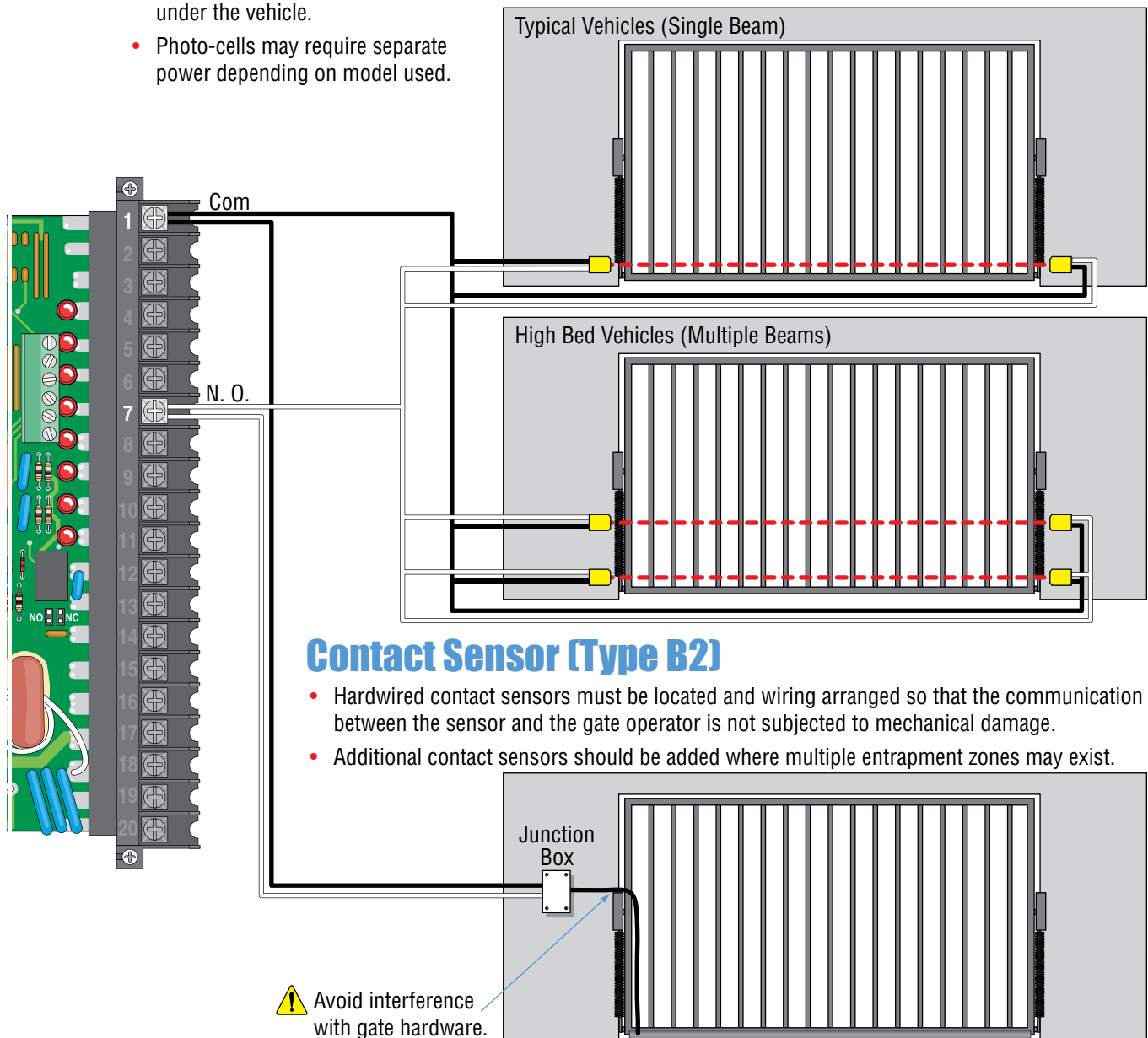
2.6 Secondary Entrapment Protection Wiring

Secondary entrapment prevention devices **must** be installed to insure a safe operating environment and reduce the risk of personnel entrapment. Secondary entrapment prevention may be provided by a combination of both type sensors (UL 325 Type B1 and B2).

- Use only UL listed (or equivalent) sensors.
- Sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier. Additional sensors should be added for additional protection where entrapment zones exist. Actual placement of sensors is dependent on the installation requirements.
- Inputs from sensors to circuit board are Normally Open (NO).
- Disconnect power to gate operator before installing the sensors.

