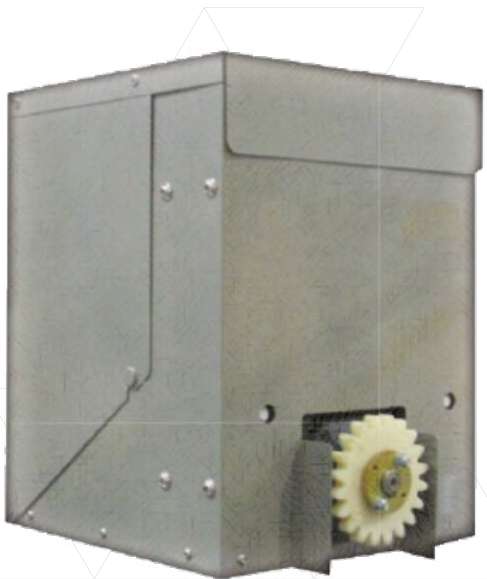
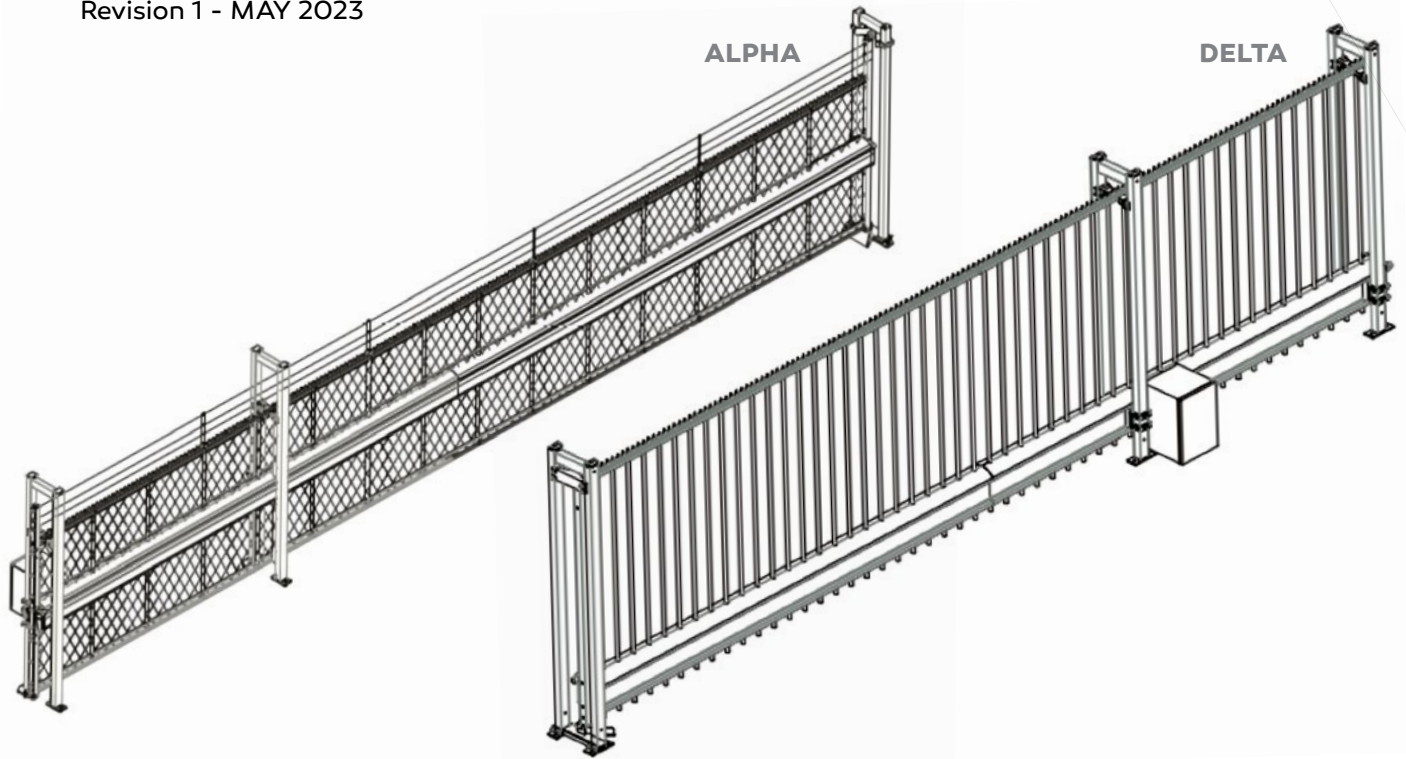


Revision 1 - MAY 2023



# ALPHA/DELTA KINETIC OPERATOR

## INSTALLATION AND MAINTENANCE MANUAL

1, 1S, 2, 2S Gate Operators

115 Lawson Crescent  
Winnipeg, Manitoba, Canada R3P 1A6  
Phone: 866.300.1110

[wallaceperimetersecurity.com](http://wallaceperimetersecurity.com)



**WALLACE**  
PERIMETER SECURITY

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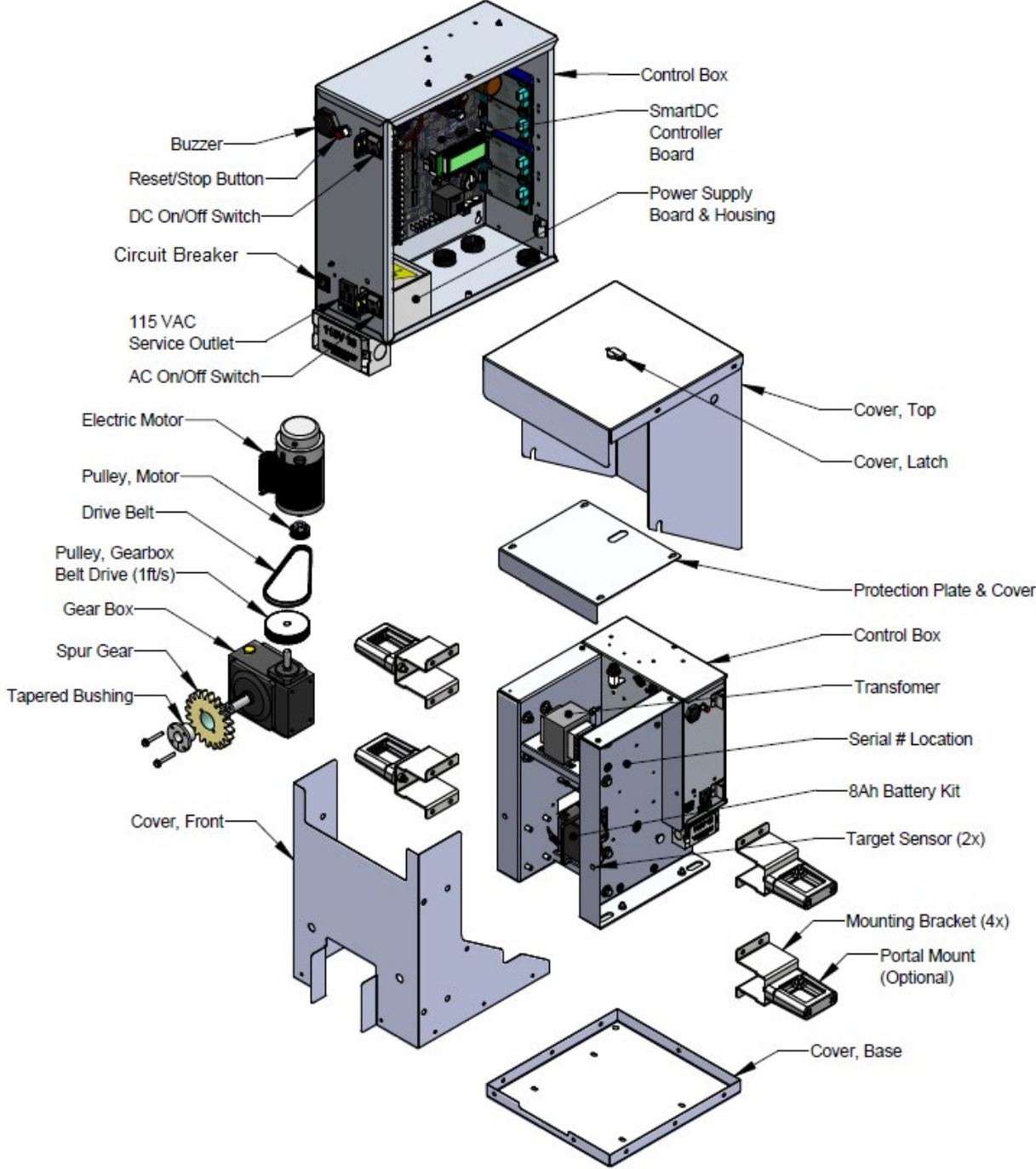
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# Kinetic Components





