

Nice Apollo Swing Gate Opener

Vehicular Gate Control Unit

1712/1812 - 12VDC

1724/1824 - 24VDC



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CAUTIONS AND NOTES

This instruction manual is intended to aid the installer in the overall process of correct installation at the desired location. Periodically, the manual will illustrate "warnings, cautions and notes" which are items the installer should carefully read to prevent damage to the gate, gate system or personal injury to yourself or others.

EXTREMELY IMPORTANT

Anyone who installs, assists with installation or otherwise facilitates the installation in any manner should thoroughly read and understand this manual in its entirety before any attempt is made to actually begin the installation process.

ETL DEFINITIONS COMPLIANT TO UL325

- Gate - A moving barrier such as a swinging, sliding, raising, lowering, rolling, or 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 dwellings, or a 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), hotel, garages, retail store, or other buildings servicing the general public.
- Commercial / General Access Vehicular Gate Operator - Class III - A vehicular gate operator (or system) intended for use in an industrial location, loading dock area, or other location not intended to service the general public.
- Commercial / General Access Vehicular Gate Operator - Class IV - A vehicular gate operator (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.

1 - OVERVIEW

- Available with Nice T524V (24VDC Motor) swing gate operators (Max gate length: 14', 400lbs per leaf)
- Available with Nice T5X1K (12VDC Motor) swing gate operators (Max gate length: 14', 400lbs per leaf)
- Battery powered with built in AC charger.

The new Apollo MB1K Control Box houses the 1050 gate controller in a rugged, reliable chassis. The 1050 controller is easily programmed and provides numerous inputs and outputs to satisfy the functional and safety requirements of the most demanding single leaf and dual leaf swing gate installations.

An industrial design ensures that the Apollo MB1K gate controller complements any gate installation and architecture while providing the safety features that meet or exceed UL325 and UL991 specifications. The Apollo MB1K gate controller may be combined with the Nice T5X1K, or the Nice T524V swing gate actuators to create the perfect arrangement of intelligent controller with powerful motors to complete the gate installation.

This manual provides documentation that covers the layout, construction, mechanical, electrical installation, and programming of the gate controller for a typical installation. Please consult your Apollo distributor for more information regarding installations or questions not specifically covered in this manual.

1.1 - Main control board

The 1050 main control board is housed in a protective plastic enclosure that includes a 2 line LCD and with 5 dedicated buttons and 3 buttons for navigation of the setup, programming, and information menus. Connectors for power, inputs, and output peripherals are arranged around the edges of the board and clearly labeled. A plug in connector is provided for direct installation of a Nice brand receiver which can be controlled by up to 1000 transmitters. A reset RJ-11 jack offers a connection to an optional Oview programmer with Bluetooth and GSM which can be used to control the gate with a telephone, smartphone, or PC. Connectors for other Nice brand plug in accessories include 2 wire Bluebus, self-monitored photocells for entrapment protection. Dry contact inputs are provided for loop, probe, and photoelectric detectors, as well as edge sensors, guard station, and fire department control of gate opening and closing. Voltage outputs (+12VDC and +24VDC) are also made available to power safety and entrapment prevention devices, and a magnetic lock if required. On board charge control circuitry delivers reliable power to the battery.

The 1050 main control board accepts DC input voltage ranging from 10VDC to 35VDC. A 2 line LCD with dedicated buttons allows the installer to quickly program the 1050 when changes to its factory default settings need to be made. A real time clock/calendar enables programming for scheduled weekly or daily events like opening, closing, or locking the gate. Gate opening and closing speed, acceleration, soft start settings, and reversing speed may be set to factory default settings, or individually programmed per customized gate installation requirements. Built in current sensing enables inherent gate force monitoring and limiting for safety and an on board alarm indicates when two sequential obstructions have been sensed in either direction. The "Learn" function helps the gate installer configure the Apollo MB1K gate operator semi-automatically for optimum settings of gate opening and closing speeds, with simple programmable adjustments to force and speed settings that may be made with front panel programming.

1.2 - 1050 control board specifics

- Inputs for batteries.
- Low power consumption in stand-by mode.
- Socket for plug-in Nice receivers.
- Board compatible with Nice Opera System (facilitates programming and diagnostic's away from the site of installation).
- Easy programming with LCD display and dedicated buttons.
- Digital programming for auto-close, force, speed, opening delay.
- On board buttons for operating the gate (Open, Close, Stop).
- Built-in voltmeter to check input voltage, battery voltage, motors' current.
- Temperature sensor to optimize charging battery and system performance.
- Programmable service alarm.
- 2 Programmable timers (from 1 sec to 9 hours).
- Inputs for guard station, additional third party receivers, loop detectors, FIRE and UL/Edge signals.
- 2 programmable inputs (open, close, step, mid-position, hold to open, hold to close, activating timer).
- Surge suppression on every peripheral input (digital and analog).
- Ports for self-powered Nice plug-in peripherals. (BlueBus).

2 - GATE INFORMATION

2.1 - ASTM F2200

Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types. Protrusions shall not be permitted on any gate, refer to ASTM F2200 for exceptions if any.

Any non-automated gate that is to be automated in any manner should be upgraded to conform to the provisions contained within the provisions of this document and ASTM F2200 as applicable.

2.2 - Gate latches

In association with this gate controller and these swing gate operators, at no time should manual gate latches or locks be used. The forces applied to a swing gate operator could be in excess of those forces which are safe for bystanders. Should unnecessary forces be applied to a gate system which is in the locked position, the catastrophic failure of the gate or locking mechanism could result in substantial damage, extensive physical injury and or death.

2.3 - Specific applications

This swing gate operators are intended for those locations where vehicle traffic is intended to be controlled through the use of an entryway obstruction (gate). The gate system should be made of closed material types which prevent any body part from entering, becoming entangled or otherwise entering the gate in any manner. If the gate is not fully closed off from access, the opening or closing of the gate system may result in severe damage, injury or death.

2.4 - Swing gates

Swing gates are designed to swing or move horizontally across an entry control point to prevent or allow controlled access by authorized persons or equipment. Swing gate systems are not necessarily completely autonomous systems, and require regular maintenance and inspection on a periodic schedule. Although with certain safety devices in place the gate system could operate as a completely independent system free from human interaction for a defined period of time, human inspection and testing is required to ensure longevity and safe operation over long periods of time.

2.5 - General requirements

- Safety and security are obviously a number one priority for both the manufacturer and the end user. As a result this manual has been written to make all persons fully aware of the responsibilities required to ensure constant safety, security and longevity are acquired throughout the life of the system.
- The manufacturer of this swing gate system has performed countless hours of testing, analysis and statistical control analysis to ensure that this operator performs its intended function for extended periods of time. The installer should ensure and verify that all required safety devices are installed correctly and in a manner consistent with the requirements of this manual. Additionally, all devices, security devices, safety devices, sensors and other affiliated attachments are installed in a robust manner that will prevent their accidental damage, removal or incidental tampering.
- A basic requirement for this system to operate correctly is that at any time a sensor is triggered, covered, disconnected or otherwise tampered with, that the entire system ceases to function. If any part of the gate safety system is removed or triggered, an immediate safety action by the gate operator is expected (retraction or stoppage). If the gate safety system is not functional, or fails to operate within these guidelines, the gate should be immediately removed from service until repairs can be made.
- Any gate system that is open or has slats, bars or other material which allows an individual to stick their hands, head, or feet through the material, must be converted or covered in such a manner so as to prevent such future actions. Application of materials, and how to modify the gate system is up to the end user or installer, however care should be taken to prevent such human interaction into the moving gate system. No entry into the gate is ever authorized and should be prevented by whatever measures are required for that specific installation. Care should always be used during installation!
- Loops and loop detectors, photocells or other equivalent devices must be installed with this gate operator 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, operator, and to the vehicle.
- Be sure that all residents are familiar with the proper use of the gate and gate operator. Be sure that all residents are familiar with the possible hazards associated with the gate system.
- Be sure that all 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 reversing 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 of one inspection per every 180 days of use.
- Do not allow children to play in the area of the operator or to play with any gate operating device.
- Be sure that all activating devices are installed a minimum distance of 8 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 activating device. If activating devices are installed in violation of these restrictions, immediately remove the gate operator from service and contact your installing dealer.
- To remove the gate operator from service, operate the gate to the full open position, shut off power to the operator at the service panel, and disconnect batteries.



THIS AUTOMATIC GATE IS NOT FOR PEDESTRIANS!



This Automatic gate opener is designed for vehicular traffic. It is powerful and can cause serious bodily injury or death. Accordingly, direct all pedestrian traffic to a separate walk through gate.

3 - SAFETY AND CAUTIONS

WARNING

IMPORTANT SAFETY INSTRUCTIONS

WARNING - TO REDUCE THE RISK OF INJURY OR DEATH READ AND FOLLOW ALL INSTRUCTIONS.

- Never let children operate or play with gate controls. Keep the remote control away from children.
- Always keep people and objects away from gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.
- Test the operator periodically. 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.
- Use the emergency release only when the gate is not moving.
- KEEP GATES PROPERLY MAINTAINED. Read the owner's manual. Have a qualified service person make repairs to gate hardware.
- The entrance is for vehicles only. Pedestrians must use separate entrance.
- SAVE THESE INSTRUCTIONS!

3.1 - Properly installed safety devices

Safety devices are used to sense, register and prevent damage to vehicular traffic which may block the path of the gate system. If properly installed and inspected for functionality within the prescribed maintenance procedures, the safety devices should prevent the gate system from inflicting harm or damage as a result of its opening and closing action.

3.2 - Safety signs, notices to personnel warning signs

Safety devices must alert all who may enter the gate system area, as to the danger posed by moving equipment. Safety features must be installed and work correctly, such as the infrared beam. This safety device prevents serious injury or death as a result of the gate closing while an object or person blocks the gate operating pathway. An optional flashing lamp that is activated any time the gate is moving should be added in addition to the aforementioned safety features.

3.3 - Gate system safety devices

Automatic gate operators are designed to move a heavy steel gate. Great amounts of force are sometimes used to move these heavy systems. The automatic gate system may cause significant damage or injury if the path of the gate is obstructed. All sensors, safety devices and warning notices must be in place and operable in order for this system to operate properly. It is the installer's responsibility to install this system properly and to ensure its correct and safe operation.

3.4 - Infrared beams and warning signs

Infrared beams are used to inform the control board that an obstruction is present. Safety devices must be installed properly and inspected periodically to ensure continued reliability and safety. Safety devices, safety sensors, warning signs and notices of moving equipment danger must be installed and readily visible by all paths of approach to the gate system. Failure to post warnings could result in loss of life, damage or physical injury.

3.5 - Establish the location

The installer of this system needs to establish the location of the opener in accordance with instructions contained within this manual. A typical layout is provided at the end of this manual with a nominal basic drawing. It is the installer's responsibility to ensure that the opener is installed in such a fashion so as to prevent binding, pinching or improper articulation of the system throughout its actuation cycle.

3.6 - Read and follow all instructions

3.7 - Keep children away

Never let children operate or play with gate controls. Keep the remote control away from children.

3.8 - Test the gate system

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. Test force and correct functionality for photo-eyes and other safety devices at least every 6 months. ONLY USE the MANUAL RELEASE when the gate is not moving or when the unit fails or in case of power outage.

- Turn the power to the gate controller OFF and disconnect batteries before using the emergency release. The ON/OFF switch for the gate operator is located adjacent to the main controller board.

3.9 - Keep gates properly maintained

Read the owner's manual. Have only a qualified service person make repairs. Unqualified service technicians are not recommended.

4 - INSTALLATION NOTES

Before installing and/or operating the gate opener, installers and/or users should do the following:

- Confirm the gate operator being installed is appropriate for the application.
- Confirm the gate is designed and built according to current applicable published industry standards.
- Confirm all appropriate features and accessory devices are being incorporated, including both primary and secondary entrapment protection devices.
- Make sure the gate works freely before installing the operator.
- Repair or service worn or damaged gate hardware before installing the operator.
- Adjust the FORCE device to the minimum force setting that allows reliable gate operation.
- Install operator inside fence line (DO NOT install operator on public side of fence line).
- Swinging gates shall not open into public access areas.
- Install a proper electrical ground to a gate operator.
- Install keypad controls where users cannot touch, or reach through gate while operating controls, which is a minimum of 8 feet from the gate.
- Install controls where user has full view of gate operation.
- Install all warning signs (In accordance with UL 325) on both sides of the gate to warn persons in the area of potential hazards associated with the automatic vehicular gate operation.

- A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
- Test all features for proper functions before placing the automatic vehicular gate opener into service.
- Demonstrate the basic functions and safety features of the gate system to owners/end users/general contractors, including how to turn off power and how to operate the manual release feature.
- Leave safety instructions, product literature, installation manual and maintenance instructions with end user.
- Explain to the owners/users the importance of a service contract that includes a routine testing of the entire system including the entrapment protection devices, and explain the need for the owners to insure that this testing is performed routinely.
- Offer the owner/end user a maintenance contract, or contact them regularly to offer maintenance.
- See instructions on the placement of non contact sensors for each type of application.

4.1 - Follow Instructions

Always follow all instructions included in this manual to ensure safety and the longevity of the operator.

4.2 - Intended usage

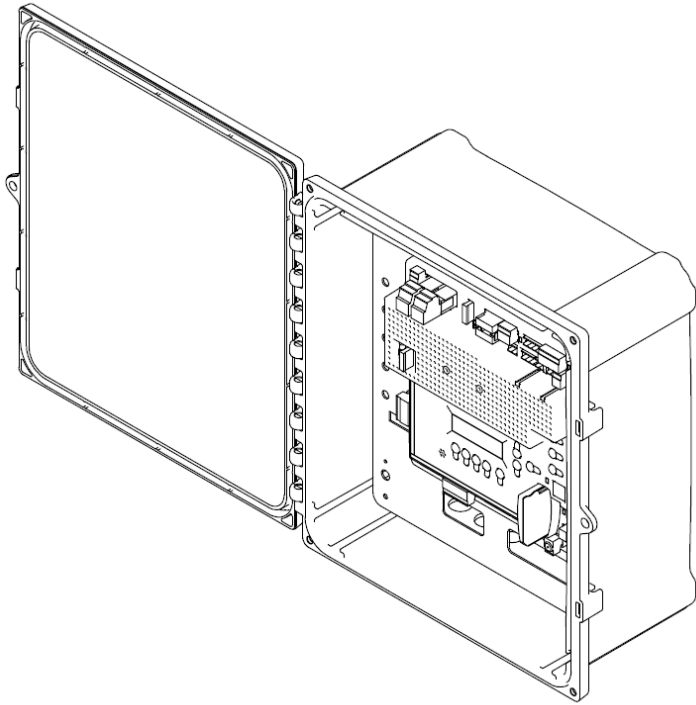
THIS GATE SYSTEM IS INTENDED FOR USE WITH VEHICULAR SWING GATES ONLY.