Non-Contact Sensor (Type B1)

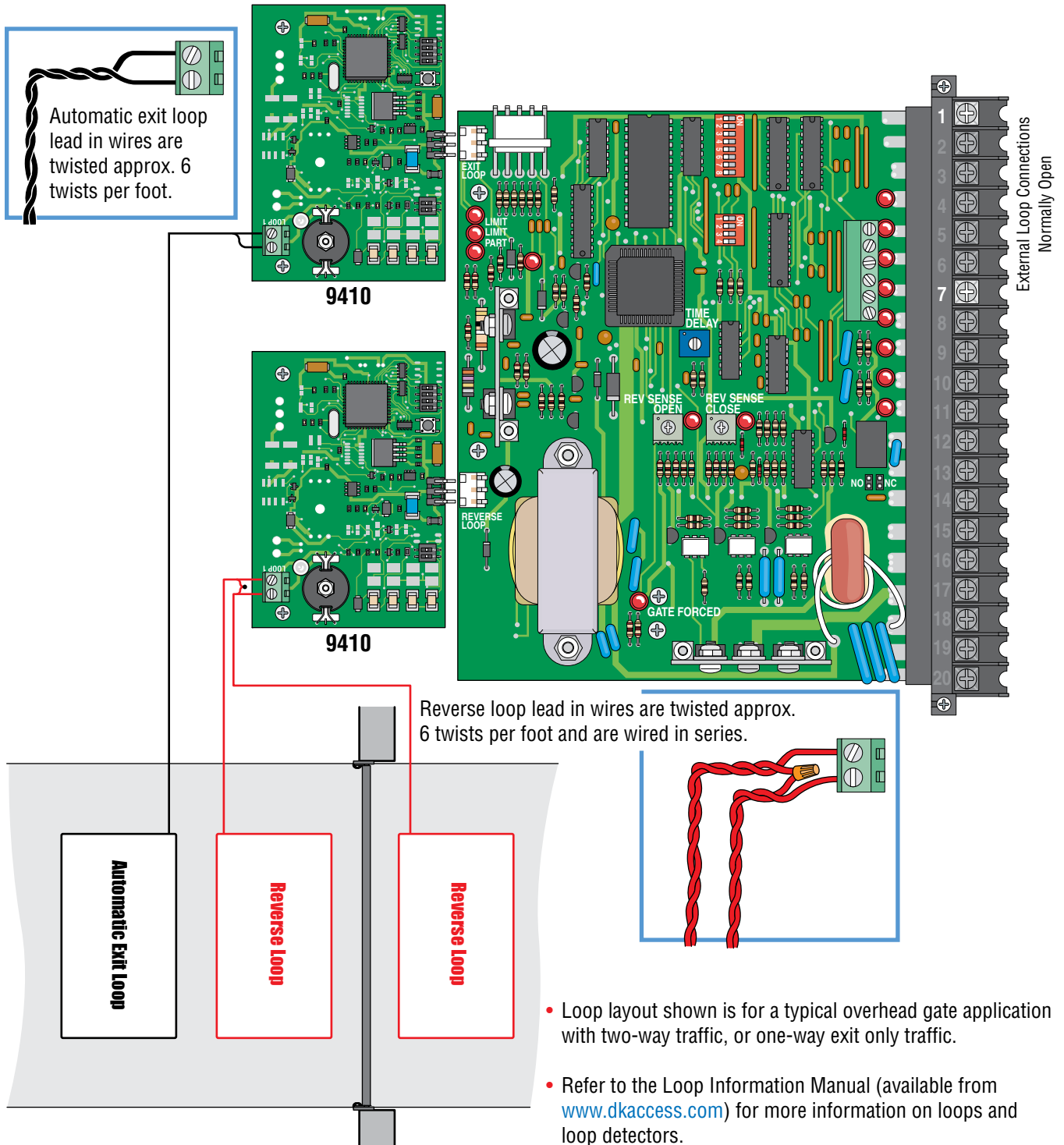
- Photo-cell should be placed so that an entrapment cannot occur at the lower travel of the gate. Do not place the photo-cell so high that a person could be trapped under the gate without activating the photo-cell.
- If high bed vehicles access the gate, a second photo-cell should be placed so that the photo-beam cannot scan under the vehicle.
- Photo-cells may require separate power depending on model used.



2.7 Loop Detector Wiring

Loop detectors **must** be installed to prevent the gate from accidentally closing on vehicles that may be in the path of the gate.

- Install 9410-101 Single Channel or 9409-101 Dual Channel DoorKing plug-in loop detectors (Sold separately).
- If using external loop detectors, use only UL listed (or equivalent) detectors. Use a separate power supply for external loop detectors. Inputs to circuit board are Normally Open (NO).
- Disconnect power to gate operator before installing any loop detectors.



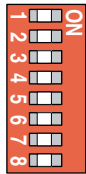
SECTION 3 - ADJUSTMENTS

The switch settings and adjustments in this chapter should be made after your installation and wiring to the operator is complete. **Whenever any of the programming switches on the circuit board are changed, power must be shut-off, and then turned back on for the new setting to take effect.**

3.1 Circuit Board Adjustments

DIP-Switches

- Set the DIP-switches on the circuit board to the desired setting. See switch-setting charts on next page.



Self Test

- Self test (when turned on) SW 2, switch 1.