# PRODUCT & WARRANTY REGISTRATION

Enter the following information to register your HySecurity product. Please write legibly.

**NOTE: TO EXTEND THE OPERATOR WARRANTY BEYOND 1 YEAR, YOU MUST RETURN THIS REGISTRATION WITHIN 60 DAYS OF PURCHASE. Refer to the Limited Warranty.**

## Installer Information

First/Last Name: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State/Province: \_\_\_\_\_  
 Country: \_\_\_\_\_ Postal Code: \_\_\_\_\_  
 Daytime Phone: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

## End-user Information

First/Last Name: \_\_\_\_\_  
 Company/Association: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State/Province: \_\_\_\_\_  
 Country: \_\_\_\_\_ Postal Code: \_\_\_\_\_  
 Daytime Phone: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

Email this completed form to:

[service@wallaceperimetersecurity.com](mailto:service@wallaceperimetersecurity.com)

For technical support call: 866-300-1110

Wallace Perimeter Security does not share warranty registration information with parties unless the requested services, transactions, or legal requirements necessitate it.

## Product Information

Model name/number: \_\_\_\_\_  
 Serial number: \_\_\_\_\_  
 Purchase Date: \_\_\_\_\_  
 Purchase Price: \_\_\_\_\_  
 Distributor's name: \_\_\_\_\_  
 Distributor's City: \_\_\_\_\_  
 Country: \_\_\_\_\_  
 Installation Date: \_\_\_\_\_

Who is completing this form? (Mark an "X".)

Installer		Maintenance Personnel	
End User		Other	
Distributor			
Additional Comments:			
_____			
_____			
_____			
_____			

Mark an "X".

Did you visit the Nice | HySecurity website before purchasing your product? 

YES	NO
-----	----

How did you hear about HySecurity gate operators? (Check all that apply.)

Advertisement	<input type="checkbox"/>	Exhibition	<input type="checkbox"/>	Distributor	<input type="checkbox"/>
Business Associate	<input type="checkbox"/>	Other (please specify)	<input type="checkbox"/>	_____	

What factor(s) most influence your purchase? (Check all that apply.)

Performance	<input type="checkbox"/>	Price	<input type="checkbox"/>	Power	<input type="checkbox"/>
Reliability	<input type="checkbox"/>	Brand	<input type="checkbox"/>	Prior Experience	<input type="checkbox"/>
Recommendation	<input type="checkbox"/>	Warranty	<input type="checkbox"/>	Product Weight	<input type="checkbox"/>



# Introducing Kinetic DC

Thank you for purchasing our premium Kinetic DC™ slide gate operator. At Wallace Perimeter Security, we pride ourselves on quality. Our new line electromechanical gate operators include a number of unparalleled user benefits:

**Robust** - The components on the SmartDC Controller™ are protected by opto-isolators which shield them from power surges and lightning strikes.

**Power** - The SmartDC Controller provides variable speed control to a powerful, continuous duty 24V DC motor which drives the gearbox. The electronics, motor and gear box are rated to operate in temperatures that range from -13°F to 158°F (-25°C to 70°C). Kinetic DC 15W [Kinetic 1] is rated for gates up to 30 feet long and 1,500 pounds (12m and 682kg). Kinetic DC 10FW [Kinetic 2] is rated for gates up to 30ft and 1,000lbs (12m and 454kg). Solar options are available for both models.

**Finesse** - A variable rate of gate acceleration and deceleration, dependent upon gate weight and length, assures very smooth handling.

**UPS backup and Solar ready** - Two 12V, 8 amp hour (Ah) batteries will provide a fully functional gate operator (up to 4000ft/1219m of gate travel) when AC power is unavailable. Four user-selectable UPS modes are available. 12VDC and 24VDC are available to power accessory controls. An optional base extension is required to provide space for the optional 50Ah batteries which support solar applications or usage during extended power outages.

## Intelligent Features: SmartDC Controller™

**Menus and User relays** - The SmartDC Controller has 43 menu items to allow installer configuration of gate function and two user relays, which can be configured for 45 different functions.

**Independent adjustment for open and close gate speeds** - An easy-to-use menu on the SmartDC Controller allows the installer to vary the open and close speed settings.

**Intelligent Inherent Entrapment Sensor (IES)** - Any impediment to gate travel is sensed by the system, stopping gate movement per UL 325 Safety Standards. The intelligent system monitors gate power then adapts the IES to trip at an adjustable threshold above normal power.

**Improved Liquid Crystal Display (LCD)** - A 32-character LCD provides increased readability for programming and troubleshooting.

**USB communications port** - A direct connection provides accessibility to download system diagnostics and upload system configurations using the Smart Touch Analyze and Retrieve Tool (S.T.A.R.T.) software.

**S.T.A.R.T. software and diagnostics** - With S.T.A.R.T. software loaded on a laptop computer, you can get the latest software upgrade and have an invaluable troubleshooting tool for Wallace Perimeter Security operators. To download this free software, visit the Nice | Hysecurity website at <https://hysecurity.com/>.