4.3 - Warnings, cautions and notes

- 4.3.1 Gate terms "system", "gate operator", "gate system", and "gate operator system" for these warnings, cautions, and notes is intended to cover the gate controller, gate controller software, the gate actuator, and all safety accessories included within a typical installation.
- 4.3.2 Gate system designers, installers and users must take into consideration the inherent hazards associated with each installation, since no two installations will be exactly alike.
- 4.3.3 Improperly designed, constructed, installed or maintained systems can and may introduce hazards which may or may not be readily seen or identified by users, bystanders, installers or inspectors.
- 4.3.3 Improperly designed, constructed, installed or maintained systems can and may introduce hazards which may or may not be readily seen or identified by users, bystanders, installers or inspectors.
- 4.3.4 All pinch points must be guarded or eliminated.
- 4.3.5 Only install this gate system opener in appropriate manners in which the operation is safe and secure.
- 4.3.6 A gate operator exerts a great amount of force in order to move the gate system in normal operation, therefore appropriate safety sensors, measures, notices and appropriate safety features must be incorporated in all installations.
- 4.3.7 The gate must be installed correctly and no binding or resistance should be present throughout its movement in either direction.
- 4.3.8 The gate system must be installed in an area and in such a manner in which the gate has sufficient clearance to open, close and move without striking or contacting any structures and/or other obstructions.
- 4.3.9 The gate system is designed for vehicular traffic only, and should never, under any situation be used for pedestrian traffic.
- 4.3.10 Pedestrian prohibited signs, warning signs or other suitable measures must be used at minimum, to warn pedestrians to stay away from, and to not use this system under any circumstances.
- 4.3.11 Pedestrians should be encouraged to use a pedestrian entry/exit only.
- 4.3.12 Pedestrians should never cross the path of a moving gate. The sensors are designed to prevent contact with a vehicle and are not necessarily capable of preventing contact with a pedestrian. Care should be taken to prevent pedestrian usage under any circumstances.
- 4.3.13 One or more non contact sensors must be used in any situation or area where entrapment may have the possibility of occurring.
- 4.3.14 Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed, refer to ASTM F2200 for additional gate types.
- 4.3.15 Any existing manual gate latches shall be removed or disabled when an automatic gate system is installed. Use only mag locks controlled by the system.

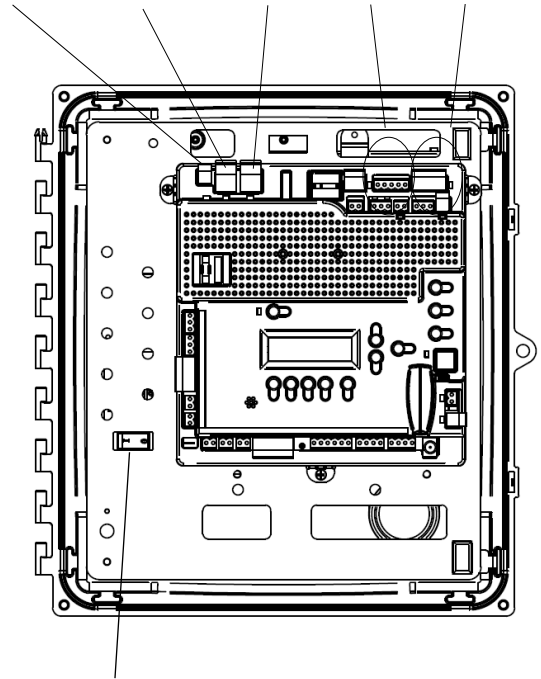
- 4.3.16 Protrusions shall not be permitted on any gate, refer to ASTM F2200 for exceptions, if any.
- 4.3.17 Gates shall not be designed, constructed and installed in such a manner that gravity will cause or initiate movement in any direction whether the operator is attached or not.
- 4.3.18 A pedestrian gate shall not, under any circumstances, be attached to, or incorporated into, any vehicular gate system in manner. This also applies to any fence or wall, or any portion thereof, that the gate may cover in the open or closed position.
- 4.3.19 Any non automated gate that is to be automated in any manner should be upgraded to conform to the provisions contained within the provisions of this document and ASTM F2200 as applicable.
- 4.3.20 To reduce the risk of severe injury or death please read and understand this entire manual and your local code requirements prior to starting installation. Additionally, understanding the ASTM standards will assist you in the proper assembly, installation and operation of your gate opening system.
- 4.3.21 Disconnect all electricity and/or all sources of power before performing any maintenance.
- 4.3.22 To reduce the risks of fire or injury always contact the installer or distributor prior to performing any repairs or maintenance.
- 4.3.23 Never operate gate with obstructions present.
- 4.3.24 No one should ever cross the operative path of the gate.
- 4.3.25 Never let children play or linger in the vicinity of the gate or opener equipment.
- 4.3.26 Never operate the gate or the opener when the opener is not operating or adjusted correctly.
- 4.3.27 Never allow children to play with or manipulate gate controls. Keep all remotes away from children.
- 4.3.28 Only use the MANUAL RELEASE when gate is completely stationary. Untrained persons should never touch the gate or any releases if any are installed or applicable.
- 4.3.29 Test the gate operator periodically (once every 6 months minimum). Gate must reverse course or stop immediately upon contact with any source in its path. Gate must stop and reverse course at any time any object or other item crosses the path of the gate. Should the safety sensors not stop and/or reverse the gates travel, immediately investigate and repair the inoperative condition. Gate should not be used under any circumstances, if all sensors and safety devices are not performing to standards illustrated within this manual.
- 4.3.30 Gate should not be used if safety devices are not performing to all local, state and federal guidelines.
- 4.3.31 Replace fuse only with fuse of same type and rating.
- 4.3.32 Installation of this gate system in a manner inconsistent with the manufacturer's recommended instructions, local, State or Federal law transfers the liability unto the installer. Careful consideration has been taken by the manufacturer's to devise safe measures, safe design and incorporate safety measures to prevent injury, death or property damage. By circumventing, ignoring or modifying any safety system or the exclusion thereof, the installer is creating a new untested process outside the purview of the manufacturer and therefore assumes all risk.
- 4.3.33 This unit is not to be installed on any gate, door or other structure which serves to block, secure, close off or otherwise control a pedestrian entry point or access point.
- 4.3.34 Vehicular swing gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question, with absolute safety in all considerations.
- 4.3.35 Never mount any device that operates the gate opener where the user can reach around, over or through the gate to operate the controls. Controls should be mounted at minimum, 8 feet away from any moving part of the gate or gate system.
- 4.3.36 A hard wired control shall be located in such a manner so that electronic communication between the two is never interrupted or the wires damaged.
- 4.3.37 Any controls used to reset the device after obstruction/entrapment protection incidents should be located within view of the gate and should have safety features that prevent unauthorized use.
- 4.3.38 Never allow anyone to ride, hang on or otherwise touch the gate.
- 4.3.39 Safety sensors must be present at all times. The hard wired safety sensors must be arranged and installed in such a manner so that the communication between gate operator and sensor(s) are never interrupted or severed by mechanical damage or movement. All items which have sensors or safety devices installed must be constructed or installed in such a manner so as to prevent removal or damage. All subsequent sensors must be suitable for the system installed and approved for use.
- 4.3.40 Never increase the force used to move the gate, beyond the absolute minimum required.
- 4.3.41 Never use force adjustments to compensate for binding, sticking or resistant operation. These situations should be addressed and corrected before installation of the gate operator. Gate systems should swing freely in all directions prior to installation of this gate operator.
- 4.3.42 After any adjustment is made, all safety modes/features must be tested. Gate must stop or reverse upon any object crossing the path of the gate or the gate comes into contact with any object.
- 4.3.43 Activate gate only when the gate is in clear view of the user, the gate system is properly adjusted, tested and verified, and there are no obstructions present.
- 4.3.44 Keep gate and gate system properly maintained and properly inspected at all times.
- 4.3.45 This operator is intended for installation only on swing gates used to control vehicular traffic.
- 4.3.46 The gate must be installed in a location so that sufficient clearance is provided between the gate and adjacent structures when opening and closing to reduce the risk of entrapment.
- 4.3.47 The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.
- 4.3.48 Install the gate operator only when the operator is appropriate for the construction and the usage class of the gate.
- 4.3.49 The gate must be properly installed and work freely in both directions prior to the installation of the gate operator.
- 4.3.50 Controls must be far enough from the gate so that the user is prevented from coming in contact with the gate while operating the controls. Controls intended to be used to reset an operator after two sequential activations of the entrapment protection device(s) must be located in the line of sight of the outdoor gate or easily accessible controls shall have a security feature to prevent unauthorized use.
- 4.3.51 All warning signs and placards must be installed where visible in the area of the gate.
- 4.3.52 Care shall be given to reduce the risk of nuisance tripping such as when a vehicle trips the sensor while the gate is still moving.
- 4.3.53 Gate operators must utilize a contact sensor such as an edge sensor.
- 4.3.54 A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subject to mechanical damage.
- 4.3.55 A wireless contact sensor such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions are recommended.

5 - CONTROL BOX LAYOUT

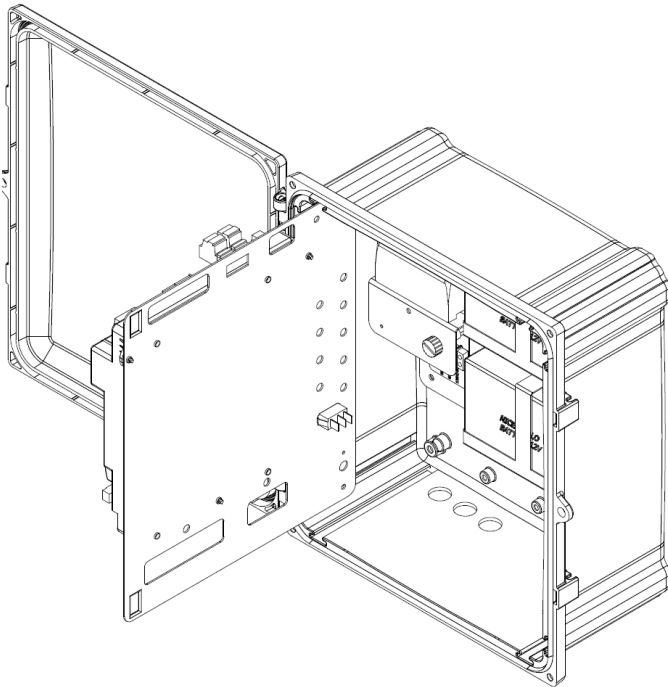


Internal Door Closed

Transformer Connection Battery Connection Not Used Motor 1 Connection Motor 2 Connection



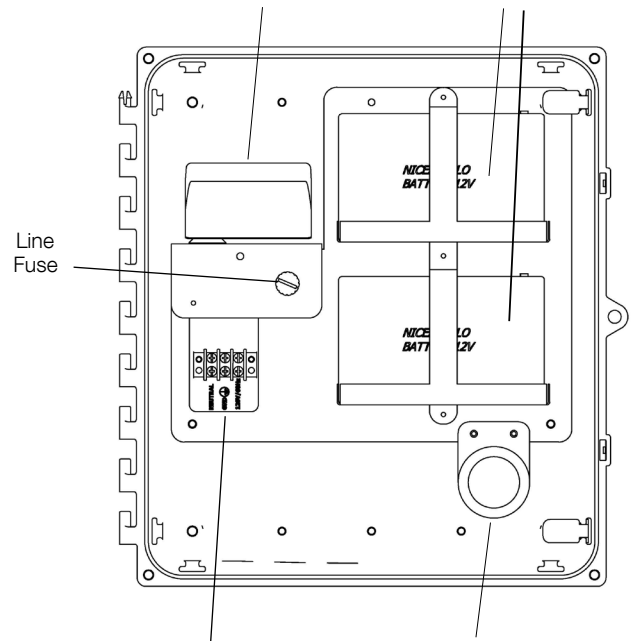
Main power switch



Internal Door Open

Power Supply

12VDC Batteries



Line Fuse

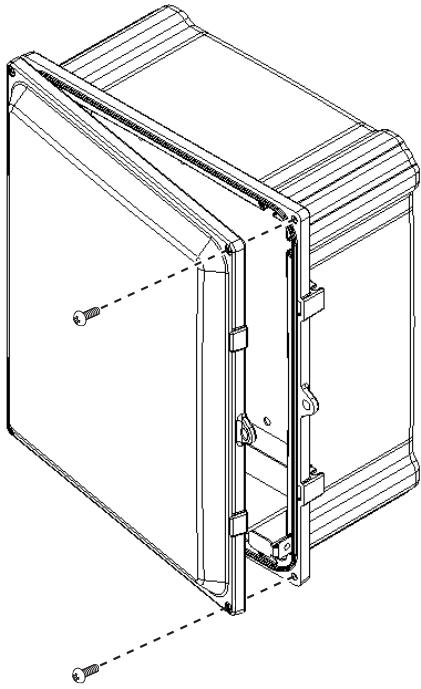
120VAC Input connection

Siren

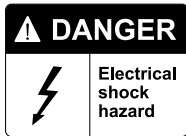
6 - WIRING AND CONNECTIONS

Remove the screws from the cover and open the door. Place the screws in a safe location until the installation is complete. Once complete, replace the screws in the cover door.

NOTE: These screws must be replaced to ensure security for the system and to ensure an adequate seal of the cover.



ISOLATE ALL ELECTRICITY PRIOR TO INSTALLATION OR SERVICE



- Disconnect power to the gate operator by manually opening its dedicated circuit breaker before making any mechanical or electrical adjustments.
- Use a 20 Amp dedicated circuit breaker for each installed gate operator.
- Open dedicated circuit breaker supplying power to this gate operator BEFORE a new installation or making any modifications to an existing installation of this gate operator.
- All wiring connections MUST be made by a qualified individual.
- Run individual circuits in separate U.L. listed conduits. Do not combine high voltage (120VAC) power wiring and low voltage (+12VDC to +24VDC) control wiring in the same conduits.
- Use the information in table 1 to determine high voltage wire size requirements. 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 110 VAC 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.

Table 1 - MAXIMUM RUN (FT) PER WIRE GAUGE

110V AWG	14	12	10	8	6	4
MAX RUN (ft)	180	280	460	700	1150	1800

This gate operator system should be grounded through the earth ground in the AC mains wiring system (GREEN WIRE).

DO NOT WIRE AC MAINS POWER TO THE CONTROL BOX WITHOUT AN EARTH GROUND CONNECTION!

Use the connection shown in Figure 1 for connecting 120VAC power to this system.

WARNING: External entrapment protection must be added to insure a safe vehicular gate operating system.

This swing gate operator uses an inherent entrapment sensing system as well as external type sensors.

Entrapment protection must be provided by a combination of non contact inherent devices. Disconnect power to the gate operator before installing the non contact sensors.