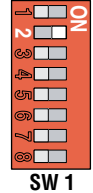


CAUTION

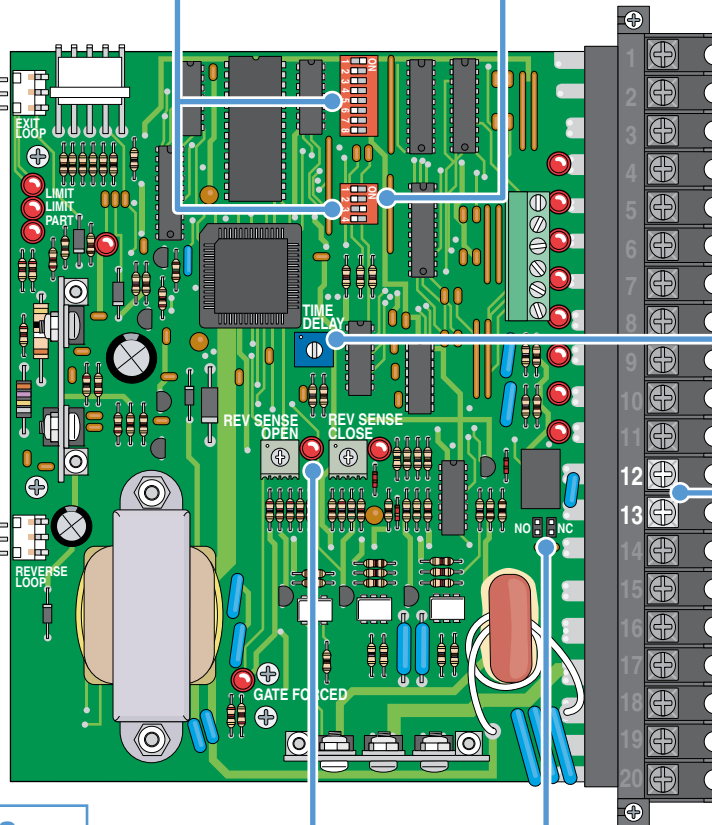
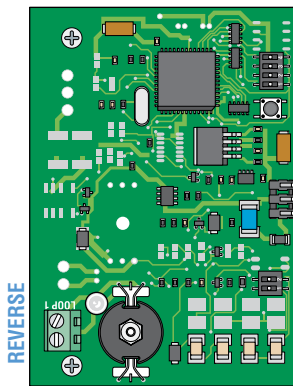
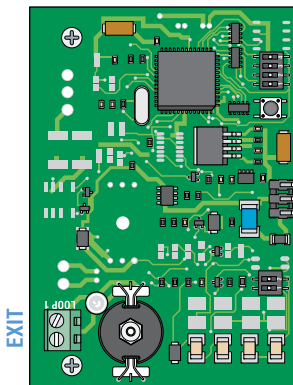
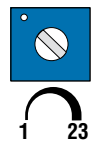
Do not run self-test with the operator connected to the gate. The drive chain must be disconnected from the operator to run the self-test. This feature is designed for bench testing **ONLY**.

Auto Close Timer

- Auto close timer (when turned on) SW 1, switch 2.

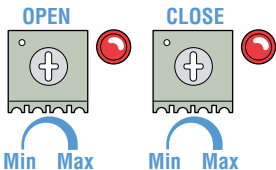


Adjust from 1 second (full counter clockwise) to approximately 23 seconds (full clockwise).

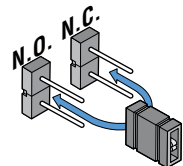


Reverse Sensors

- Adjust reversing sensitivity for OPEN and CLOSE directions.



Dry Relay Contact



- Dry relay contacts (terminals 12-13) can be set for Normally Open (NO) or Normally Closed (NC) operation by placing the relay shorting bar on the N.O. or N.C. pins respectively.

3.2 DIP-Switch Descriptions and Functions

The two DIP-switches located on the circuit board are used to program the operator to operate in various modes and to turn on or off various operating features. Whenever a switch setting is changed, power to the operator must be turned OFF and then turned back on for the new setting to take affect. Check and review ALL switch settings prior to applying power to the operator.

SW 1 (Top 8 Switches)			
Switch	Function	Setting	Description
1	Change Direction	OFF	Changes open/close direction operator should cycle open upon initial power up.
		ON	Normal setting.
2	Auto-Close Timer	OFF	Auto-close timer is OFF. Manual input (push control button) required to close gate.
		ON	Auto=close timer is ON. Adjustable from 1-23 seconds.
3	EXIT Loop Port	OFF	EXIT loop port output is sent to terminal 4 for secondary slide gate operator only.
		ON	Normal setting. EXIT loop port output is sent directly to circuit board.
4 and 5	Relay	4-OFF 5-OFF	Relay activates when gate is full open.
		4-OFF 5-ON	Relay activates when gate is not closed.
		4-ON 5-OFF	Relay activates when gate is opening and open.
		4-ON 5-ON	Relay activates when gate is opening and closing.
6	Not Used	OFF	Normal setting.
7	Reverse and Open	OFF	Normal Setting. During close cycle, input to terminal 7 will reverse and open gate.
	Stop then Close	ON	During close cycle, input to terminal 7 stops gate, after input removed, closes gate.
8	Quick Close	OFF	Normal Setting. Normal gate operation.
		ON	Opening gate will stop, then close as soon as all reversing inputs (loops, beams) have been cleared by vehicle regardless of how far the gate has opened.

Switch 1 Sets direction of the operator so that the operator cycles open upon initial power up and open command. If the operator begins to cycle close upon initial power up and open command, turn power off and change the setting on this switch.

Switch 2 Turns the auto close timer on or off. Maximum time that the close timer can be set for is approximately 23 seconds.

Switch 3 Determines if the output of the loop detector (DoorKing loop detectors only) plugged into the EXIT port will be sent directly to the microprocessor of a single slide or overhead gate operator's circuit board, or if the output is directed to the Main Terminal 4 where it can then be connected with a secondary slide gate operator ONLY. Turn switch ON, Main Terminal 4 is not used for an overhead gate operator.