## Technical Support

For technical support, call your installer or authorized Wallace Perimeter Security distributor. Obtain the serial number of your operator before calling. Refer to **“Kinetic Components” on page 7**. For the name of a distributor near you, call Wallace Perimeter Security at 866-300-1110.

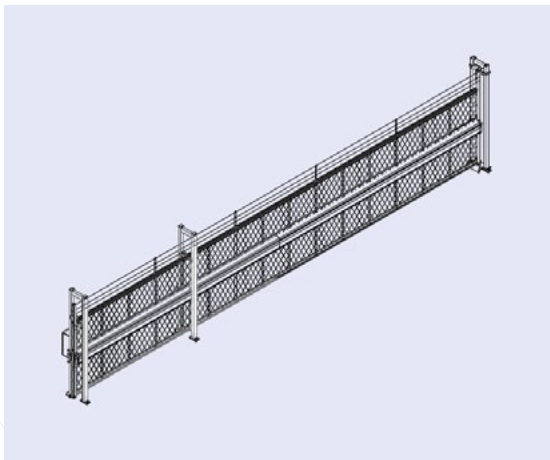

For information about Wallace Perimeter Security training for installers, maintenance personnel and end-users, refer to the company website at [www.wallaceperimetersecurity.com](http://www.wallaceperimetersecurity.com) or call 866-300-1110.

## Alpha/Delta (Kinetic Operator) Gate System

The Kinetic automatic gate operator is designed to open and close two types of Wallace Perimeter Security modular aluminum gate models:

- ALPHA Cantilever Sliding Gate
- DELTA Cantilever Sliding Gate

The modular gate construction allows for quick, economical delivery, and cost-effective future serviceability.

Wallace Perimeter Security Sliding Gates			
ALPHA Cantilever Sliding Gate		DELTA Cantilever Sliding Gate	
			
Features	<ul style="list-style-type: none"> <li>-Rack and pinion drive</li> <li>-Concealed nylon rollers</li> <li>-Anti-climb top rail</li> </ul>	Features	<ul style="list-style-type: none"> <li>-Rack and pinion drive</li> <li>-Concealed nylon rollers</li> <li>-Anti-climb top rail</li> <li>-Matches ornamental fence line</li> </ul>

<b>Wallace Perimeter Security Sliding Gates</b>			
<b>ALPHA Cantilever Sliding Gate</b>		<b>DELTA Cantilever Sliding Gate</b>	
Infill Options	-Chain link -Welded wire	Infill Options	Vertical picket
Maximum Height	8 feet (2.44 meters)	Maximum Height	8 feet (2.44 meters)
Maximum Width	30 feet (9.14 meters)	Maximum Width	30 feet (9.14 meters)
Opening Speed	1 foot per second* 2 feet per second**	Opening Speed	1 foot per second* 2 feet per second**
Finish	-Hot dip galvanized/ mill -1 finish aluminum -Powder coat options	Finish	-Hot dip galvanized/ mill -1 finish aluminum -Powder coat options
Power Requirements	Voltage: 115-230 V Frequency: 50-60 Hz Current: 15 amp dedicated circuits	Power Requirements	Voltage: 115-230 V Frequency: 50-60 Hz Current: 15 amp dedicated circuits
*Screen must be installed to be compliant with ASTM Standards/UL Standards. **Dependent on UL 325 classification. Listed to UL 325 (class 1,2,3 &4).			
Alpha/Delta Applications: Airports, Seaports, Commercial Facilities, Water Treatment Facilities, Public Transportation			

Alpha/Delta models are cantilever gate systems (trackless sliding gates) that use a tooth rack and spur gear mechanism to move the gates. The absence of a ground track allows the gate to accommodate heavy traffic in continuous duty applications.

Sealed-bearing nylon rollers concealed behind the fencing remain suspended when the gate is opening and closing via a rack and pinion drive. The nylon polyamide rack and pinion drive is quiet, and provides a secure entrance while maximizing the gate’s lifespan and minimizing maintenance requirements.

The Kinetic operator is installed on the Alpha/Delta gate posts parallel to the gate beam. The operator gearbox engages the tooth rack located in the gate beam, causing the gate to slide open or closed in response to a keypad or remote access signal processed by the SmartDC controller.

Wallace Perimeter Security Alpha/Delta cantilever sliding gates provide a secure, easy-to-operate solution for various applications, particularly when space is at a premium.

# Alpha/Delta Installation & Maintenance Checklist

Review the following list and check off the items as you complete the installation. Make sure gate installation complies with ASTM F2200 Standard Specification for Automated Vehicular Gate Construction. And, install the supplied WARNING sign on both sides of the gate. Check for compliance with local codes, site conditions, and NEC standards.

**NOTE**

When turning the power OFF and ON to demonstrate learn limits after DC/AC cycles (see Step 2.17 - End User Demonstration), it is important to emphasize that interrupting the learn limits procedure will cause the operator to fail the limit setting process.



Turn OFF power to the gate whenever assembly and maintenance activities are being carried out.

Customer:

Gate Type:

Address:

Gate Size:

Contact:

Phone:

Onsite Location:

ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<b>Kinetic Operator</b> <b>Serial Number:</b>				
<b>1-MECHANICAL</b>				
<b>1. Target Magnet</b> <p>Should be mounted in proper position on the gate beam, so that the gate travel is stopped electronically (soft stop), before it stops mechanically. Magnet should be approximately 3" past proximity switch when gate is at fully closed position. The gate should not hit the back of the run-on-plate, nor should it squish the rubber bumper. Appropriate gap between the leading edge post and the bumper is 1/4" to 1/2".</p>				
<b>2. Run-on Plate</b> <p>Make sure that the run-on-plate is mounted in the proper location on the catch portal. It should not sit too low, so that the gate leaf is suspended in the air, nor should it be mounted too high, so that the gate rides up the entire run-on-plate. The run-on-plate should only support about 15 lbs/7kg of the total weight of the gate, keeping it from bouncing in the wind, when fully closed. The leading edge post should engage/contact the run-on-plate approximately halfway up the plate.</p>				
<b>3. Beam Joint(s)</b> <p>Make sure there is no gap or bump in between the two beams. Make sure beam is not sagging or pulled laterally to one side. Beams that are not aligned properly will cause the lower rollers to wear out prematurely.</p>				
<b>4. Bottom Rollers</b> <p>Check bottom beam guide rollers for wear. Rollers should be replaced every 2 to 3 years depending on usage.</p>				

ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<p><b>5. Top Rollers</b></p> <p>Check top guide rollers for wear. Top rollers should be replaced every 3 to 5 years depending on usage.</p>				
<p><b>6. Leading/Trailing Edge Post</b></p> <p>Pull on or twist the leading and trailing edge posts by hand to make sure that they do not move – all fasteners should be tight. Also, make sure that the leading edge post foot is secure (bottom of leading edge post). If loose, use self-drilling screws to hold in place. Loctite should be used to secure the fasteners holding the posts in place.</p>				
<p><b>7. Gate Portals</b></p> <p>Ensure gate portals are in line and level.</p>				
<p><b>8. Operator</b></p> <p>When mounting the operator cabinet, the right height is very critical. If mounted too high, the gate leaf will put extreme pressure on the gearbox, therefore the teeth on the gear will wear out very quickly and cause internal damage to the gearbox. If mounted too low, the teeth on the drive gear will not engage the tooth rack appropriately. The operator must be installed parallel to the gate beam; drive gear must run true in the middle of the tooth rack throughout the length of travel. The optimum gap is 2.7mm (0.106 inch) – roughly the diameter of an 11-gauge tie wire.</p>				
<p><b>9. Drive Sprocket</b></p> <p>Check the drive sprocket. Worn or broken teeth will require replacement.</p>				
<p><b>10. Drive Belt</b></p> <p>Check drive belt for cracks and tooth wear. Either condition will require the belt to be replaced. The belt should be replaced every 2 years.</p>				

ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<p><b>11. Wallace Perimeter Security Logo</b></p> <p>The Wallace Perimeter Security logo should be placed starting/ending (depending on the direction of the gate) at the third picket from the front of the beam, facing the public side of the property.</p>				
<p><b>12. UL 325 Warning Sign Compliance</b></p> <p>It is a UL 325 requirement to keep the four (4) warning signs (two in each official language in Canada) provided with this system visible and securely mounted. One is to be installed on each side of the gate and on either side of the gate opening. <b>For UL 325 compliancy, ensure signage is installed near the gate; visible from each side of the gate and not ON the gate since they should be seen whether the gate is fully open or fully closed.</b> Each sign must be clearly visible to persons located on the side of the gate on which the warning sign is installed.</p>				
<b>2-ELECTRICAL</b>				
<p><b>13. Photocells - Test</b></p> <p>Ensure that the photocells are mounted on the inside of the property (secure side), for safety reasons. Test the photocells to make sure they are aligned properly by placing the stickers simulating rain and snowfall on the face of the photocells, and listen for a clicking sound when interrupting the photocell beam. Complete in both opening and closing directions.</p>				
<p><b>14. Photocells – Clean</b></p> <p>Remove covers from photocells, clean inside of covers and ensure gasket is in place to protect the photocell body from water and dust entering.</p>				
<p><b>15. Sensing Edges</b></p> <p>If installed, test for proper operation.</p>				

ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<p><b>16. Loop Detector - Test</b></p> <p>Verify that the ground loops have been occupied and the gate responds correctly. Test the loop occupation with the type of vehicles that will be using the gate. The loop detector sensitivity should be set as high as possible without false detections. Ensure loop phasing is correct.</p>				
<p><b>17. Loop Inspection</b></p> <p>Ensure all of the ground loop path is covered with sealant. Exposed areas should be resealed.</p>				
<p><b>18. Accessory Device Programming</b></p> <p>Program changes through the Kinetic Installer Menu for the accessory devices, installed as appropriate for site requirements.</p>				
<p><b>19. Close Timer</b></p> <p>Set the close timer if required and record the setting:</p> <p>Default is 0.</p>				
<p><b>20. IES Sensitivity</b></p> <p>Test IES sensitivity and adjust if needed. Record setting:</p> <p>Default is 2.</p>				
<p><b>21. Usage Class</b></p> <p>Record Usage Class setting in Initial Setup menu:</p>				
<p><b>22. Gate Speed</b></p> <p>Record the Open Speed settings:</p> <p>Record the Close Speed settings:</p>				



ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<p><b>23. Gate Handing</b></p> <p>From the secure side of the gate, record if it slides to the left or to the right:</p>				
<p><b>24. Fire Department Override</b></p> <p>If enabled, write YES in space provided. If not enabled, write NO in space provided:</p>				
<p><b>25. Response to AC Power Failure</b></p> <p>Record whether AC Power Loss setting is set to AP0, AP1, AP2 or AP3:</p>				
<p><b>26. SmartDC Controller – Batteries</b></p> <p>Check batteries for physical wear and corrosion on leads. Clean if needed. Test battery input and output voltage via the SmartDC circuit board and record.</p> <p>Battery input voltage:</p> <p>Battery output voltage:</p> <p>Batteries should be replaced every 2 years.</p>				
<p><b>27. SmartDC Controller – Software Version</b></p> <p>Check the software version on the SmartDC board. If not the latest version, contact the Wallace Perimeter Security service team to download new version, update and record new version number:</p>				
<p><b>28. Wiring</b></p> <p>All field wiring should run in the provided wiring ducts. Power supply wiring should be secured safely in appropriate clips.</p>				

ALPHA/DELTA INSTALLATION AND MAINTENANCE CHECKLIST	Checked	Good	Needs Attention	N/A
<p><b>29. Conduits</b></p> <p>All conduits must be finished to the applicable electrical code(s) into the bottom of the operator cabinet only. This will help to prevent water entry into the operator cabinet and will allow for proper installation of thermal cover (if required).</p>				
<p><b>30. Motor Brushes</b></p> <p>Check motor brushes for wear. Brushes should be replaced every 2 years.</p>				
<p><b>31. Thermal Cover/Thermostat</b></p> <p>If supplied as part of the installation, ensure the thermal cover fits appropriately over the cabinet and Velcro straps are appropriately fastened. Installation/removal of cover should be clearly understood by end user. Thermostat is self-regulating at 40.1°F (4.5°C).</p>				
<b>Comments/Recommendations:</b>				

Customer Signature:	Customer Name (Print):
Signature of Maintenance Inspector:	Maintenance Check Performed by (Print Name):
Date:	Date of next Maintenance Inspection:
Cycle Count:	

# SAFETY INFORMATION

## Safety Notices

The following four levels of safety notices are used where applicable within this manual; each notice contains information specific to the situation.

**⚠ DANGER**

Indicates death or serious injury will occur if the hazardous situation is not avoided.

**⚠ WARNING**

Indicates death or serious injury could occur if the hazardous situation is not avoided.

**⚠ CAUTION**

Indicates mild or moderate injury could occur if the hazardous situation is not avoided.

**CAUTION**

Indicates damage to equipment is probable if the hazardous situation is not avoided.

## Common Industrial Symbols

The following international safety symbols may appear on the product or in its literature. The symbols are used to alert you to potential personal injury hazards. Obey all safety messages that follow these symbols to avoid possible injury or death.



**Attention - Take Notice**



**DANGER - Keep Away**



**Entrapment Zone**




**Possible Pinch Point**

# Safety Requirements

Automatic gate operators provide user convenience and security. However, because these machines can produce high levels of force, it is imperative that gate operator system designers, installers and end users be aware of potential hazards associated with improperly designed, installed, or maintained systems. The gate operator is only one component of the total gate operating system. It is the joint responsibility of the architect, site designer, purchaser, installer and end user to verify that the total system is appropriately configured for its intended use. Additionally, certain municipalities have established licensing, codes or regulations that regulate automated gate system design and installation. Consult local government agencies for up-to-date rules and regulations prior to gate system design or installation.