Actual placement of sensors is dependent on the specific installation requirements.

One or more non contact sensors should be located where the risk of entrapment or obstruction exists such as the perimeter reachable by a moving gate or barrier.

Use only U.L. listed (or equivalent) non contact sensors. Inputs from the photo beam to the circuit board are Normally Open (N.O.). Use only U.L. listed (or equivalent) non contact sensors.

Connect the non contact sensors. Inputs from the photo beam to the circuit board are Normally Open (N.O.). Photo beam input shall REVERSE travel of gate when activated during the CLOSE CYCLE ONLY. Gate will resume normal operation when photo-beam is no longer activated. To reduce the risk of SEVERE INJURY or DEATH:

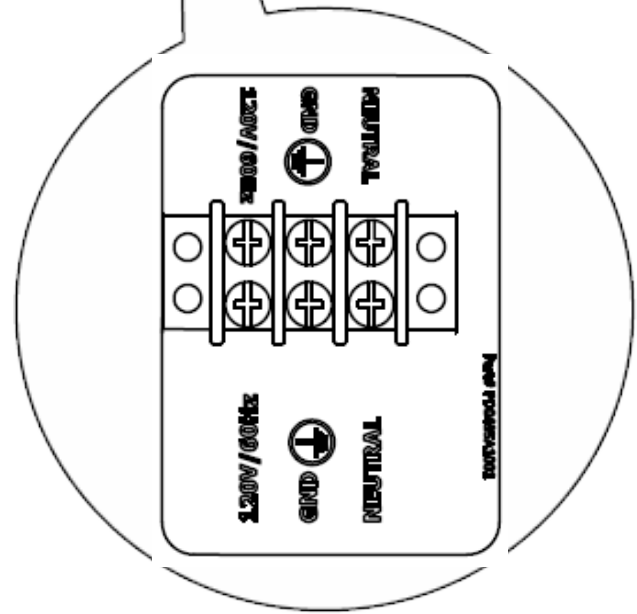
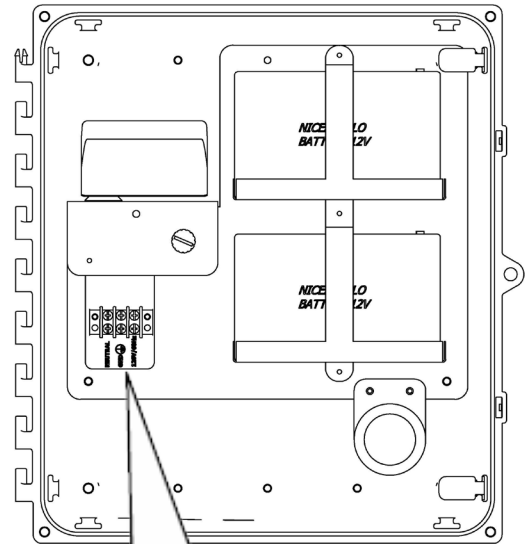


Figure 1 - 120VAC Input connection

Use the connection shown above for connecting incoming 120VAC power.

7 - T5X1K AND T524V INSTALLATION PROCEDURES

The 1050 board can operate 12VDC or 24VDC motors in a single or dual application. Follow the steps below for installation.

7.1 - Step one-swing operator location

Prior to installing the gate operator verify the proper installation and operation of the gate. If one or more of the following items are not ready, repair it before installing the gate operator:

- Are the gate hinges serviceable?
- Does the gate swing free and level?
- Will the gate require a magnetic lock?
- Are the hinge and post stops sturdy enough to handle the gate operator?
- Does the gate meet UL 325 and ASTM 2200 construction guidelines?

Determine the location of the gate operator(s), attachment points. Consider the following points:

- Is there a suitable connection point for the metal control box operator?
- Is 120VAC available?

Consider the following safety points:

- Are safety loops, edge switches, or photocell detectors required for this installation?
- How will the gate be opened in emergencies?
- How will visitors enter and exit?
- Will large vehicles or vehicles with trailers be able to operate any keypads out of traffic?

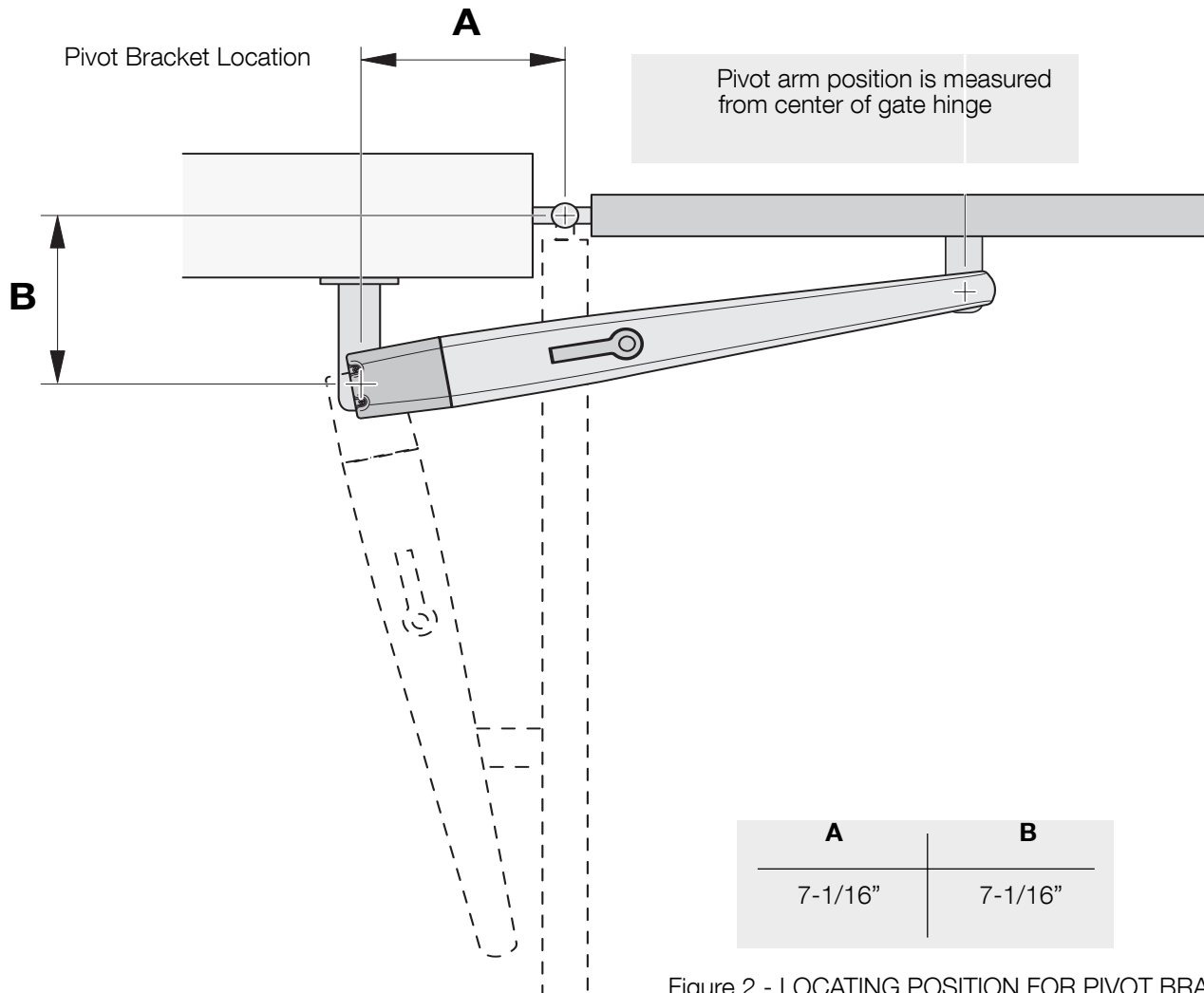


Figure 2 - LOCATING POSITION FOR PIVOT BRACKET

Dimensions of the T5X1K and T524V are shown in Figure 3 DIMENSIONS.

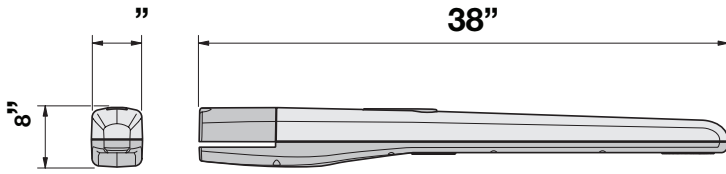


Figure 3 - T5 DIMENSIONS

7.2 - Step two-placing and attaching the pivot bracket and the gate attachment bracket

Refer to Figure 2 LOCATING POSITION FOR PIVOT BRACKET for placing the pivot bracket for the T5 swing gate operators. The dimensions shown in Figure 2 (dim. A and dim. B.) should be adjusted as necessary depending upon the post size or hinge location. Cut the pivot bracket and weld the pivot bracket to the base as shown in Figure 4 PIVOT BRACKET ADJUST AND WELD, being careful to check that the bracket is level.

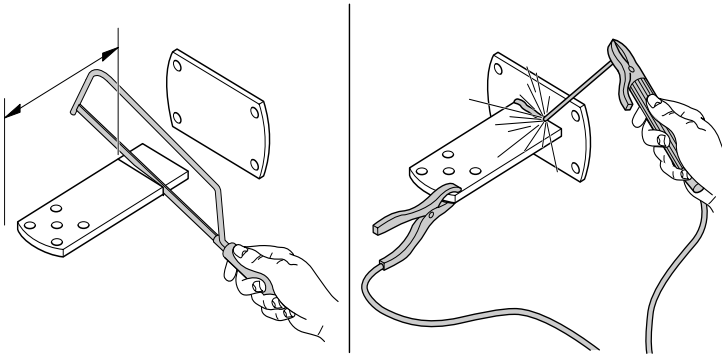


Figure 4 - PIVOT BRACKET ADJUST AND WELD

Attach the gate attachment bracket to the gate based on the position and dimension shown in figure Figure 5 ATTACHMENT BRACKET LOCATION. The T5 gate operator must be fastened to the gate in a completely level position. Ensure that the gate attachment bracket is located at a "hard point" on the gate suitable for opening or closing the gate.

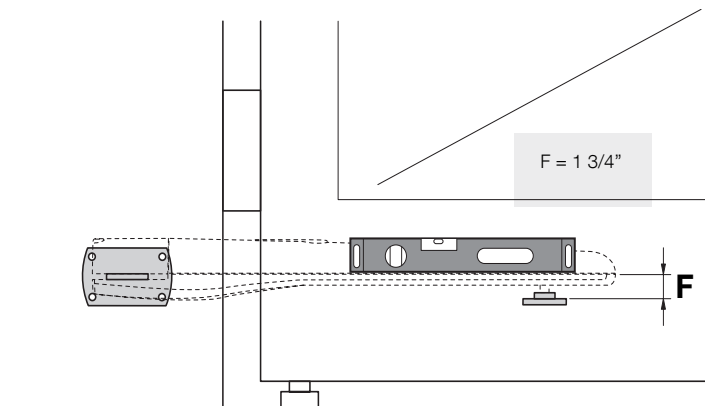
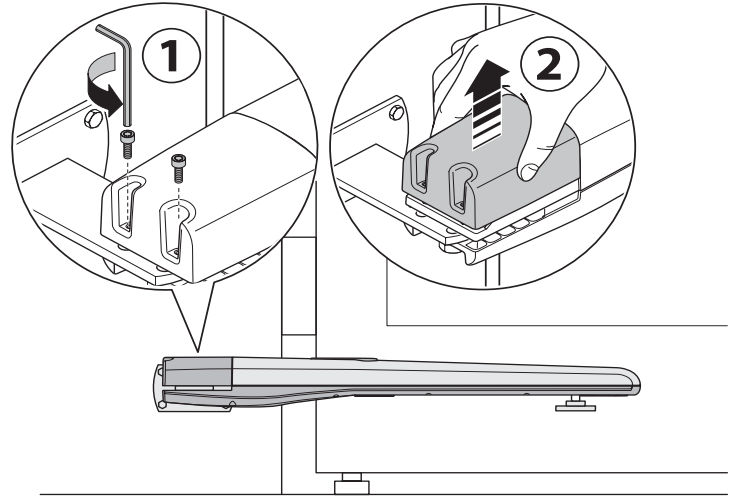


Figure 5 - ATTACHMENT BRACKET LOCATION

7.3 - Step three-removing the top cover

Refer to Figure 6 TOP COVER REMOVAL. Locate the top cover on the T5 and remove the two screws by rotating them counterclockwise to access the mounting hole and the wiring connectors. Be careful to retain the screws and cover for re-installation once the T5 is installed, the gate controller is programmed and any other mechanical or electrical adjustments have been made.

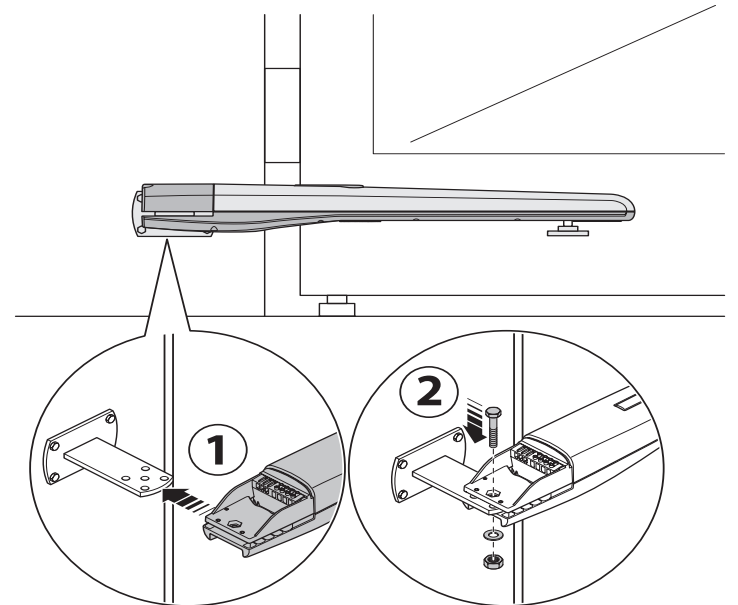


SAVE COVER AND SCREWS !

Figure 6 - TOP COVER REMOVAL

7.4 - Step four-attaching the operator to the pivot bracket and the attachment bracket

While resting the front end of the gate operator on the gate attachment bracket, slide the back end of the gate operator onto the installed pivot bracket as shown in Figure 7 ATTACHMENT TO THE PIVOT BRACKET. Insert the bolt, washer, and locknut as shown in the diagram. Be careful to not to over-tighten the locknut, but the bolt should be sufficiently tightened to securely fasten the gate operator to the pivot bracket.



Don't over tighten the lock nut to the attachment bolt

Figure 7 - ATTACHMENT TO THE PIVOT BRACKET

Connect the front section of the T5 to the attachment bracket using the supplied bolt and washer with a 13mm metric socket as shown in Figure 8 CONNECTING TO THE ATTACHMENT BRACKET. Be careful not to over-tighten the bolt.