Switches 4-5 These work in conjunction with each other and determine when the relay on the circuit board will be activated. This relay can be used as a switch for various functions such as illuminating a warning light when the gate is moving, or turning on a green light when the gate is full open.

Switch 6 Spare switch, not used. Leave in OFF position.

Switch 7 Determines if an input to terminal 7 will reverse and open or stop then close a closing gate. If this switch is set to stop then close (ON), input to terminal 7 will stop closing gate, once input is removed (cleared), the gate will continue to close. This is typically used to help prevent tail-gating.

Switch 8 Turning quick-close on will cause the auto close timer to close the gate after 1 second, regardless of the timer's setting. This will also cause an opening gate to stop, then close when the reverse (loop) inputs have been cleared by vehicle no matter how far the gate has opened. This feature helps prevent an unauthorized second vehicle from driving through a single authorized long open/close cycle for large gates.

SW 2 (Bottom 4 Switches)			
Switch	Function	Setting	Description
1	Self Test	OFF	Normal Setting.
		ON	Run self test - bench testing only. Operator must not be connected to gate!
2	Not Used	OFF	Normal setting.
3	Slide Gate	OFF	
	Overhead Gate	ON	Normal setting. Must be in the ON position for overhead gate operator.
4	Not Used	OFF	Normal setting.

Switch 1 This switch must be in the OFF position for normal operation. The self-test feature checks various functions of the operator. **CAUTION - Do not run self-test with the operator connected to the gate. The drive chain must be disconnected from the operator to run the self-test.**

Switch 2 Spare switch, not used. Leave in OFF position.

Switch 3 Sets the circuit board to function with slide gate operators (switch OFF) or overhead gate operators (switch ON). This switch must be left in the ON position for model 1150 Overhead Gate Operator.

Switch 4 Spare switch, not used. Leave in OFF position.

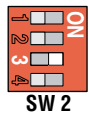
3.3 Limit Switch Adjustments

Basic DIP Settings

- Start-up direction should be ON. SW 1, switch 1.
- Auto close timer (when turned on) SW 1, switch 2.
- SW 1, switch 3 should be ON.

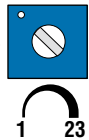


- SW 2, switch 3 should be ON.