## Important Safety Instructions

 **WARNING**

A moving gate can cause serious injury or death. Start the gate operator only when the gate's travel path is clear.

Hazards, associated with automatic gates, can be reduced with proper site design, installation, and use. Installers, maintenance crew, and owners/users must read and follow the Important Safety Instructions in this manual and review all the literature that accompanies the product. It is important that only qualified installers handle the installation of the Kinetic gate operator. A qualified installer has one of the following:

- **A minimum of three years' experience installing similar equipment.**
- **Proof of attending a Wallace Perimeter Security Technical Training seminar within the past three years.**
- **Significant manufacturer endorsements of technical aptitude in gate operator installation and operation.**

Underwriter Laboratories (UL) and the American Society for Testing and Materials (ASTM) are responsible for current safety standards and regulations regarding gate operators and automated gates. All aspects of gate installation must comply with the appropriate safety standard. For the most up-to-date ASTM F2200 Gate and Fence Standards, refer to <https://www.astm.org/>. For UL 325 Safety Standard, refer to <https://www.ul.com/>.

## Safety Standards - Installer's Responsibility

- Study the entire contents of this manual prior to installing, operating, or maintaining the Kinetic gate operator. Taking extra time to align the gate operator and verify a fully functional installation will reduce maintenance, guarantee longest system life, and ensure customer satisfaction.
- Verify the gate operator usage class for the site. Refer to ***“Identifying Gate Operator Category and Usage Class” on page 27***. Install Kinetic only when the gate operator class is correct for the site and type of gate.
- Install an automatic operator only on gates that comply with ASTM F2200 Gate and Fence Standards. Screen or enclose openings in the gate per UL 325 Safety Standards.
  - All horizontal slide gates must guard or screen openings from the gate’s base support to a minimum height of 4 feet (122cm) above the ground. This must prevent a sphere of 2.2 inches (57mm) in diameter from passing through an opening in the gate or the adjacent fence that is covered in the gate’s open position.
  - Physical stops exist in the gate construction to prevent over-travel in both directions and guard posts prevent the gate from falling in the event of a roller failure.
- Before attaching the operator to the gate, slide the gate in both directions. Make sure it is level and moves freely. A gate that slides easily reduces strain on operator components. Gravity should play no part in the opening or closing of the gate.
- Make sure all exposed pinch points, rollers and wheels are guarded.
- To reduce the risk of entrapment throughout the entire travel path, make sure the gate is installed in a location so enough clearance is supplied between the gate and adjacent structures when opening or closing. Minimize the parallel gap between the gate and the fence.
- Make sure a separate walk-through entrance is nearby. Make certain a clear pedestrian path is designated and signs direct pedestrians to the walk-through gate. The automated gate entry is for vehicle use only. No one should cross the path of a moving gate.
- Install the gate operator on the secure (non-public) side of the gate. Locate controls (Open, Close, Stop/ Reset) where a user will have a clear view of the gate.
- Mount access control devices beyond reach of the gate. The control devices that operate the gate must be:
  - Located in a clear line of sight to the gate.
  - Mounted beyond 6 feet (183cm) of the gate, to prevent users from touching or accessing the gate while operating the controls. People attempting to access the controls by reaching through or around the gate can be seriously injured or killed by the moving gate.

- Incorporate a security feature to prevent unauthorized use.
- The gate operator must be properly grounded and the incoming power voltage must match the voltage label on the junction box.
- Install enough external entrapment protection sensors so that pedestrians are protected from entrapment in both directions of the gate travel and all hazard areas and possible pinch points are fully protected. Review the information found in ***“External Entrapment Protection Sensors” on page 25*** and ***“UL 325 Compliant Sensors” on page 29***.
- Install the supplied WARNING signs on the inside and outside of the gate so they are clearly visible from both sides of the gate. Installing the signs is a requirement for UL 325 compliance.
- Connect radio and other remote access (non-resetting controls) to the RADIO OPTIONS terminals.
- Open and close the gate to confirm that it was properly installed and to ensure reduced risk of entrapment. Verify the clearance between the gate and adjacent structures per UL 325 Safety Standards. Have a qualified gate technician test the gate monthly.
- When you complete the installation, show the end user how to:
  - Remove the cover. Turn the power off and on to demonstrate relearn limits after DC/AC cycles.
  - Turn the DC power switch off, which disengages the motor, and manually push the gate.
  - Use the Stop Button located on the side of the control box. It can be accessed through a hole in the cover.

**NOTE**

Gate operator instructions must be given to the owner per UL 325 Safety Standards.

## Safety Standards - Owner/User Responsibility

### WARNING

A moving gate can cause serious injury or death. Automatic gate operators move gates with high force. Make sure gates and gate operators are installed to reduce the risks of entrapment. Verify your gate and gate operator comply with UL 325 Safety Standards and ASTM F2200 Gate and Fence Standards. Ask for a copy of the gate operator's product literature and review it. You are responsible for educating all gate system users about proper use of the automated gate system.

- Automatic gates are for vehicular use only; provide and maintain walkways and signs to direct pedestrians to a separate walk-through entrance.
- An automatic gate can start at any time without warning; always keep people away from the gate area.
- Never let children operate or play with gate controls. Keep all remote controls, especially radio transmitters, away from children. Do not allow children to play on or around the gate or gate operators.
- Learn how to turn the power on and off. Learn how to manually release the gate.

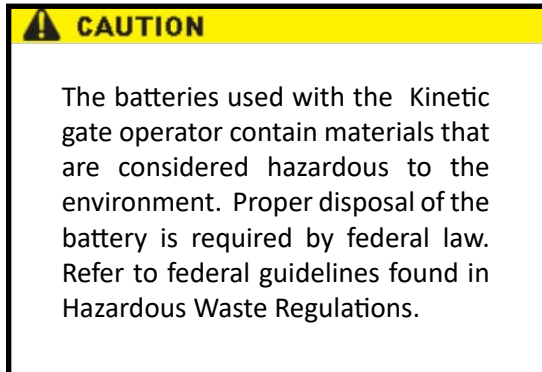
### CAUTION

Before attempting a manual release, make sure the gate is not moving.

- WARNING signs supplied with the gate operator must remain installed and clearly visible on both sides of the gate. The signs are required to maintain UL 325 compliance.
- Do not physically disable the warning buzzer and NEVER disconnect or cut its wires. The buzzer is required to function in the event of entrapment, regardless of UL 325 gate usage class. It provides an alert that the gate is about to move. Disabling the warning buzzer may increase the risk or extent of injury if entrapment occurs.
- Test the gate operator monthly. Specifically, test the Inherent Entrapment Sensor (IES) and external entrapment protection sensors. The gate must reverse its direction of travel upon contact with a rigid object and/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 test the gate operator on a regularly maintained schedule can increase the risk of injury or death.
- Have a professional gate installer routinely test the entire gate operator and entrapment protection sensors. Have a qualified service person make repairs to gate hardware to keep the gate running smoothly.