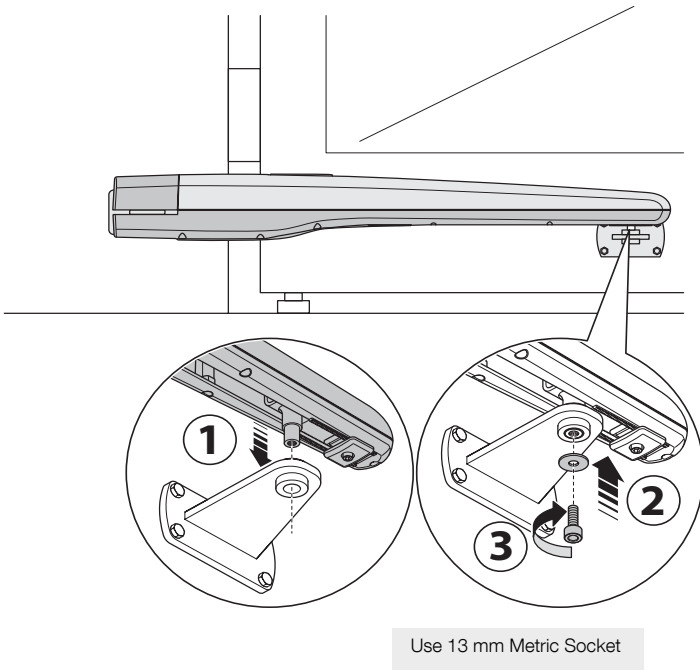


Figure 8 - CONNECTING TO THE ATTACHMENT BRACKET

7.5 - Step five connect power cable and attach individual wires

Unlock the strain relief bushing located on the bottom of the T5 near the pivot bracket mounting bolt by rotating the nut counterclockwise and insert the power cable through the bushing to the top of the T5 as shown in Figure 9 INSERTING AND SECURING POWER CABLE. Ensure there is sufficient conductor on the topside of the T5 to make connections, and then tighten the nut clockwise to secure the cable in the strain relief bushing.

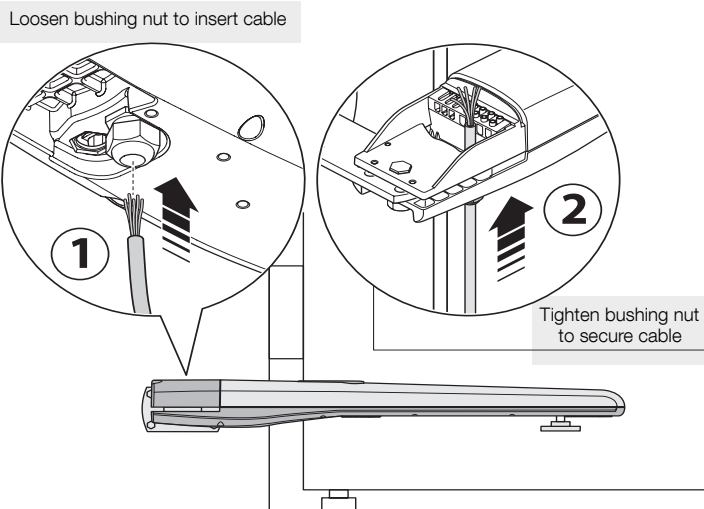


Figure 9 - INSERTING AND SECURING POWER CABLE

Using a small flathead screwdriver, turn each of the screws indicated in a counterclockwise direction to open each of the wire terminals. Strip 1/4" of the end of the 18AWG conductors with wire strippers to avoid nicking the stranded wire. Insert the stripped ends of the conductors as shown in Figure 10 T5X1K MOTOR WIRING for the T5X1K. Insert the stripped ends of the conductors as shown in Figure 11 T524V MOTOR WIRING.

Re-tighten the wire terminals to complete the wiring connection to the T5. Re-attach the cover and secure with the provided Phillips head screws.

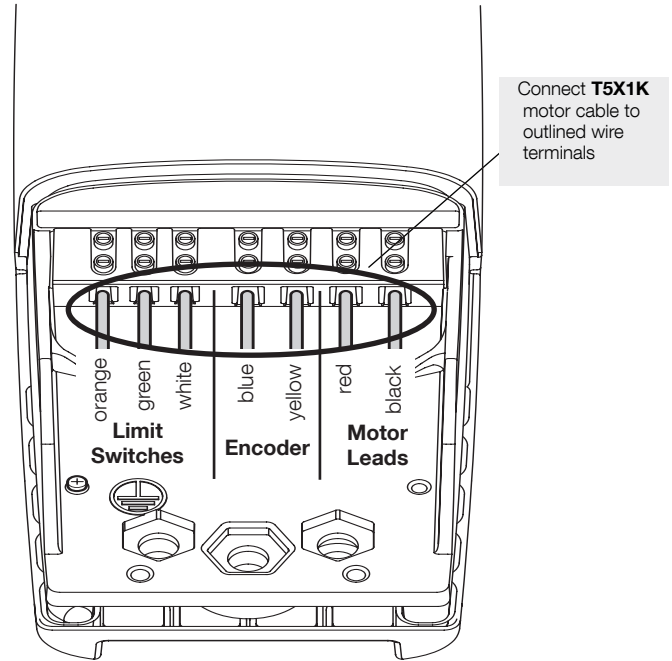


Figure 10 - T5X1K MOTOR WIRING FOR 12 VOLT MOTOR

NOTE: Board MUST be set for 12 Volt motor output before attempting to operate the T5X1K 12VDC motor.

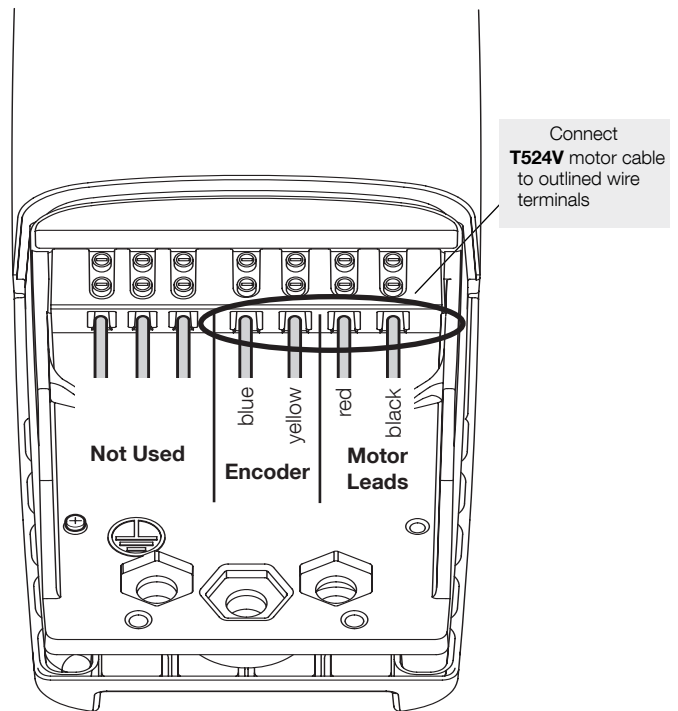


Figure 11 - T524V MOTOR WIRING FOR 24 VOLT MOTOR

Terminate the other end of the T5 motor control cable as shown in Figure 12 T5X1K WIRING DIAGRAM and Figure 13 T524V MOTOR WIRING DIAGRAM.

7.6 - Step six Actuator limit switch and motor wiring connection to the controller

Wiring diagram of T5X1K 12VDC actuator to the 5-pin Motor 1/ Motor 2 connector.

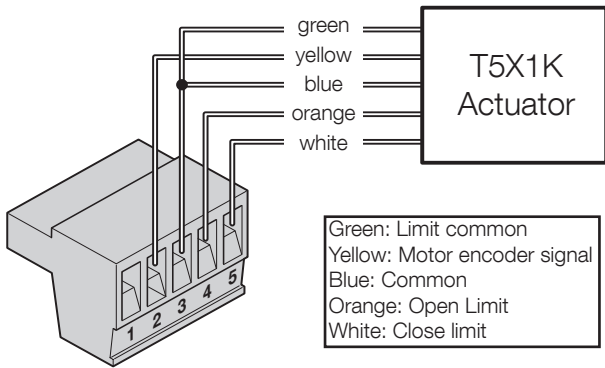


Figure 12 - T5X1K WIRING DIAGRAM

Connect the Apollo T5X1K actuator motor leads to the 3-pin connector as shown in Figure 13. Note: If the gate moves in the opposite direction from what is expected, reverse the actuator wiring from what is shown in the figure. (Red to Pin 3, Black to Pin 1).

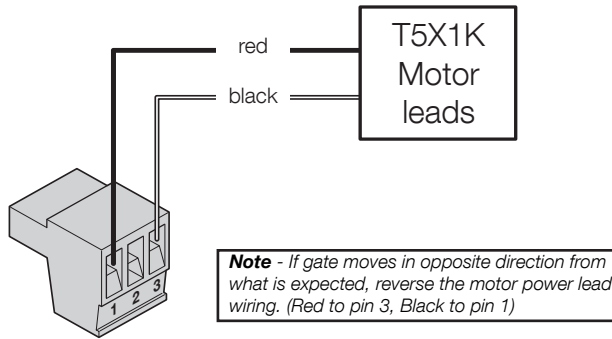


Figure 13 - T5X1K MOTOR WIRING DIAGRAM.

Wiring diagram of T524V 24VDC actuator to the 5-pin Motor 1/ Motor 2 connector.

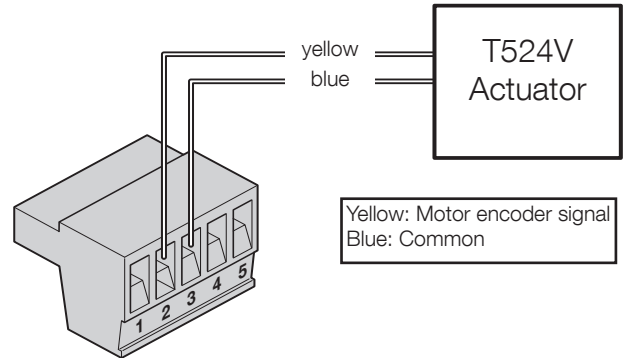


Figure 12 - T524V WIRING DIAGRAM

Connect the Apollo T524V actuator motor leads to the 3-pin connector as shown in Figure 13. Note: If the gate moves in the opposite direction from what is expected, reverse the actuator wiring from what is shown in the figure. (Red to Pin 3, Black to Pin 1).

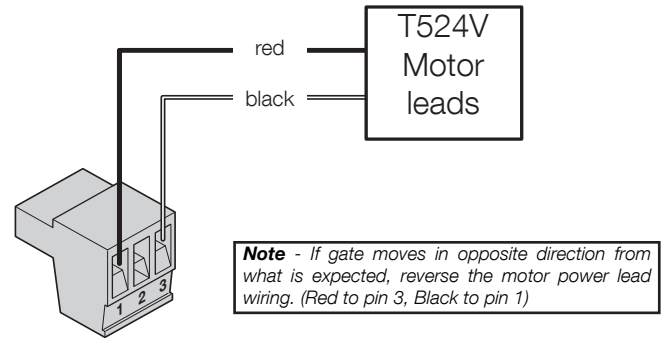


Figure 13 - T524V MOTOR WIRING DIAGRAM.

Connect T5X1K and T524V motor power and control wiring as shown for motor 1.

Motor 2 connections identical for dual leaf gate

For T5X1K motors the board MUST be set to 12 volt motor output.

1. Select FUNCTIONS
2. Using the arrows scroll to "9. Adv. Settings" and press OK
3. Using the arrows scroll to "Motor 12V" and press OK
4. Using the arrows select "ON" and press OK.

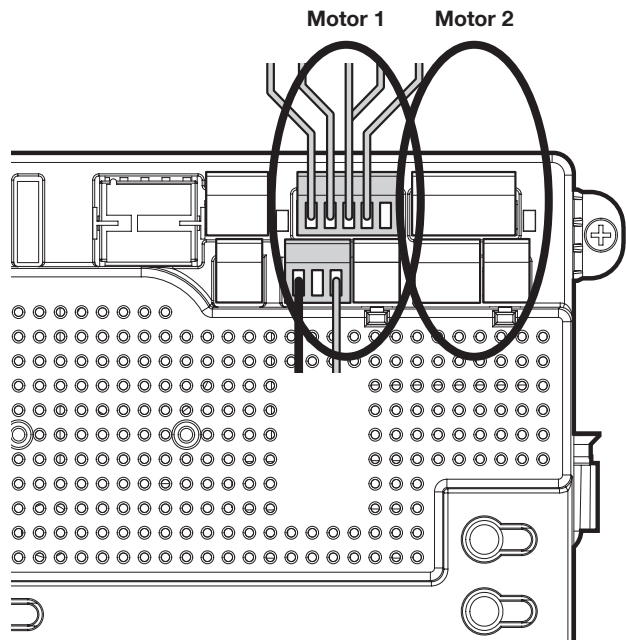


Figure 14 - MOTOR CONNECTION AT THE CONTROLLER

7.7 - Step seven-control box installation

Mount the control box within 4 feet of the pivot arm. Do not mount the control box where the person using the push button on the side of the box can come in contact with the gate. Use mounting hardware capable of supporting the weight of the control box.

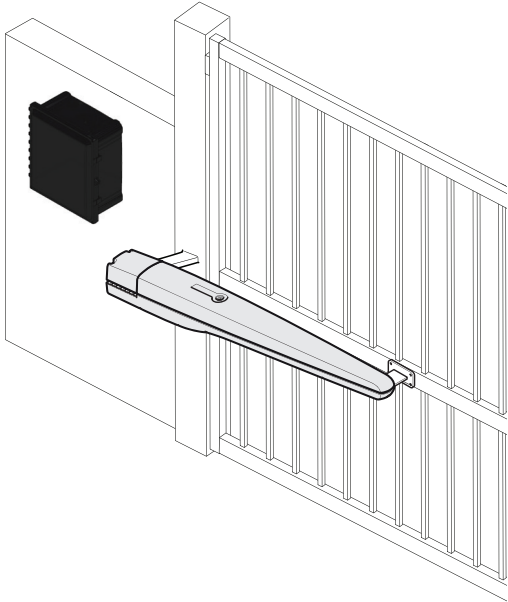


Figure 15 - MOUNTED CONTROL BOX

7.8 - Learning and programming features

Apollo has taken great care to simplify the installation, operation and safety of this device and to ensure longevity and reliability of the unit over time. The learning procedure consists of the following steps shown below:

1. Install electrical power to the control box.
2. Install all gate accessories such as Photo Eye's, Sensors, Loops and other safety devices.
3. Turn on the electrical power to the unit.
4. Using the MANUAL RELEASE, disengage the drive motor if this is not already accomplished as shown in Figure 16.