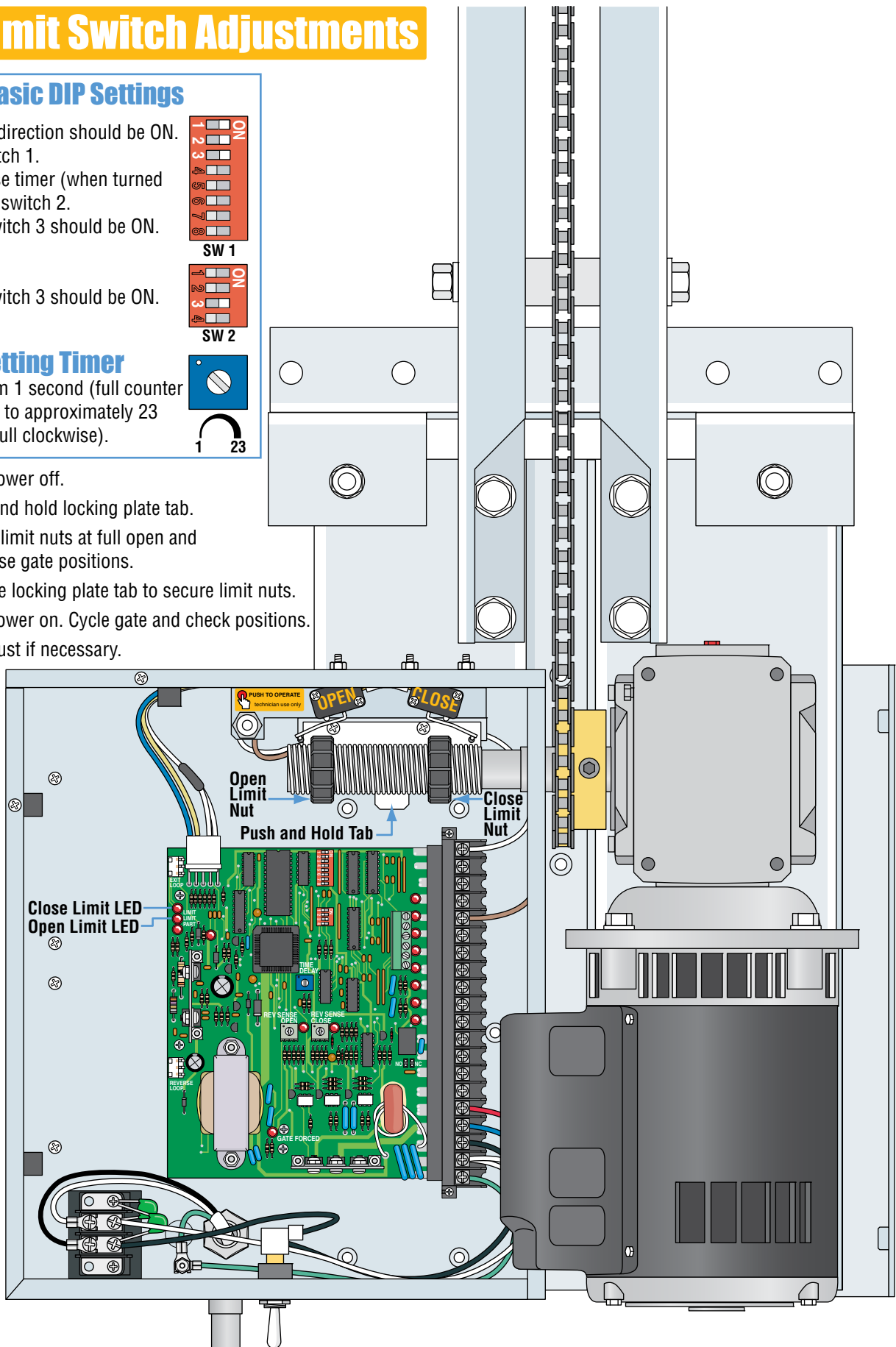


Setting Timer

Adjust from 1 second (full counter clockwise) to approximately 23 seconds (full clockwise).



- Turn power off.
- Push and hold locking plate tab.
- Adjust limit nuts at full open and full close gate positions.
- Release locking plate tab to secure limit nuts.
- Turn power on. Cycle gate and check positions.
- Re-adjust if necessary.

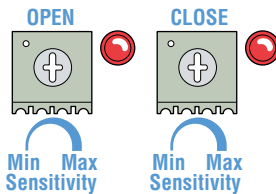


3.4 Inherent Reverse Sensors Adjustment

This vehicular gate operator is equipped with an inherent (Type A) entrapment sensing system. This system will sense an obstruction in either the opening or closing gate cycles and will cause the gate to reverse direction should an obstruction be encountered. For this system to function correctly, the gate must be properly installed and work freely in both directions.

1 After the limit switches have been adjusted, activate the gate operator by pushing “**Push to Operate**” button.

2 While the gate is **OPENING**, slowly rotate the reverse **open** sensor clockwise until the gate stops and the Open LED will light up, then rotate the sensor 1/8 turn counter-clockwise. After the gate has stopped, push “**Push to Operate**” button again to continue the open cycle of the gate. Auto close timer (If on) will then close the gate, completing the gate’s open/close cycle.



NOTE: Clockwise INCREASES the reverse sensitivity. Counter-clockwise DECREASES the reverse sensitivity.

3 While the gate is **CLOSING**, slowly rotate the reverse **close** sensor clockwise until the gate stops and the Close LED will light up, then rotate the sensor 1/8 turn counter-clockwise. The gate will automatically reverse direction and open. Auto close timer (If on) will then close the gate, completing the gate’s open/close cycle.

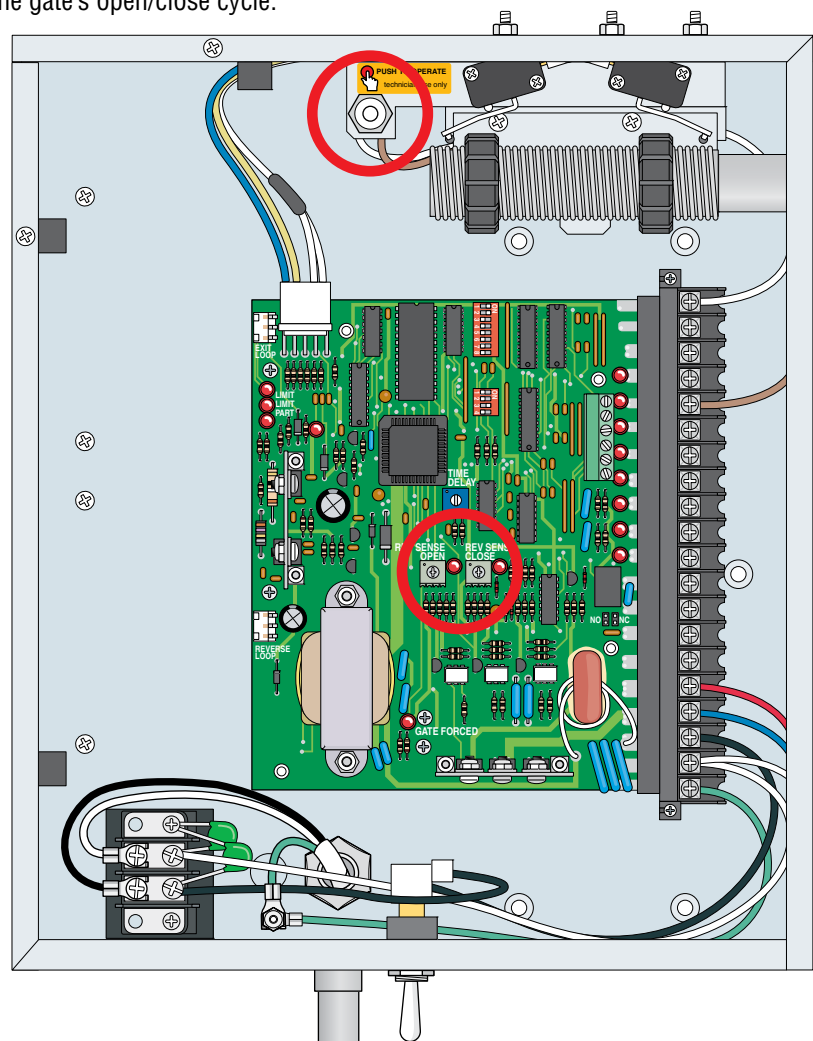
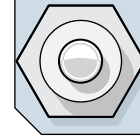
NOTE: You may have to repeat these steps a few times to get the gate to completely cycle open and closed.