## Hazardous Materials and Proper Disposal

The Kinetic operator uses sealed, state-of-the-art Absorbed Glass Mat (AGM) batteries. Wallace Perimeter Security highly recommends replacing used batteries with new AGM-type batteries.



To reduce the risk of injury to persons:

- **Observe the polarity between the batteries and charging circuit.**
- **Never mix battery sizes, types, or brands. The charging circuit on Wallace Perimeter Security DC operators is designed for AGM-type batteries, not lead acid-type batteries. Wallace Perimeter Security strongly recommends that only sealed AGM style batteries be used.**
- **Exercise care in handling batteries. Be aware that the metal found in rings, bracelets, and keys can conduct electricity and cause other injuries. The material within batteries is toxic.**
- **Do not open or mutilate the batteries. Battery cells contain corrosive materials which may cause burns; have a qualified service person make repairs to gate hardware to keep the gate running smoothly.**
- **Always dispose of batteries properly. Do NOT place batteries in fire. The battery cells may explode. Follow federal guidelines for proper disposal of hazardous waste.**
- **Replace batteries according to the instructions found in DC Battery Replacement.**



## External Entrapment Protection Sensors

Kinetic is equipped with a Type A inherent entrapment sensor (IES). UL 325 Safety Standard compliance requires installation of external entrapment protection sensors, the number of which, depends on the entrapment hazards that exist at each particular installation.

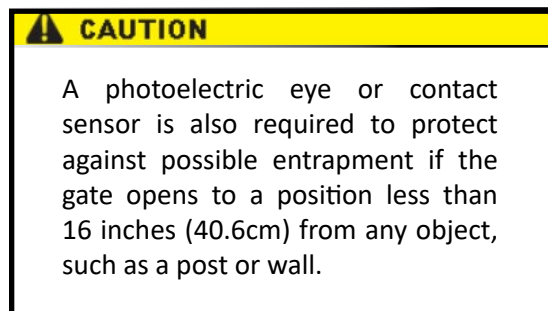
To comply with UL 325, the following external sensors may be used:

- **Contact sensors, such as edge sensors**
- **Non-contact sensors, such as photoelectric eyes**

The site designer or installer can choose either photoelectric eyes or edge sensors or use these devices in combination. Whatever devices are used, protection in both the opening and closing directions of gate travel must be provided.

The UL 325 Safety Standard for automatic sliding gates specifically requires that edge sensors or photoelectric eyes or a combination of both devices be installed to protect against pedestrian entrapment in BOTH directions of the gate travel and where an entrapment hazard exists.

**PHOTOELECTRIC EYES:** One or more photoelectric eyes shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate.



**EDGE SENSORS:** One or more edge sensors shall be located on the leading and trailing edges of a slide gate where the risk of entrapment or obstruction exists. One or more contact sensors (edge sensors) shall be located at the leading edge, trailing edge, and post-mounted, both inside and outside of a sliding gate.

**SENSOR SECURITY:** A hard-wired sensor shall be located and its wiring arranged so that communication between the sensor and gate is not subjected to mechanical damage.

**SENSOR FUNCTION and COMMUNICATION:** A sensor that transmits its signal to the gate operator must be located so its signal is not impeded by building structures or other obstructions. All sensors must be installed so that they function as intended for the end-use conditions.

**UL 325 LISTING:** The edge sensors and photo electric eyes must be tested and labeled as “Recognized Components” under UL 325 in order to be deemed acceptable for use in a gate operator. Study the **“Important Safety Instructions” on page 20** and consider your specific installation to determine where the greatest entrapment risks exist. Locate edge sensors and/or photoelectric sensors accordingly.

Be certain that a sufficient number of sensors are used so that pedestrians are protected from entrapment in both directions of the gate travel and all hazard areas are fully protected. Refer to the UL website at <https://www.ul.com/> for the most up-to-date list of gate operator safety standards (UL 325). Refer to <https://www.astm.org/> for a complete list of ASTM F2200 Gate and Fence Standards.

## Identifying Gate Operator Category and Usage Class

The Kinetic operator, according to UL 325 Safety Standards, falls in the Slide Gate category for gate operators. Its usage class is determined by the area that the vehicular gate services.

Four different vehicular usage classes are defined by UL 325:



### ***Class I***

Class I: Intended for use in a location of one to four single family dwellings or a parking area associated with one to four single family dwellings.



### ***Class II***

Class II: Intended for use in a commercial location or building such as multi-family housing units (five or more single family units), hotels, garages, retail stores or other buildings servicing the general public.



### ***Class III***

Class III: Intended for use in an industrial location or building such as factories or loading docks or other locations not intended to service the general public.



### ***Class IV***

Class IV: Intended for use in guarded industrial locations or buildings such as an airport security area or other restricted access location, not servicing the general public, in which access is monitored by security personnel or via closed circuitry.

## Choosing External Entrapment Protection

The site designer or installer must determine which external entrapment sensor devices will be installed with the Kinetic operator to meet UL compliance. The type(s) of entrapment sensor device systems are described below. For a complete listing of the requirements, see UL 325 Safety Standards.

Usage Class	Inherent Type Device	External Type Device
Class I, II, III	A	B1, B2, C, or D
Class IV	A	B1, B2, C, D, or E

To comply with UL 325, refer to the chart and take the following steps:

1. Select the Usage Class according to the gate’s locale and purpose.
2. The required UL 325 inherent Type A sensor is an integral part of the Kinetic system.
3. Based on the gate’s usage class, choose External Type Devices: B1, B2, C, D, or E.
  - To comply using B1 - install non-contact sensors (photoelectric sensor or the equivalent).
  - To comply using B2 - install contact sensors (edge sensor device or the equivalent).
  - Refer to the following Section for the operator manufacturer’s list of (non-contact and contact) tested sensors compliant with the UL 325 Standard of Safety.
  - Mounted beyond 6 feet (183cm) of the gate, to prevent users from touching or accessing the gate.
  - To comply using a Type D device requires a CONSTANT HOLD push-button station. This CONSTANT HOLD push-button station must be the only device that opens and closes the gate. It can only be used where the gate and push-button station will be monitored by personnel 24 hours a day in full view of the gate area. An automatic closing device (such

as a timer, loop sensor, or similar device) must not be employed. A Warning placard stating, “WARNING - Moving Gate has the Potential of Inflicting Injury or Death - Do Not Start the Gate Unless the Path is Clear” must be placed adjacent to the gate operator control.

### NOTE

The Kinetic system is equipped with a Type A inherent entrapment sensor (IES) that complies with UL 325. Any impediment to gate travel causes the gate to stop and reverse.

### CAUTION

Compliance issues exist with a Type E device (audible warn before operate alarm). A Type E device is permitted as a means of external entrapment protection by UL 325 in Class IV applications, but it is not recommended by Wallace Perimeter Security because a buzzer warns, but cannot protect against possible entrapment. Wallace Perimeter Security highly recommends, even for Class IV use, that external entrapment protection (edge or photo-eye sensor) devices be installed to detect possible entrapment.