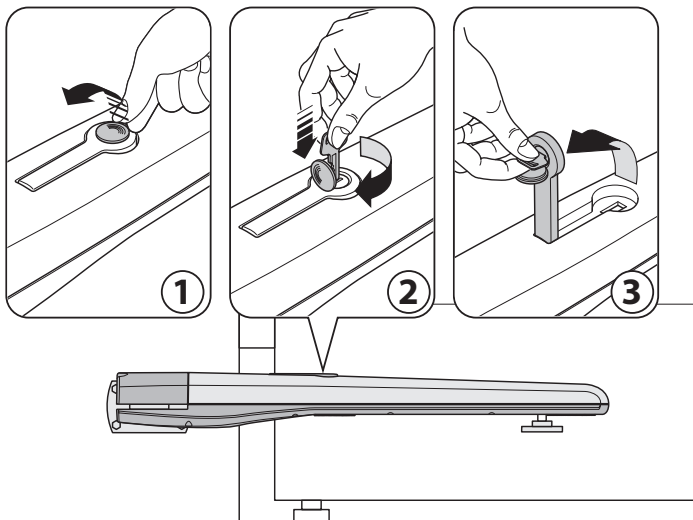


Figure 16 - T5 MANUAL RELEASE

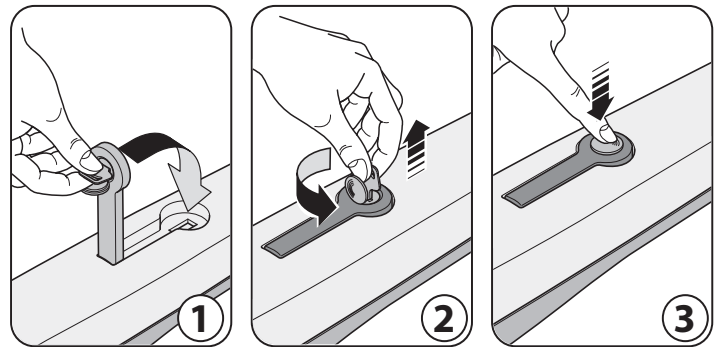
5. Move the gate manually (with your hands) to ensure that the gate travels to the fully open and fully closed positions with no binding or problems. Gate should move freely. Push the gate to the CLOSED position. The control board is already in the "LEARNING MODE" when shipped. If not

in learning mode press FUNCTION then press LEARN then press SWING then SELECT LIGHT, AVERAGE OR HEAVY, then press ENTER.

For T5X1K motors the board MUST be set to 12 volt motor output.

Follow the steps below to set your motor output to 12V

1. Select FUNCTIONS
 2. Using the arrows scroll to "9. Adv. Settings" and press OK
 3. Using the arrows scroll to "Motor 12V" and press OK
 4. Using the arrows select "ON" and press OK.
6. Manually move the gate midway and engage mechanical release and stow handle (see Figure 17 T5 MANUAL ENGAGE). Test motor direction by pressing OPEN. If the gate instead CLOSES swap the RED and BLACK motor leads shown in Figure 13 T5 MOTOR WIRING DIAGRAM. Using the OPEN button on the front of the Control board, hold the button down until the gate reaches the fully intended open position.



7. T5X1K motors - Adjust the Open Limit Switch (See Figure 18) until the GREEN light illuminates on the front of the control board (See Figure 19). The FULLY OPEN limit switch is now set.

T524V motors - Adjust the Mechanical Stop (See Figure 18) against the pin for the gate bracket.

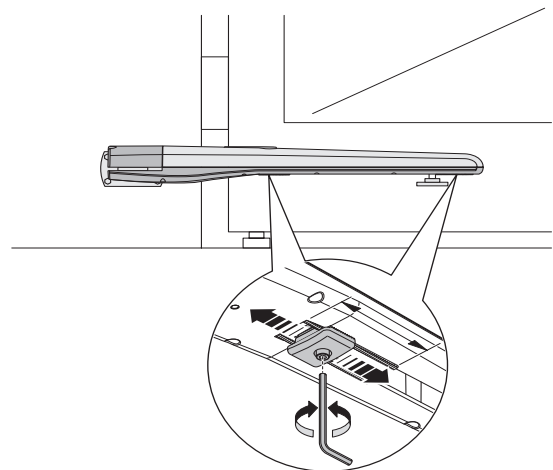


Figure 18 - T5 LIMIT SWITCH AND MECHANICAL STOP ADJUSTMENT

8. Using the CLOSE button on the front of the Control Board, hold the button down until the gate reaches the fully intended closed position.
9. T5X1K motors - Adjust the Closed Limit Switch (See Figure 19) until the RED light illuminates on the front of the control board (See Figure 20). The fully CLOSED limit switch is now set.

T524V motors - Adjust the Mechanical Stop (See Figure 18) against the pin for the gate bracket.

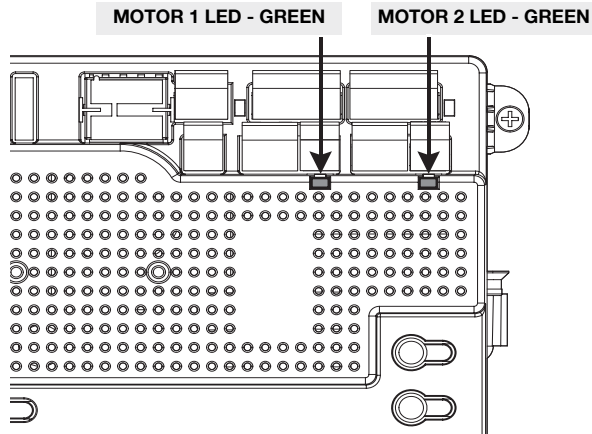


Figure 19 - Green OPEN LED

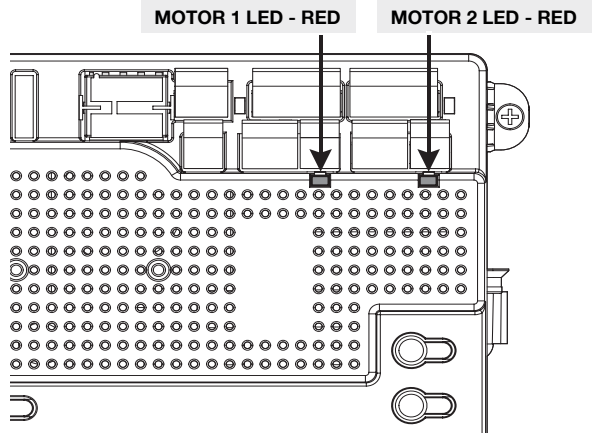


Figure 20 - Red CLOSE LED

10. Press "OK" to allow the control board to scan for attached items, such as sensors, photo eye's and other safety devices.
11. The gate will open partially then stop. This is being done, so that the control board can sense the type and operational condition of the drive motor. The gate will then run to the closing limit (one leaf at a time in case of dual application:"slave" closes first then "master" follows), so that the control board can properly sense the close limit trigger.
10. The control board will then OPEN the gate slowly to establish travel and limits by sensing the open limit trigger.
13. Once the gate reaches the fully OPENED limit switch, the control board will now increase gate travel speed to the highest speed allotted, and will now travel to the fully CLOSED position at full speed.
14. The gate opener is now programmed for basic usage.

8 - CIRCUIT BOARD LAYOUT

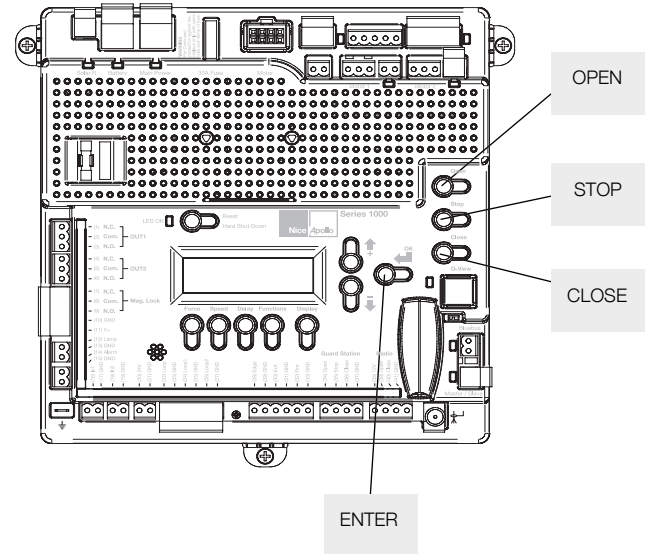


Figure 21 - CONTROL BOARD BUTTONS

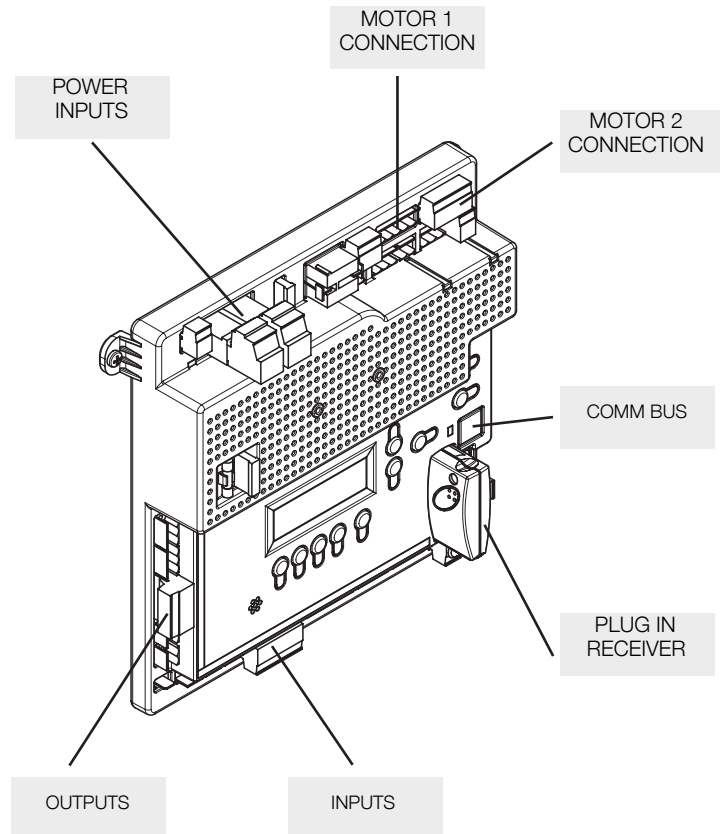


Figure 22 - CIRCUIT BOARD LAYOUT

9 - ACCESSORY INPUTS AND OUTPUTS

9.1 - Outputs

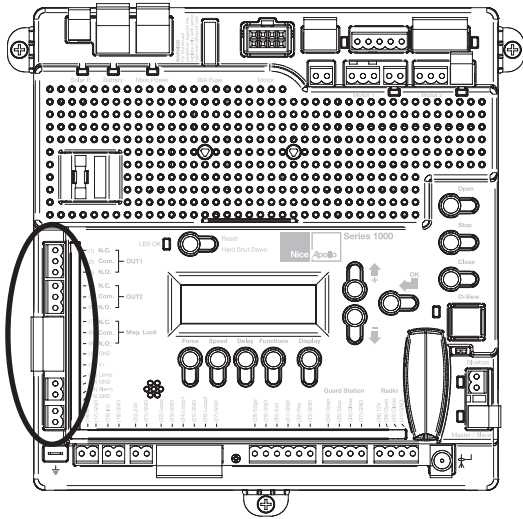


Figure 23 - BOARD OUTPUTS

Commercial Gate Operator Accessory Outputs:

OUT1 and OUT2: Individual, isolated relays provide COMMON, NORMALLY OPEN, and NORMALLY CLOSED dry contacts for switching accessories based on programming of the "Auxiliary IO" function. These outputs are programmed in the "FUNCTION Auxiliary I/O" menu.

Magnetic Lock: Provides fused power (1.85A max) and isolated relay COM, NORMALLY OPEN, and NORMALLY CLOSED dry contacts for electrically powered and maintained magnetic locks. The delay for magnetic lock activation/deactivation may be adjusted from 0 to 5 seconds.

Lamp: Provides fused power (1.85A max) to drive a flashing warning lamp to indicate gate operation. This output is active when the gate is operating (Opening and Closing). Sets the amount of time the lamp accessory output is activated prior to gate movement. Settings from 0 to 5 seconds with a step of 0.5 seconds.

Alarm: Provides fused power (0.5A @ 12VDC) to drive an alarm siren to signal the occurrence of a hard shutdown, caused by 2 consecutive entrapment events (signals). This alarm output is reset by pressing the "Reset Hard Shutdown" button on the front panel or activating the "FIRE" input.

9.2 - Inputs

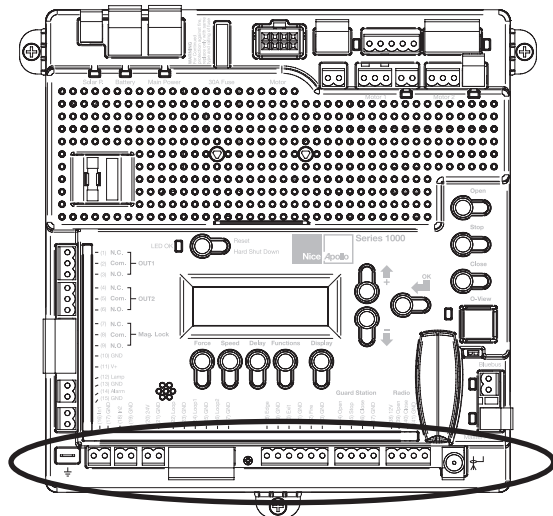


Figure 24 - INPUTS

Commercial Gate Operator Accessory Inputs:

Auxiliary Inputs 1 (16) and 2 (18): These digital inputs may be connected to the digital outputs of accessories and programmed to activate or control the gate operator in a number of different modes. Shorting pin 1 to pin 2 through a dry contact activates the programmed settings for these input. These inputs are programmed in the "FUNCTION Auxiliary I/O" menu.

LOOP Input: (22) Dry contact input that can be programmed for an inductive safety loop or photo eye detector. Shorting the digital input to GND reverses a closing gate to the full open position. The opened gate is held opened for as long as the LOOP input is active. (SAFETY)

LOOP 1 Input: (24) Dry contact input that can be programmed for an inductive safety loop or photo eye detector. Activating the LOOP 1 input maintains an OPEN gate fully open and a CLOSED gate fully closed until deactivated. (SHADOW)

Setting the LOOP1 input to "Photo Mode" causes the moving gate to stop, then reopens the gate when the LOOP1 input is deactivated.

LOOP 2 Input: (26) Dry contact input that can be programmed for an inductive safety loop or photo eye detector. Activating the LOOP2 input (26) while the gate is opening cause the gate to close to the fully closed position. This loop input is intended for use with safety sensors to prevent entrapment between the opening gate and an adjacent wall or structure.