Test Reverse Sensors

1 Place an immobile object along the path of the gate so that the gate strikes it while **opening**. Gate must stop! Re-adjust **Open** sensor if necessary.

2 Place an immobile object along the path of the gate so that the gate strikes it while **closing**. Gate must reverse direction and open! Re-adjust **Close** sensor if necessary.

PUSH TO OPERATE
technician use only



SECTION 4 - TECHNICAL INSTRUCTIONS

Inspection and service of this gate operator by a qualified technician should be performed anytime a malfunction is observed or suspected. High cycle usage may require more frequent service checks.

4.1 Maintenance

When servicing the gate operator, always check any secondary (external) reversing devices (loops, photo eyes, etc.) for proper operation. If external reversing devices cannot be made operable, do not place this operator in service until the malfunction can be identified and corrected.

Always check the inherent reversing system when performing any maintenance. If the inherent reversing system cannot be made operable, remove this operator from service until the cause of the malfunction is identified and corrected. Keeping this operator in service when the inherent reversing system is malfunctioning creates a hazard for persons which can result in serious injury or death should they become entrapped in the gate.

When servicing the gate operator, be sure that the AC input power is disconnected.

Operator Component	Maintenance	Monthly Interval		
		3	6	12
Chain	Check for sagging, chain must not rub against steel rail separators. Tighten if necessary. Grease chain if necessary.		✓	
Fire Dept.	Check emergency vehicle access device for proper operation.	✓		
Gate	Inspect for damage. Check gate hinges for wear and grease if necessary.		✓	
Loop(s)	Check vehicular reverse and exit loops for proper operation.	✓		
Gearbox Oil	Check oil level, should be at fill mark. Fill if necessary. Use Mobil SHC-629 synthetic gear oil or equivalent.		✓	
Primary Reverse System	Check that the gate reverses on contact with an object in both the opening and closing cycles. Adjust the reversing sensors if necessary.	✓		
Release	Check manual release for proper operation.	✓		
Secondary Reverse Device	Check secondary (external) reverse device(s) stop or reverse the gate when activated.	✓		
Complete System	Complete check of gate and gate operating system.			✓

4.2 Diagnostics Check

Have the following diagnostic tools available: VOM meter with minimum voltage memory or min-max range to check voltage and continuity. Meg-ohm meter capable of checking up to 500 megohms of resistance to properly check ground loop integrity. A malfunction can be isolated to one of the following:

- Gate Operator
- Loop System
- External Keying Devices

Use caution when checking high voltage areas: high voltage input terminal and the main terminals 16 through 19, the motor capacitor and the motor.

Check the input indicator LEDs. They should only come ON when an external keying device (card reader, push button, etc.) is activated. If any of the input LEDs are ON continuously, the gate will not operate. Disconnect the external keying devices one at a time until the LED goes OFF.

A malfunction in a loop or loop detector can cause the gate operator to hold open, or not detect a vehicle when it is present over the loop. Pull the loop detector circuit boards from the loop ports on the operator circuit board. If the malfunction persists, the problem is not with the loop system. For more information refer to the loop detector instruction sheet and the DoorKing Loop and Loop Detector Information Manual.

Check to be sure that there are no shorted or open control wires from the external keying devices to the gate operator. If a external keying device fails to operate the gate, momentarily jumper across terminals 6 and 14 on the operator circuit board. If the gate operates, this indicates that a problem exist with the external keying device and is not with the operator. Check the high voltage supply. A voltage drop on the supply line (usually caused by using too small supply voltage wires) will cause the operator to malfunction. Refer to the wire size chart on page 13.