## UL 325 Compliant Sensors

The following sensors have been tested with Nice | HySecurity gate operators by an independent laboratory and certified to comply with UL 325 7th Edition. Select sensors from this list for UL compliant gate automation solutions. Contact the sensor manufacturer for specific recommendations for use.

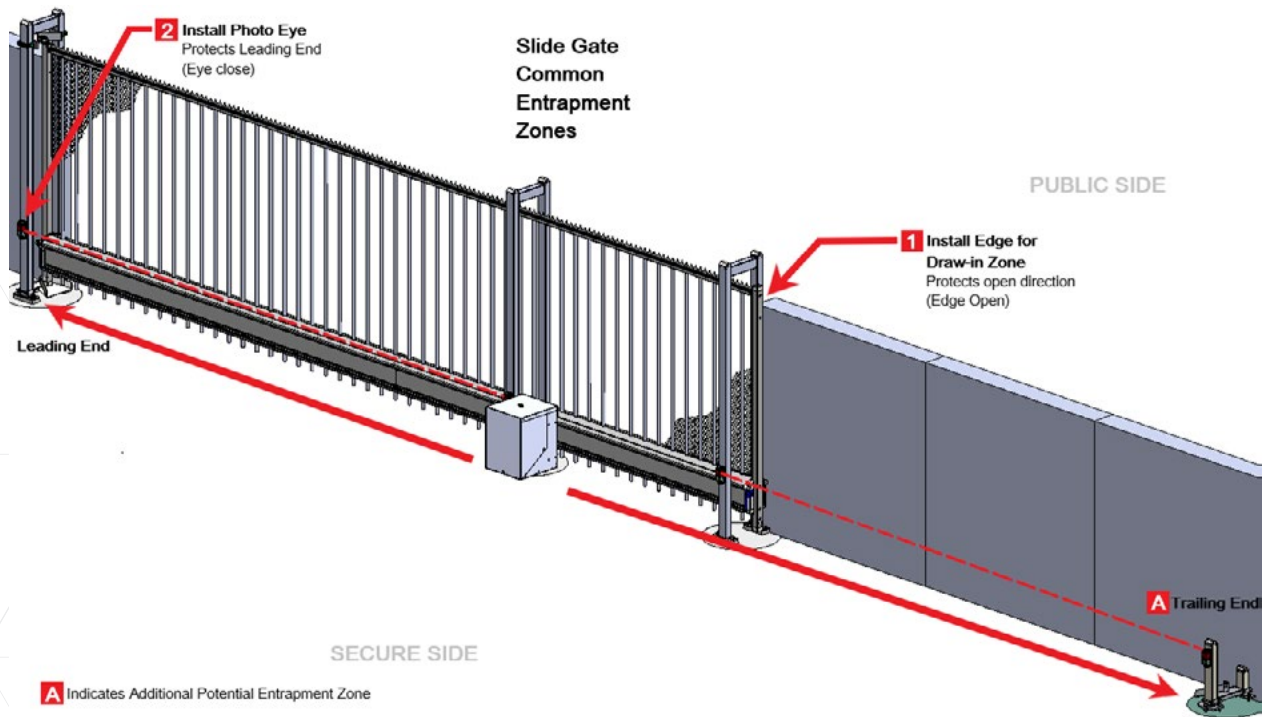
**NOTE**

All external entrapment protection sensors **must have NC sensor outputs** and be wired to the SENSOR COM terminal for monitoring and powering purposes. Depending on software version, the sensor becomes powered when the gate operator’s motor runs or is always powered when the operator is connected to AC power.

Recommended External Entrapment Protection Sensors List for the SmartDC Controller – Kinetic Operator				
	Mfg. Part # or Model	Brand	Wallace Perimeter Security Part #	Max. Range
<b>Photo Eyes (Retro-reflective)</b>	E3K-R10K4-NR-1	Omron	-	40 ft (12.2m)
	NIR-50-325	EMX	-	45 ft (13.7m)
	IRB-RET	EMX	-	53 ft (16.1m)
	E-931-S50RRGQ	Seco-Larm	-	46 ft (14m)
<b>Photo Eyes (Thru-Beam)</b>	OVS-50TNR	Optex	-	33 ft (10m)
	IRB-MON	EMX	100620	65 ft (19.8m)
	E-960-D90GQ	Seco-Larm	-	90 ft (27.4m)
<b>Edge Sensors</b>	Sentir Series	ASO Safety	100543	-
	CPT210-2U-#-T2	Miller Edge	-	-
<b>Edge Sensor Converters</b>	Hy2NC (Converts 10K to NC Monitoring)	HySecurity	-	-
<b>Multi-Input Module</b>	The Solution – MIM-62	Miller Edge	-	-

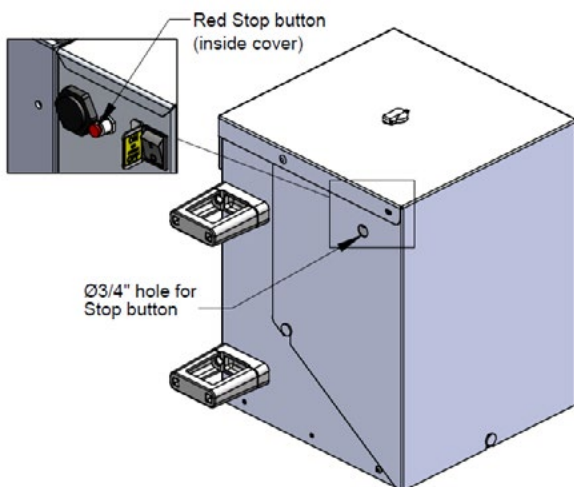
<b>Recommended External Entrapment Protection Sensors List for the SmartDC Controller – Kinetic Operator</b>
<b>Excerpts from UL 325 Standard:</b>
The operator shall monitor for the presence of every device at least once during each open and close cycle. (Clause 32.1.8 of the Standard)
It shall not be possible to make simple modifications in the field by adding, suppressing or changing, either on the operator or external entrapment protection device(s), to bypass, interfere with, or otherwise defeat the monitoring function. (Clause 32.1.10 of the Standard)
Entrapment zones are now defined for each gate type. (Clauses 4.23, 4.24, 4.29, 4.34 of the Standard)
Slide Gates: To enable fully automatic operation, all SLIDE gate operators will require a minimum of TWO monitored external entrapment protection sensors (one for each direction) to protect entrapment zones in both the open and close direction of travel.
Preferred solution for slide gates: A photo eye for the close direction and a hard-wired edge sensor for the open direction that is mounted to the face of the leading post of the fence behind the gate. (Reach-through injuries are the most common hazard associated with automatic sliding gates).

Installers must assess each specific site and install sensors that protect all potential entrapment zones. See figure below; EYE CLOSE and EDGE OPEN are programmed at the appropriate sensor inputs (1, 2 or 3).



## Stop Button

A stop button is accessible from the outside of the operator. The red stop button is located inside a hole cutout on the Kinetic cover.