Edge Input: (28) This input may be configured as "DIGITAL" or "ANALOG" as required by the sensor type. When configured as "DIGITAL", this is a dry contact input; otherwise when configured as "ANALOG", the input must measure 8200ohms. When the input is activated it stops the gate regardless of direction of travel, momentarily reverses it then stops.

Exit Input: (30) Dry contact input for a vehicle exit sensor. Opens gate from the closed position and holds gate open with maintained input or reverses gate if closing.

Fire Input: (32) Dry contact input for a fire department control switch. Opens the gate and holds the gate open until the control switch is deactivated. This input is "hold to run". Auto close is disabled when this input is activated. Also clears hard shutdown.

GUARD STATION

Guard Station Open: (34) Dry contact input for a guard station open switch. Momentarily shorting the digital input to GND opens the gate to the full open position with the subsequent auto close feature enabled.

Guard Station Stop: (35) Dry contact input (Normally Closed) for a guard station stop switch. Momentarily opening this input stops the opening gate at its current position. While this input is activated, all other inputs are disabled and are not functional.

Guard Station Close: (36) Dry contact input for a guard station close switch. Momentarily shorting the digital input to GND closes the gate (master and slave).

RADIO

Radio Open: (39) Dry contact input for an accessory radio open switch. Momentarily shorting the digital input to GND opens the gate to the full open position with the subsequent auto close feature enabled.

Radio Close: (40) Dry contact input for an accessory radio close switch. Momentarily shorting the digital input to GND closes the gate.

Radio Input: Open/Close: (39 and 40) If you tie open and close together the unit will operate like a garage door opener in the instance that each time you press the button, it will either OPEN, STOP or CLOSE.

9.3 - Communication buses

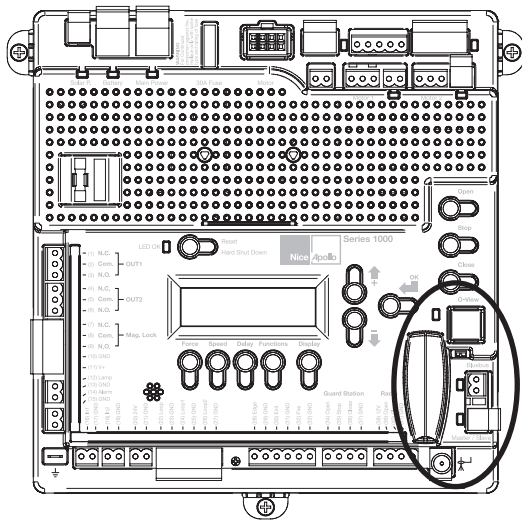


Figure 25 - COMMUNICATION BUSES

OVIEW

Programming and diagnostic unit which connects directly to the gate controller and is part of the Nice “Opera” control system. The unit can be used in “standalone” mode via its front panel keypad, or it may be accessed via a Bluetooth or cellular enabled PDA, PC, or Smartphone when used with the OView Software Suite. This unit, when matched with the OVIEW Bluetooth or GSM modules, enables remote control and management of the gate controller. Remote control functions include most of the programming functions that are available at the front panel LCD on the control board as well as software updates.

OVBT: Bluetooth module for OVIEW and the “OView Software Suite” application for PC, PDA, or Smartphone for localized wireless control of the gate controller.

OVBTGSM: Combination GSM and Bluetooth module that plugs into the OVIEW and provides cellular phone access through the “OView Software Suite” application for PC, PDA, or Smartphone, for wireless local, national, and international control of the gate controller.

OVIEW Software Suite: Provides desktop or Smartphone level control of the gate controller. Other benefits include software updates that can be made wirelessly as new versions of software are made available.

BLUEBUS ACCESSORIES

MOTB: Moon Touch programmable keypad with secure codes (up to 9 digits per code if required) to control gate opening and closing. Connects to the 2wire BlueBUS connector with inexpensive unshielded twisted pair wire.

FT210B: Photocell transmitter and receiver pair that connects to the 2wire BlueBUS connector with inexpensive unshielded twisted pair wire and is a non contact sensor for entrapment protection as specified in UL325, Section 31.1 “General Entrapment Protection Provisions”.

MASTER/SLAVE Not applicable in this system

9.4 - Programming the plug-in receiver and remote controls

Plug in Receiver: The 433PlugIn Receiver provides up to 15 channels for specific control of individual gate functions. The receiver includes built in programming functions for adding or removing Nice FloR/A, Inti, One wireless remote controls to/from a gate installation. The following procedures detail the steps to assign a remote control, add a new remote control, delete a single remote control, or remove all remote controls from the receiver memory.

Programming the FloR/A, Inti, One 2Button or 4Button Remote Control with the Plug In Receiver.

These procedures apply to the FloR/A, Inti, One wireless remote control. These procedures assign factory default controls automatically to the remote control

1. Have a functioning Nice FloR/A, Inti, One 2 button or 4 button remote control with a battery installed prior to programming the remote control.
2. Press and hold the button on the side of the receiver until the led illuminates green on the receiver, then release the button.
3. Within 10 seconds, press and hold any key on the FloR/A, Inti, One remote control until the led in the receiver blinks green 3 times, indicating that the FloR/A, Inti, One is programmed to control the receiver.
4. After the led on the receiver blinks green 3 times, another 10 second interval is started to program another FloR/A, Inti, One remote control if desired. Repeat step 3 to program the additional FloR/A, Inti, One remote control. Step 3 may be repeated as many times as necessary to program all available FloR/A, Inti, One remote controls.
5. Verify that the FloR/A, Inti, One remote control(s) can control the gate by pressing one or more buttons individually on the remote control(s).

Wirelessly add new remote control to the Plug-In Receiver

A FloR/A, Inti, One remote control that has been programmed to control a receiver may be used to create other FloR/A, Inti, One remote controls for the same receiver. This procedure needs to be performed within 10 to 20m (30 to 60 feet) of the receiver, but the receiver does not need to be physically accessed.

1. Press and hold any button on the non programmed FloR/A, Inti, One remote control for at least 5 seconds, then release the button, taking note of the button that was pressed.
2. Press the same button on the programmed FloR/A, Inti, One remote control three times.
3. Press the same button in step 1 on the non programmed FloR/A, Inti, One remote control and release.
4. It is recommended to test the new copy of the FloR/A, Inti, One remote control with the assigned gate controller.

NOTE: This procedure will affect all receivers within radio range.

Deleting a Single FloR/A, Inti, One Remote Control from the Plug In Receiver Memory

A FloR/A, Inti, One remote control that has been programmed to control a receiver may be removed from the receiver memory without affecting other assigned remote controls. This procedure needs to be performed at the Plug In Receiver with the affected FloR/A, Inti, One transmitter

1. Press and hold the button on the side of the receiver until the led on the receiver illuminates green and keep the button pressed. The led will illuminate after approximately 4 seconds.
2. Press and hold any button on the FloR/A, Inti, One remote control until the led on the receiver blinks 5 green flashes.
3. Release the button on the side of the receiver.
4. It is recommended to verify that the deprogrammed FloR/A, Inti, One remote control no longer controls the gate

Deleting all FloR/A, Inti, One Remote Controls from the Plug In Receiver Memory.

All programmed remote controls may be removed from the plug in receiver memory . This procedures need to be performed at the gate controller.

1. Press and hold the button on the side of the receiver until the led on the receiver illuminates green and keep the button pressed.
2. Watch the led and on the receiver and verify the following sequence in the led.
3. Within 4 seconds after pressing the button (approx.) the green led illuminates.
4. Within 8 seconds after pressing the button (approx.) the green led turns off.
5. With 12 second after pressing the button (approx.) the green led starts flashing.
6. Count the green led flashes on the receiver. On EXACTLY the 5TH flash, release the button on the receiver.
7. It is recommended to test the FloR/A, Inti, One remote controls, if available, with plug in receiver to verify that no longer affects the gate controller.

10 - ACCESSORIES AND SENSORS

EXTERNAL ENTRAPMENT PROTECTION

Non contact and contact sensors must be installed individually or in combination with each other to provide external entrapment protection.

Care should be exercised to reduce the risk of nuisance tripping, such as when a vehicle trips the sensor while the gate is still moving, and 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.

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.

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 obstruction.

DURING INSTALLATION

- DISCONNECT POWER at the control panel before making any electric service power connection.
- Be aware of all moving parts and avoid close proximity to any pinch points.
- Know how to operate the manual release.
- Adjust the unit to use the minimum force required to operate the gate smoothly even during mid travel reversing.
- Place controls a minimum of 8 feet away from the gate so that the user can see the gate and operate controls but cannot touch the gate or gate operator while operating the controls.
- Warning signs must be placed on each side of the gate or in high visibility areas to alert of automatic gate operations.



11 - OPTIONAL INPUTS / OUTPUTS

11.1 - Fire department connection

32 FIRE
33 GND

Dry contact input for a fire department control switch. Normally Open (NO) contact must be shorted to ground through a switch to open the gate.

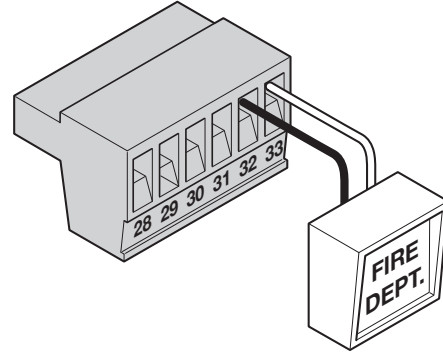


Figure 26 - FIRE DEPT. INPUT

11.2 - Magnetic lock connection

7 NC
8 Com (Common)
9 NO
10 GND
11 V+

This connection is used to install the magnetic lock. In this instance a gate can be locked magnetically to prevent a forced opening. Consult lock manual for specifics on installation and wiring.

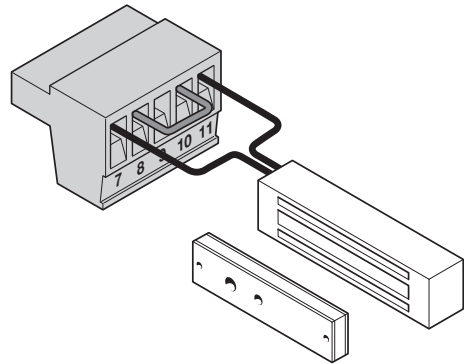


Figure 27 - MAGNETIC LOCK WIRING (EXAMPLE)

11.3 - Guard station

- 34 OPEN
- 35 STOP
- 36 CLOSE
- 37 GND

With the Guard Station switches installed, the user can operate the gate by pushing the respective buttons for the command that is desired. Gate Open, Stop, and Close dry contact inputs, are controlled by NORMALLY OPEN (NO) and NORMALLY CLOSED (NC) momentary switches.

NOTE: If the guard station inputs are not used STOP (35) and GND (37) need to be tied together

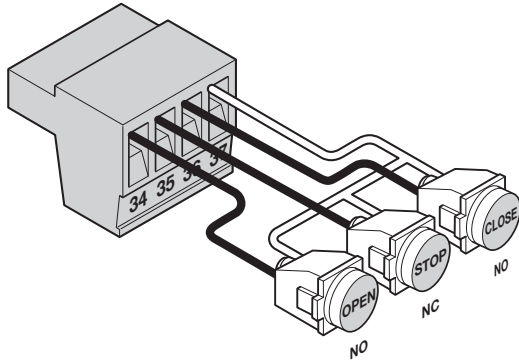


Figure 28 - GUARD STATION INPUTS

11.4 - Exit and edge inputs wiring diagram

- 28 EDGE
- 29 GND
- 30 EXIT
- 31 GND

The EDGE input may be configured as a monitored ANALOG input, or DIGITAL (NC or NO) input. The EDGE sensor input is intended for ANSI/UL 325 listed gate edge sensors to protect against entrapment and hazardous pinch points along the moving edge of the closing gate. The EXIT sensor input is provided to activate to open the gate, or reopen a closing gate, upon sensing an exiting vehicle.

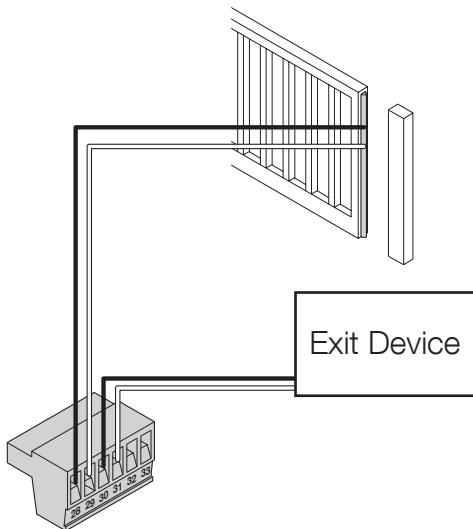


Figure 29 - EXIT AND EDGE INPUTS

11.5 - Radio receiver connection (third party)

- 38 12V
- 39 OPEN
- 40 CLOSE
- 41 GND

The customer supplied radio receiver allows the gate operator to be operated via remote, such as wireless keycard readers or user remote controls. Connecting the Open (39) and Close (40) pins together with a receiver enables single button gate control. This configuration allows a single button to control the gate in the following sequence:

- Press - Gate Open
- Press - Gate Stop
- Press - Gate Close
- Press - Gate Stop

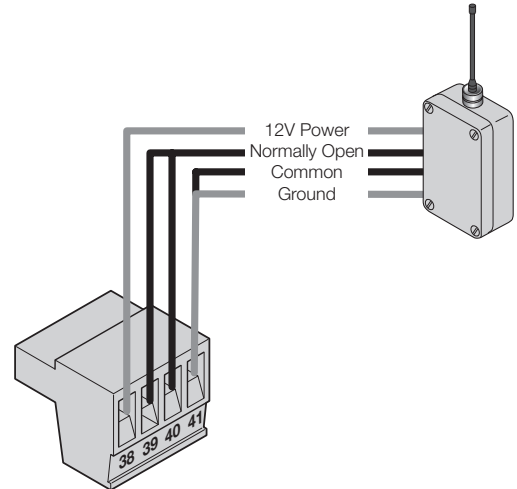


Figure 30 - RADIO RECEIVER

12 - BOARD NOMENCLATURE

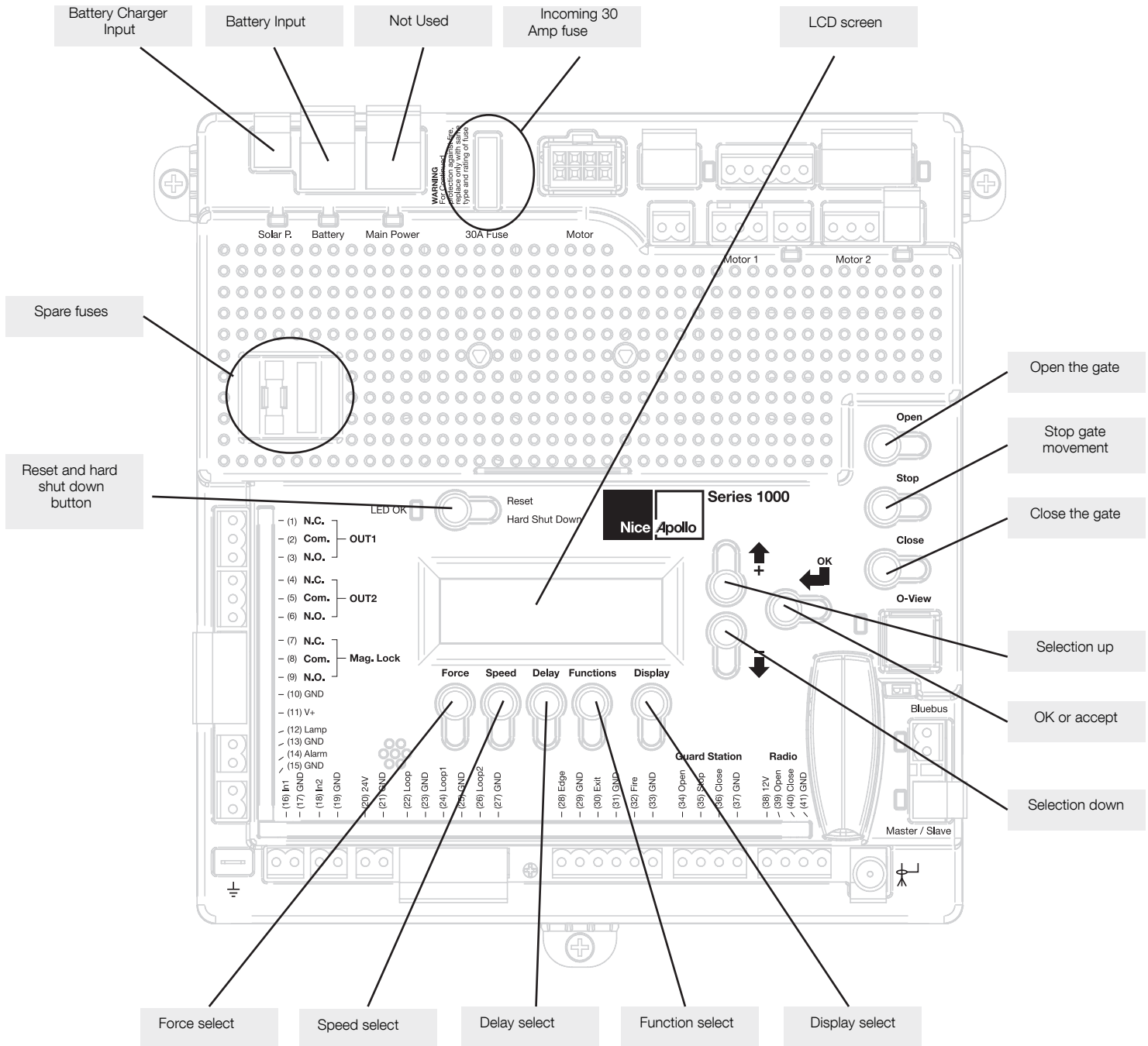


Figure 31 - GENERAL BOARD OVERVIEW

THE PROGRAMMING BUTTONS INDICATED IN THE ABOVE REFERENCE SHOULD BE USED ONLY AFTER UNDERSTANDING THE MANUAL AND ITS RELATION TO THE PROGRAMMING SEQUENCES SHOWN ON THE FOLLOWING PAGES. CARE SHOULD BE TAKEN WHENEVER CHANGES ARE IMPLEMENTED TO ENSURE PROPER FUNCTIONALITY AND SAFETY.

13 - PROGRAMMING BUTTONS

13.1 - Force

Static: Set sensitivity to constant force on a scale of 1 to 10 (1 being the most sensitive).

Dynamic: Set sensitivity of sudden impact force to the moving gate on a scale of 1 to 10 (1 being most sensitive).

ESC: Exit the FORCE menu.

13.2 - Speed

Max: Sets the limit of maximum allowed gate speed on a scale of 20% to 100% (20% being the lowest setting).

Standard: Sets the limit of the gate speed during normal movement (not soft start/stop) on a scale of 20% to MAX (20% being the lowest setting).

Low: Sets the limit of the gate speed while in LEARNING mode and when moving in SLOW, on a scale of 20% to 100% (20% being the lowest setting).

Slowdown: Set gate speed when going into approaching the open or close limits on a scale of 20% to 100% (20% being the lowest setting).

13.3 - Acceleration

Max: Sets the limit of gate acceleration when reversing the gate after an obstacle has been detected by the UL/Edge or current sense feature (Force). Settings from 3 to 10, with 10 being the highest rate of gate acceleration. *

Standard: Sets the limit of the gate acceleration in normal operation. Settings from 1 to MAX, with MAX being the highest rate of gate acceleration. *

*TO PREVENT DAMAGE TO THE GATE OR THE CONTROLLER USE LOWER ACCELERATION SETTINGS FOR HEAVIER GATES.

ESC: Exit the SPEED menu.

13.4 - Delay

Auto Close: Sets the timeout before the gate closes automatically from the fully open position. Settings from 0 (off) to 90 seconds. Setting this to 0 will disable the auto close timer.

Slave: Sets the delay for opening the slave gate leaf in a Master/Slave (Motor 1 and Motor 2 operation), (dual gate) system. Settings from 0 to 5 seconds with a step of 0.5 seconds.

Lamp/Strobe: Sets the amount of time the Lamp accessory output is activated prior to gate movement. Settings from 0 to 5 seconds with a step of 0.5 seconds.

Lock: Sets the amount of time the Magnetic Lock accessory output is activated to disable the lock when opening the gate. Settings from 0 to 5 seconds with a step of 0.5 seconds.

Run Time: Sets the maximum run time for the gate. Used in case the gate doesn't reach its limits. Settings from 15 to 120 seconds with a step of 1 second.

ESC: Exit the DELAY menu.

13.5 - Function

Learn: Puts the gate operator into learning mode for a Swing or Slide gate, and Blue BUS peripherals. Learning mode for a Swing or Slide style gate involves selecting the gate type (Light, Average, Heavy), then fully opening and closing the gate to sense the limits. Selecting the gate type selects precalculated values for the FORCE, SPEED, and ACCELERATION settings. Learning the Blue BUS peripherals enables the gate operator to discover and integrate accessory devices like Blue BUS access control and safety devices.

Positions: Configures the points in the gate open, close, and partial cycles at which deceleration occurs.

- Slow Down – Open: Sets the point in the % of gate opening when the gate begins deceleration to the fully open position.

- Slow Down – Close: Sets the % of gate opening when the gate begins deceleration to the fully close position.
- Partial: Sets the point in the % of gate opening.

Auxiliary Inputs: Auxiliary inputs IN AUX1 (16) and IN AUX2 (18) can be programmed with one of the following options:

- No program No Function used
- OPEN the Gate
- CLOSE the Gate
- STEP Cycling Step (Open-Stop-Close-Stop)
- PARTIAL opening
- PARTIAL 1 Partial Opening 1 (open one leaf in dual gate applications)
- STOP the gate and Auto closing
- HOLD TO OPEN Input must be maintain active for Opening
- HOLD TO CLOSE Input must be maintain active for Closing
- FIRE Reset Hard Shut Down and Open the Gate
- TIMER 1 Start Count Down TIMER1
- TIMER 2 Start Count Down TIMER2
- PHOTO Photocell PHOTO input: reverse to opening when closing
- PHOTO1 Photocell PHOTO1 input: Stop Gate when activated
- PHOTO2 Photocell PHOTO2 input: reverse to closing when opening
- SHADOW Loop input: prevent closing gate when completely open
- LOCK system from other command (only STEP H overrides the LOCK)
- UNLOCK UNLOCK the system if blocked
- OPEN and LOCK Open the Gate and inhibit further commands (except STEP H)
- CLOSE and LOCK Close the Gate and inhibit further commands (except STEP H)
- OPEN and UNLOCK Open the Gate and unhibit further commands
- CLOSE and UNLOCK Close the Gate and unhibit further commands
- STEP H Command high priority Step cycling (open-stop-close-stop)

Auxiliary Outputs: Auxiliary outputs OUT AUX1 (1,2,3,) and OUT AUX2 (4,5,6,) can be programmed with one of the following options:

- NO PROGRAM Output not used
- OPEN Output is activated when Gate is open
- CLOSE Output is activated when Gate is closed
- MOVING Output is activated when Gate is moving
- TIMER 1 Output is activated when TIMER1 is counting down
- TIMER 2 Output is activated when TIMER2 is counting down
- MAINTENANCE Output is activated when maintenance counter reaches 0

Radio Channel: For the Plug in On board Receiver, 15 radio channels may be programmed with one of the following options:

- NO PROGRAM
- OPEN (Default CH. 2)
- CLOSE
- STEP (Default CH. 1)
- PARTIAL
- PARTIAL
- STOP
- HOLD TO OPEN
- HOLD TO CLOSE
- FIRE
- TIMER 1
- TIMER 2
- PHOTO
- PHOTO1
- PHOTO2
- SHADOW
- LOCK
- UNLOCK
- OPEN and LOCK
- CLOSE and LOCK
- OPEN and UNLOCK
- CLOSE and UNLOCK
- STEP H

Timers: Set time for count down timers Timer 1 and Timer 2. Settings between 1 second and 9 hours in 1 second increments.

Events: Up to 8 weekly events (EV1 through EV8) can be programmed and stored. Each event can be programmed to trigger at a specific time and can

be assigned to any combination of days of the week (Monday through Sunday). Events that are already programmed into the system may be suspended temporarily, or removed permanently from memory. The following actions can be assigned to events:

- No program
- Open
- Close
- Partial
- Partial1
- AxOut1 On
- AxOut1 Off
- AxOut2 On
- AxOut2 Off
- Open and LOCK
- Close and LOCK
- Open and UNLOCK
- Close and UNLOCK

To program weekly events EV1 through EV8, perform the following steps:

1. Press FUNCTION > Events.
2. Press and hold OK to display EV1 (display will blink "EV1").
3. Press UP or DOWN to toggle between events, then press OK to make a selection. The display changes to hours.
4. Press UP or DOWN to toggle between hours, then press OK to make a selection. The display changes to minutes.
5. Press UP or DOWN to toggle between minutes, then press OK to make a selection. The display changes to individual days of the week.
6. Press UP or DOWN to toggle between days of the week. Press OK to toggle between ON and OFF for each day of the week. Continue toggling through the days of the week until ESC is displayed. Press OK to advance to the next event.
7. Repeat step 2 through 6 for event EV2 through EV8.

To temporarily suspend one or more weekly events (EV1 through EV8), perform the following steps:

1. Press FUNCTION > Events.
2. Press OK quickly to display EV1 active days.
3. Press OK quickly again to display "Suspend". Event EV1 is now suspended and will not run until re enabled.
4. Press UP or DOWN to toggle through the events EV1 – EV8 and repeat steps 2 through 3 to suspend or enable other weekly events.

Charger: A battery charger is built in with the Control board to keep battery charged. Keep this setting at the system default to properly keep batteries charged.

Standby: Programs the timeout for the gate operator to go into low power standby mode. Low power standby is Settings from 5 to 120 seconds, or may be disabled with "OFF". During low power standby there is no data displayed on the gate operator LCD and it consumes a minimum amount of power to extend the life of the backup battery. All the outputs are switched off and the LED OK blinks to show this standby status of the system.

Advance Settings: The following settings are available for customizing the gate operator as required by the customer's installation requirements:

- Set Language (English Spanish French)
- Set clock 12H/24H
- Set LCD Contrast
- Set Virtual Encoder (Used for motors without built in encoders)
- Set Anti tailgate (Closes gate immediately after vehicle has cleared safety sensors)
- Select inputs LOOP or PHOTO
- Select UL/EDGE input type (NO, NC, Analog)

- Select Master / Slave Motor1 or Motor2
- Activate link for remote Master/Slave (Enables control of an additional gate operator board)
- Power Fail Open (Opens gate automatically on batter backup power if main AC power input loss is detected) not applicable in this system
- Motor 12V (Forces motor control voltage to +12VDC even if the supply voltage varies from +9.5VDC up to +35VDC)

Default: This setting gives the installer/user the option of returning some or all settings of the gate operator to the original factory settings:

- System settings
- Radio Channel settings
- Event settings
- Charger settings

ESC: Exit the FUNCTION menu.

13.6 Display

ESC: Exit the DISPLAY menu.

Info: Displays the manufacturer name, product name/model, software versions, and serial number.

Clock: Displays the calendar date and time in the real time clock. Pressing and holding the "OK" button for 5 seconds enables the date and time settings to be updated manually.

Main Volt: Displays the gate operator main control voltage in volts DC.

Battery Volt: Displays the gate operator backup battery voltage in volts DC.

Sun Volt: Displays the solar panel input voltage in volts DC.

Motor Volt: Displays the voltage at the motor in volts DC.

UL Volt: Displays the voltage at the UL/Edge sensor input in volts DC.

Temperature: Displays the temperature of the gate controller board in degrees Centigrade or Fahrenheit (press OK and hold 5 seconds to change scale).

Service: The following information is recorded and viewable about the operating history of the gate:

- Total: Displays the total number of open close cycles (non Settings).
- Partial: Display the total number of partial cycles. Reset by pressing the "OK" button for several seconds.
- Maint. Display the number of cycles before service is required. Settings from 1000 to 50000 cycles in increments of 1000 cycles.

Motor: Displays the Motor position, voltage, and current.

Motor 1: Displays the Motor1 position, voltage, and current.

Motor 2: Displays the Motor2 position, voltage, and current.

Charger: Displays the battery charger voltage and current.

Last Reset: Displays the code for diagnostic review. Used for diagnostic and troubleshooting.

ESC: Exit the DISPLAY menu.