4.3 Troubleshooting

Symptom	Possible Solution(s)
Operator will not run – power LED is OFF.	<ul style="list-style-type: none"> • Check that power to the operator is turned ON. • Transformer may be overheated. Turn power off and allow board to cool for several minutes then retest. Check for low 120 VAC power and low voltage shorts. • Check for 120 VAC at terminals 18 and 19. If voltage measures 0, check power. If voltage measures OK, check the terminal strip or replace the circuit board.
Operator will not run – power LED is ON.	<ul style="list-style-type: none"> • If a photo-cell is used as a secondary entrapment prevention device, check to be sure that the beam is not blocked. • Momentarily jumper terminal 1 to terminal 5 or press “Push to Operate” button. If the input LED does not come ON, check the terminal strip or replace the circuit board. If LED does come ON, proceed to next steps. • Be sure that the chain is not too tight. A too tight chain may cause the operator to stall. • Turn power switch OFF and remove the control board. • Place a jumper wire from terminal 18 to terminal 17. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run. Turn the power switch off and remove the jumper. • Place a jumper wire from terminal 18 to terminal 16. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run in the opposite direction. Turn the power switch off and remove the jumper. • If the motor runs in both steps above, replace the control board. If the motor does not run, or runs in only one direction, problem can be a bad motor, motor capacitor, wire connections from the control board to the motor or a bad control board.
Gate opens a short distance, stops and reverses.	<ul style="list-style-type: none"> • Disconnect the gate from the gate operator and check that the gate moves freely without any binding. • Re-adjust the open reverse sensitivity. • Replace the circuit board.
Gate opens but will not close.	<ul style="list-style-type: none"> • Check the input LEDs. Any ON will hold the gate open and indicates a problem with a external keying device. • Check the secondary safety devices. Any that are activated will hold the gate open and indicates a problem with the safety device. • Check the loop detectors. Any that are activated can hold the gate open and indicates a problem with the loop detector or in-ground loop. • SW-2, switch 3 may be set incorrectly. Be sure that this switch is in the ON position for overhead gate operation. Activate any external keying device to determine if operator returns to normal operation. • If automatic close timer is desired, be sure SW-1, switch 2 is ON. • Check motor: Place a jumper wire from terminal 18 to terminal 17. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run. Turn the power switch off and remove the jumper. Place a jumper wire from terminal 18 to terminal 16. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run in the opposite direction. Turn the power switch off and remove the jumper. Continued on next page.

Symptom	Possible Solution(s)
Gate opens but will not close.	<p>Continued from previous page.</p> <p>If the motor runs in both steps from previous page, replace the control board. If the motor does not run, or runs in only one direction, problem can be a bad motor, motor capacitor, wire connections from the control board to the motor or a bad control board.</p>
Gate closes but will not open.	<ul style="list-style-type: none"> • SW-2, switch 3 may be set incorrectly. Be sure that this switch is in the ON position for overhead gate operation. Activate any keying device to determine if operator returns to normal operation. • Check to be sure that the operator is running in the proper direction. Turn power OFF, and then back ON. Activate an external keying device. Operator should run in the open direction. If operator runs in the close direction, turn power OFF and change direction switch SW-1, switch 1. Go to the previous symptom if operator now opens but will not close. • Be sure that the respective LED on the control board lights when the external keying device connected to the respective terminal is activated. If LED does not light, momentarily place a jumper wire from terminal 1 to the input terminal being checked. If LED lights and gate opens, problem is with the external keying device. If LED does not light, replace control board. • Check motor: Place a jumper wire from terminal 18 to terminal 17. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run. Turn the power switch off and remove the jumper. Place a jumper wire from terminal 18 to terminal 16. CAUTION – HIGH VOLTAGE. Turn the power switch on. The motor should run in the opposite direction. Turn the power switch off and remove the jumper. <p>If the motor runs in both steps above, replace the control board. If the motor does not run, or runs in only one direction, problem can be a bad motor, motor capacitor, wire connections from the control board to the motor or a bad control board.</p>
Gate starts to close, then reverses to open.	<ul style="list-style-type: none"> • Re-adjust the close reverse sensitivity. • Disconnect the gate from the operator and check that the gate operates freely without any binding. • Check the loop detector LEDs and input LEDs. Any that flash ON will cause the gate to reverse. • Replace the circuit board.
Gate closes and then re-opens.	<ul style="list-style-type: none"> • Check for any input or loop detector LEDs that are ON. • Check that the operator is running in the proper direction, switch SW-1, switch 1 should be ON.
Loop detector LED is ON continuously.	<ul style="list-style-type: none"> • Activate the RESET switch on the loop detector. • Decrease loop detector sensitivity. • Check loop wire for resistance to ground with a meg-ohm meter. Should be 100 megohms or higher. If less, problem may be with loop wire. • Be sure that lead-in wire from loop is twisted. • Be sure that all loop connections are soldered. • Replace loop detector.
Loop detector LED never activates.	<ul style="list-style-type: none"> • Increase loop detector sensitivity. • Check continuity of loop wire. Should be 0 ohms. If continuity check indicates greater than 0 ohms, check all connections or replace loop wire. • Move loop detector board to the other loop detector port on the control board, then check loop operation. If loop detector still fails, replace loop board with a known good one. If problem continues, ground loop may be too small to detect vehicles – replace ground loop.
Loop detectors do not open or reverse gate.	<ul style="list-style-type: none"> • If loop detector LED illuminates when vehicle crosses over, problem may be in loop detector board. Replace with a known good detector and re-check. If problem continues, control board may be bad. • If loop detector LED does not illuminate, see above symptom.

4.4 Accessories

The following accessory items are available for the model 1150 overhead gate operator.

Contact Sensors - For use as a secondary entrapment protection device.
Miller Edge, Inc., ME120, ME123, MGO20, MGR20, MGS20.

Photo Cell - Non-contact (photo-cells) sensors for use as a secondary entrapment protection device.
P/N 8080-010 – Infrared thru-beam, 165 foot sensing distance.
P/N 8080-011 – Photo-reflective beam, 30 foot sensing distance.
P/N 8080-031 – Infrared thru-beam, 65 foot sensing distance.
P/N 8080-031 – Polarized photo-reflective, 35 foot sensing distance.

Loop Detector - Detectors plug directly into ports on circuit board simplifying wiring.
P/N 9410-010 - Single channel detector
P/N 9409-010 - Dual channel detector

Loop Wire - 18 AWG loop wire with XLPE insulation is ideal for ground loops. Available in 500 and 1000 foot rolls with red, blue or black insulation.

Pre-Fab Loops - Prefabricated ground loops. 24-foot circumference with 50-foot lead-in. Available in yellow, red or blue jackets. Not for use in asphalt roadways.

Control Station - Three button interior and exterior control stations provide manual open-close-stop gate operation.
P/N 1200-006 – Exterior / Interior
P/N 1200-007 - Interior

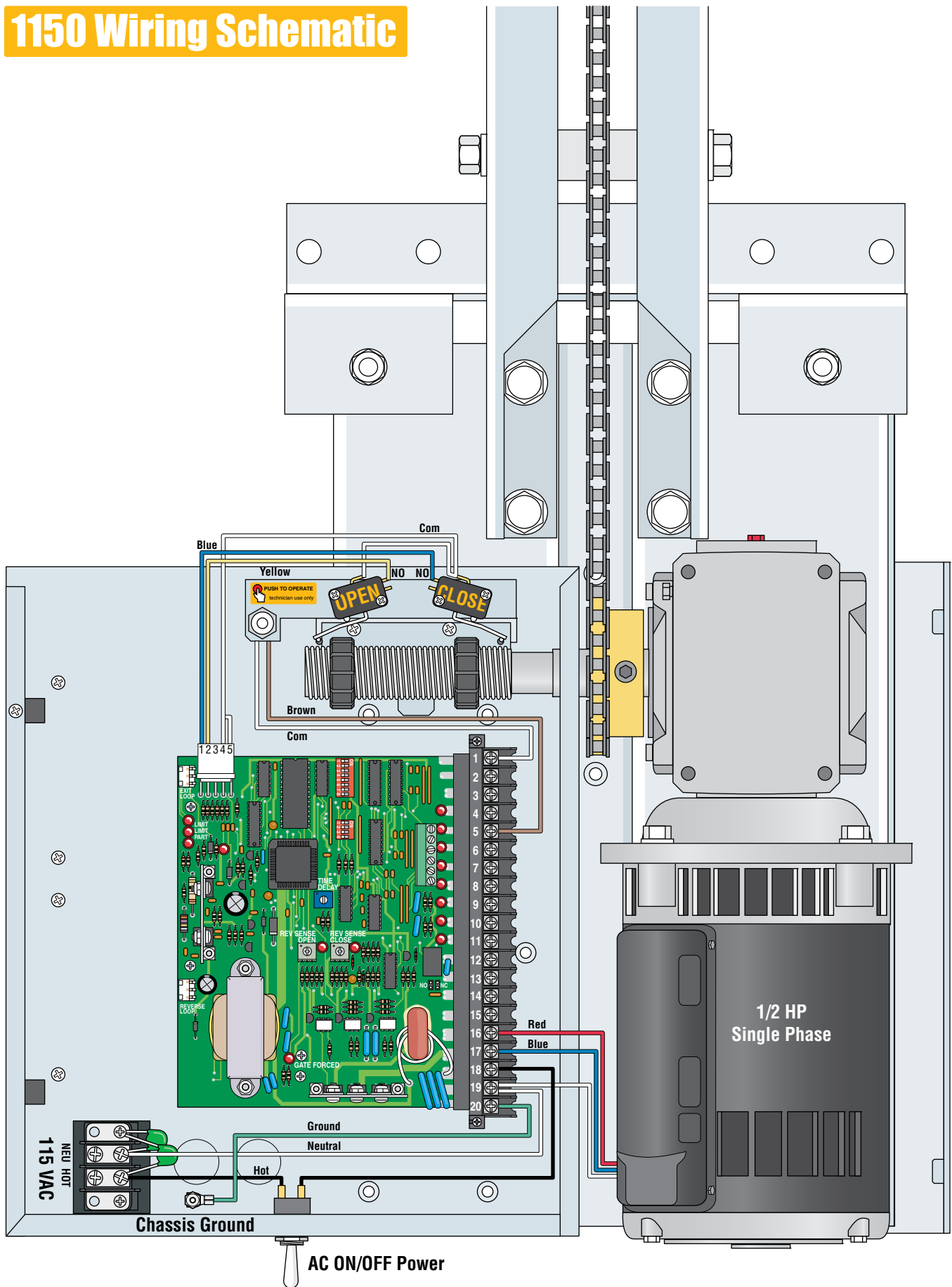
Time Clock - 7 day and 365 day time clocks can be used to automatically open gate at pre-set time and days. Compact clock fits inside the operator.
P/N 2600-791 - 7 day clock
P/N 2600-795 - 365 day clock

Surge Devices - High and low voltage surge suppressors help prevent circuit board failure caused by lightning strikes and power surges.
P/N 1876-010 - High Voltage
P/N 1878-010 - Low Voltage

Gate Scale - Use to test torque required to move gate. P/N 2600-225

Speed Bumps - Prefabricated six-foot speed bump reduces traffic speed through gate system. P/N 1610-150

1150 Wiring Schematic



Owner's Manual

1150

Overhead Gate Operator



DoorKing, Inc.
120 S. Glasgow Avenue
Inglewood, California 90301
U.S.A.

Phone: 310-645-0023
Fax: 310-641-1586