14 - GENERAL LAYOUT AND SAFETY ACCESS

Entrapment Protection Inputs - Typical Installation Diagram Utilizing Loop Sensors and Photocells

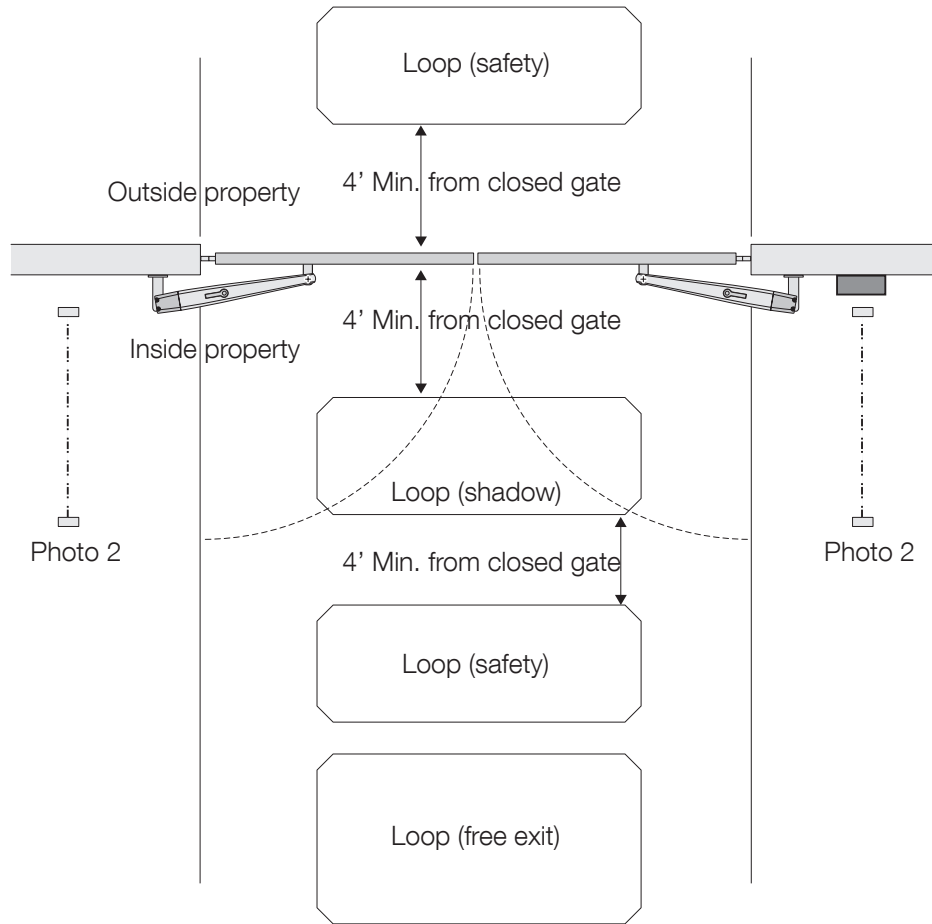


Figure 32 - LAYOUT FOR IN-GROUND LOOPS

Entrapment Protection Inputs - Typical Installation Diagram Utilizing Photocells

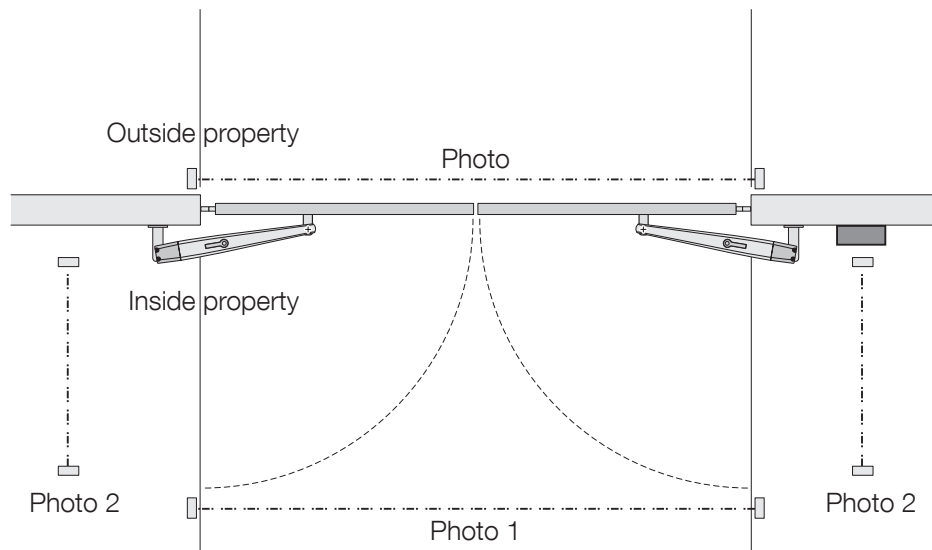


Figure 33 - LAYOUT FOR PHOTOCELLS

15 - INSPECTION AND OPERATION

Proper inspection of all equipment is required to ensure continuous functionality, safety and to ensure reliable operation in all weather conditions. Inspect electrical assemblies and wiring installations for damage, general condition, and proper functioning to ensure the continued satisfactory operation of the electrical system. Adjust, repair, overhaul, and test electrical equipment and systems in accordance with the recommendations and procedures in the gate operator system and/or component manufacturer's maintenance instructions.

Replace components of the electrical system that are damaged or defective with identical parts, with manufacturer's approved equipment, or its equivalent to the original in operating characteristics, mechanical strength, and environmental specifications. A partial list of suggested problems to look for and checks to be performed are listed below:

- 15.1** Damaged, discolored, or overheated equipment, connections, wiring, bearing caps and installations.
- 15.2** Excessive heat or discoloration at high current carrying connections. (Look for bluing or heat affected metal).
- 15.3** Misalignment of electrically driven equipment. (Causes strain on pulley assemblies and bearings).
- 15.4** Poor electrical bonding (broken, disconnected or corroded bonding strap) and grounding, including evidence of corrosion.
- 15.5** Dirty equipment and connections. Clean equipment and connections.
- 15.6** Improper, broken, inadequately supported equipment, wiring and conduit, loose connections of terminals, and loose ferrules.
- 15.7** Poor mechanical or weld joints. Broken welds.
- 15.8** Condition of circuit breaker and fuses. Ensure that they are of the correct type and amperage.
- 15.9** Insufficient clearance between exposed current carrying parts and ground or poor insulation of exposed terminals. All exposed connections must be covered (prevent arcing between exposed parts, and electrical shock).
- 15.10** Broken or missing wire, connectors, etc.
- 15.11** Operational check of electrically operated equipment such as motors, inverters, generators, batteries, lights, protective devices, etc. Ensure proper functionality of all systems during inspections.
- 15.12** Ensure safety placards and warning signs are present as specified within this document. Ensure proper functionality of all safety devices as specified. Non functioning or malfunctioning safety devices should be replaced immediately.

16 - EMERGENCY VEHICLE ACCESS

- 16.1** The automatic vehicular gate system must be designed to allow access to emergency vehicles under different operating conditions.
- 16.2** During normal powered operation, emergency vehicles access the gate by use of the emergency vehicle access device installed on your gate system. The type of device that is used in your community is dependent on your city codes. These devices may include (but are not limited to) Fire Department lock boxes, Click2Enter radio receivers, strobe light sensors, siren sensors, etc.
- 16.3** Check with your installer to determine if your gate system is equipped with a backup power system. In the event of a primary (AC) power failure and a backup system (DC) power failure (low charged or dead batteries for example), the system must have a release system to allow the gate to be manually operated. The release device must be accessible from either side of the gate and must be present so that emergency personnel can gain access through the gate under this condition.
- 16.4** If applicable, this operator is equipped with a manual release system that will allow the gate to be pushed open in the event of a power outage or equipment failure.
- 16.5** NOTE: Never attempt to manually push open any gate with an operator attached to it until you have verified that power to the operator has been shut off.
- 16.6** The automatic vehicular gate system must be designed to allow access to emergency vehicles under different operating conditions.
- 16.7** In the event of a power failure, the emergency vehicle access device may not be functional because the gate operator is not powered. NOTE: DC powered backup systems are optional and your gate system may or may not be equipped with one. Check with your installer to determine if your gate system is equipped with a backup power system.
- 16.8** For manual failsafe gate operation, turn power to the operator OFF. If a backup power system is in use, be sure that this power is turned OFF also or disconnected. Once power is OFF, the gate can be manually operated, by using the MANUAL RELEASE handle under the key lock (T5X1K/T524V)

17 - T5X1K/T524V PROGRAMMING QUICK START

17.1 Learning the T5X1K/T524V actuator

1. Install electrical power to the gate opener unit.
2. Install all gate accessories such as Photo Eye's, Sensors, Loops and other safety devices.
3. Turn on the electrical power to the unit.
4. Using the MANUAL RELEASE HANDLE, disengage the drive motor. See Figure 14 T5X1K/T524V MANUAL RELEASE.
5. Move the gate manually (with your hands) to ensure that the gate travels to the fully open and fully closed positions with no binding or problems. Gate should move freely.
6. Using the MANUAL RELEASE HANDLE, reengage the drive system and stow the handle. See Figure 15 T5X1K/T524V MANUAL ENGAGE.
7. Using the open button on the front of the Control board, hold the button down until the gate reaches the fully open position. If the gate moves in the opposite direction swap the RED and BLACK motor leads at the 3pin motor power connector on the control board.

For T5X1K motors the board **MUST** be set to 12 volt motor output.

Follow the steps below to set your motor output to 12V

1. Select FUNCTIONS
 2. Using the arrows scroll to "9. Adv. Settings" and press OK
 3. Using the arrows scroll to "Motor 12V" and press OK
 4. Using the arrows select "ON" and press OK.
8. T5X1K motors - Adjust the Open Limit Switch until the GREEN light illuminates on the front of the control board. The FULLY OPEN limit switch is now set.
T524V motors - Adjust the Mechanical Stop against the pin for the gate bracket.
9. Using the CLOSE button on the front of the Control Board, hold the button down until the gate reaches the fully closed position.
10. T5X1K motors - Adjust the Closed Limit Switch until the RED light illuminates on the front of the control board. The fully CLOSED limit switch is now set.
T524V motors - Adjust the Mechanical Stop against the pin for the gate bracket.
11. The control board is already in the "LEARNING MODE" when shipped. If not in LEARNING MODE, press FUNCTION, then press LEARN, then press SWING, then select LIGHT, AVERAGE < or HEAVY, then press ENTER to start the gate learning process.
12. The gate will open partially then stop. This is being done, so that the control board can sense the type and operational condition of the drive motor. The gate will then run to the closing limit, so that it can properly sense where it is located.
13. The control board will then OPEN the gate slowly to establish travel and limits.
14. Once the gate reaches the fully OPENED limit switch, the control board will now increase gate travel speed to the highest speed allotted, and will now travel to the fully CLOSED position at full speed.
15. The gate opener is now programmed for basic usage.

17.2 - Putting the controller into learning mode

Steps on how to place the Apollo 1050 control board into learning mode.

1. Press Function
2. Press OK
3. Select Swing
4. Select weight of gate (LIGHT, AVERAGE, or HEAVY)
5. Press Enter Unit should now be in LEARNING MODE

18 - GLOSSARY

LOCK Ceases all operator function except HIGH PRIORITY inputs.

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 multifamily housing unit (five or more single family units), hotels, garages, retail store, or other building servicing the general public.

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

FORCE STATIC Constant load threshold for sensitivity setting.

FORCE DYNAMIC Impact sensitivity setting.

GATE A moving barrier such as a swinging, sliding, raising, lowering, or the like, barrier, that is a standalone 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.

(STEP H) HIGH PRIORITY Step by step control.

INHERENT ENTRAPMENT SENSOR SYSTEM An automatic sensor system which senses entrapment of a solid object and is incorporated as a permanent and integral part of the operator.

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.

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.

STEP BY STEP Command that opens-stops-closes-stops the gate with each press of the button.

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

UNLOCK Resumes normal operation after a blocked condition.

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.

19 - MAINTENANCE SCHEDULE

Table 2

		COMPLETE	BASIC
Alarm	Active the primary (inherent) reverse system by blocking the gate with a solid object. The gate should reverse momentarily then stop. Restart the gate and block again with a solid object. The gate should reverse momentarily, then stop, and go into hard shutdown with an alarm	●	●
Battery	Check the batteries for any leakage or loose connections. Batteries should be replaced every two years or when depleted	●	
Fire Dept	Check emergency vehicle access device for proper operation	●	●
Gate	Inspect for damage	●	
Reverse System	Check that the gate reverses on contact with an object in both the opening and closing cycles	●	●
Loop(s)	Check vehicular reverse and shadow loops for proper operation	●	●
Release	Check manual release for proper operation	●	
Complete	Overall Check: Complete check of gate and gate operating system	●	
Mounting Hardware	Check screws and nuts	●	

20 - TROUBLESHOOTING

Table 3

SYMPTOM(S)	POSSIBLE SOLUTION
Operator will not Power On. Power switch LED is OFF	Check that power switch in the control box power supply is turned ON Check terminal block wiring for loose or broken wires Check for 120 VAC at source. Check the line fuse.
Gate opens a short distance, then stops and reverses	Check the UL/Edge input on the gate controller Adjust Force Settings
Gate opens but will not close	Check the input LEDs. Any ON will hold the gate open and indicates a problem with a keying device Check the secondary safety devices. Any activated safety devices will hold the gate open and indicates a problem with the safety device Check the loop detectors. Any activated safety devices can hold the gate open and indicates a problem with the loop detector or ground loop
Gate runs slow or board has no power	Check the batteries for proper voltage. Replace if necessary. Check terminal blocks for loose connection or broken wires.
Hard Shutdown (2 back to back obstructions) LED blinking, Buzzer sounds for 5 minutes	Clear any obstructions from the path of the gate. Press RESET to clear (or hard reset button)
Gate opens by itself	Check accessory inputs and clear them as necessary

21 - INSTALLATION CHECKLIST

Left box is for installer check off and the right box is for customer check off.

- 1. The gate has been checked to make sure it is level and moves freely in both directions.
- 2. Potential pinch areas have been guarded so as to be inaccessible OR have contact and/or non contact obstruction sensing devices installed.
- 3. The installer has installed one or more contact or non contact obstruction sensing devices, in compliance with UL325 requirements for this installation.
- 4. If pedestrian traffic is expected, a separate pedestrian gate has been installed, a minimum of seven feet from the gate. The customer has been informed that all pedestrian traffic must use the pedestrian gate.
- 5. Warning signs have been installed on each side of the gate in highly visible locations. The customer has been informed that these signs must remain at all times.
- 6. There are no controls installed on the gate operator, or within 8 feet of the gate.
- 7. The installer has properly adjusted the obstruction sensing feature and has tested the gate to make sure that the gate stops and reverses a short distance with minimal resistance applied (Approximately 40 lbs. on a swing gate, at the end of the gate.
- 8. The installer has instructed the customer in the proper use of the gate operator and reviewed all of the operational functions, obstruction sensing devices, warning beeper and reset, etc.
- 9. The installer has instructed the customer in the proper use of the operator's manual disconnect feature. The manual disconnect must never be used while the gate is in motion. The power switch must be turned off before using the manual disconnect and disengaging the operator.
- 10. The installer has reviewed all safety instructions with the customer, and has left the safety instructions and owner's information sheets for their reference.
- 11. The installer has answered any questions the customer has regarding the operation of the gate operator and gate operator safety precautions.
- 12. The installer has explained to the customer that a regular maintenance schedule for both the gate and the gate operator is recommended.

Installation Acceptance

Address where opener is located

Installer name, number and address

End user name and telephone number



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