Pressing the stop button while the gate is opening or closing disables the automatic close time and stops gate travel. The gate travel remains stopped until the operator receives an open or close signal.

Make sure all users of the gate know where the stop button is located.

A screwdriver or hex key can be used to press lightly on the switch to activate it.

## Manual Release

Make sure to teach all users how to turn off electric power and how to move the gate manually. Kinetic allows a gate to be pushed manually when the operator's DC power is turned off. (You DO NOT need to turn AC power off to manually push the gate.) See NOTE.

When you turn the DC power off, the following occurs:

- **The motor disengages which makes it easier to push the gate open.**
- **The GATE NO LOAD (FAULT 4) appears on the display.**
- **The position sensor is active and established limits are remembered.**

To turn DC power on, take the following steps:

1. **Make sure the gate is not moving.**
2. **Flip the DC power switch ON.**
3. **Clear any faults by pressing RESET.**

### NOTE

If you turn OFF both power switches (AC and DC) and manually move the gate, the operator will search for the target to re-establish its limits. When you turn AC & DC power back ON, the operator will cycle the gate and search for the target magnet (its "home" position). An operator with the DC power switch ON and the AC power switch OFF still functions normally, but "NO AC" flashes in the display. If you "push" the gate, it will push back because the position sensor is active and the motor is engaged.

# Alpha/Delta Gate Unloading

1. Check packing slip to ensure all pieces are accounted for.



4. The pallets are built with openings at the bottom to be securely lifted by a forklift.



2. Lift the aluminum beams by hand. Use a cart if available.



5. **IMPORTANT TO NOTE:** If you are offloading without a dock, disassemble pallet and remove pieces by hand.



3. Contents are fragile. Take care when moving.



6. Remove spools of tensioning wire.

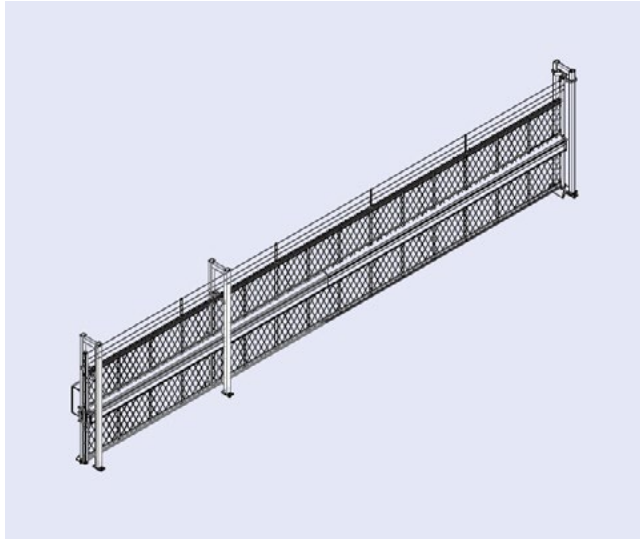




# ALPHA/DELTA Gate Installation

The Kinetic motor powers two models of Wallace Perimeter Security Cantilever Sliding Gates:

- The **ALPHA** Gate (chain-linked), with an internal tensioned aluminum beam.



- The **DELTA** Gate (vertical bar infill), with an internal tensioned aluminum beam; without diagonal braces.



Both gate models feature a rack and pinion drive, concealed nylon rollers and anti-climb top rail.

Kinetic Gate installation should only be carried out by personnel qualified by Wallace Perimeter Security.

Be sure to attach the **WARNING** signs on both sides of the gate but **NOT ON** the gate.

For your records, take a photograph of the completed installation site.

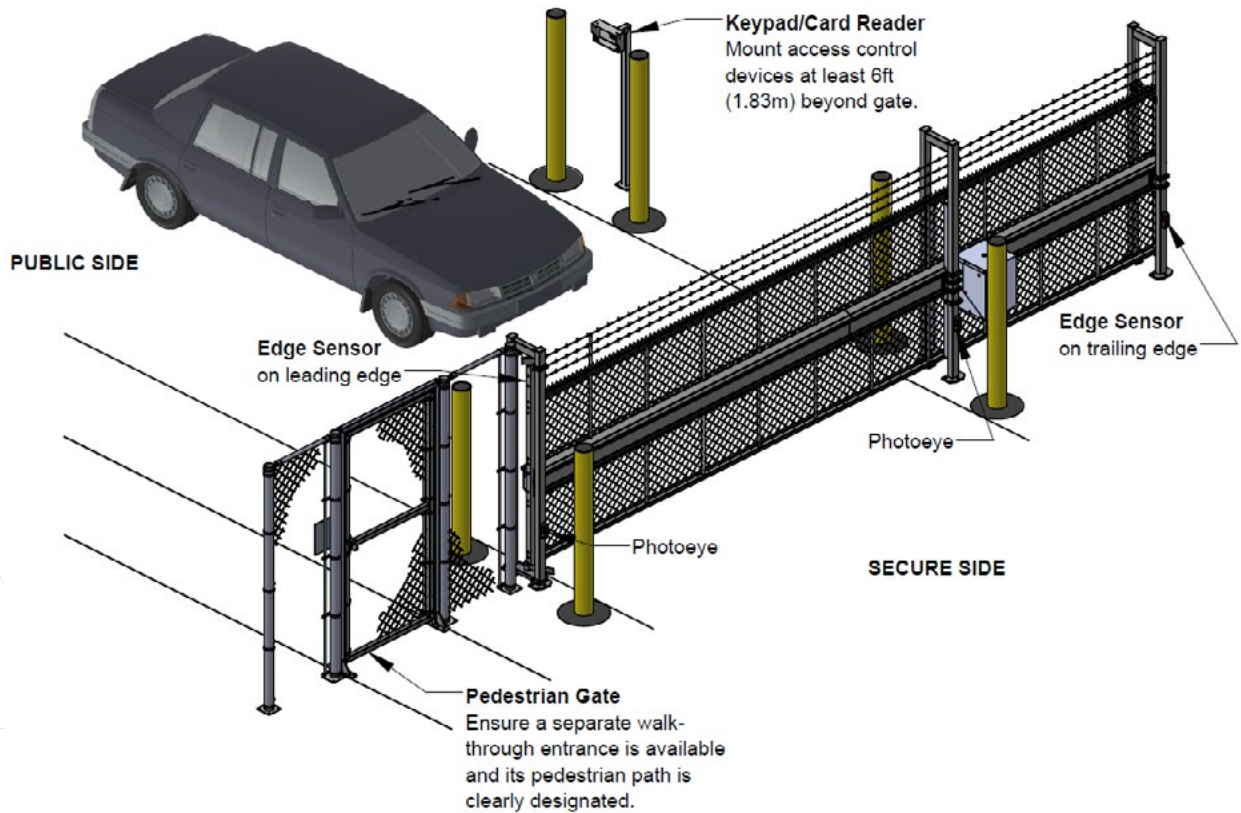
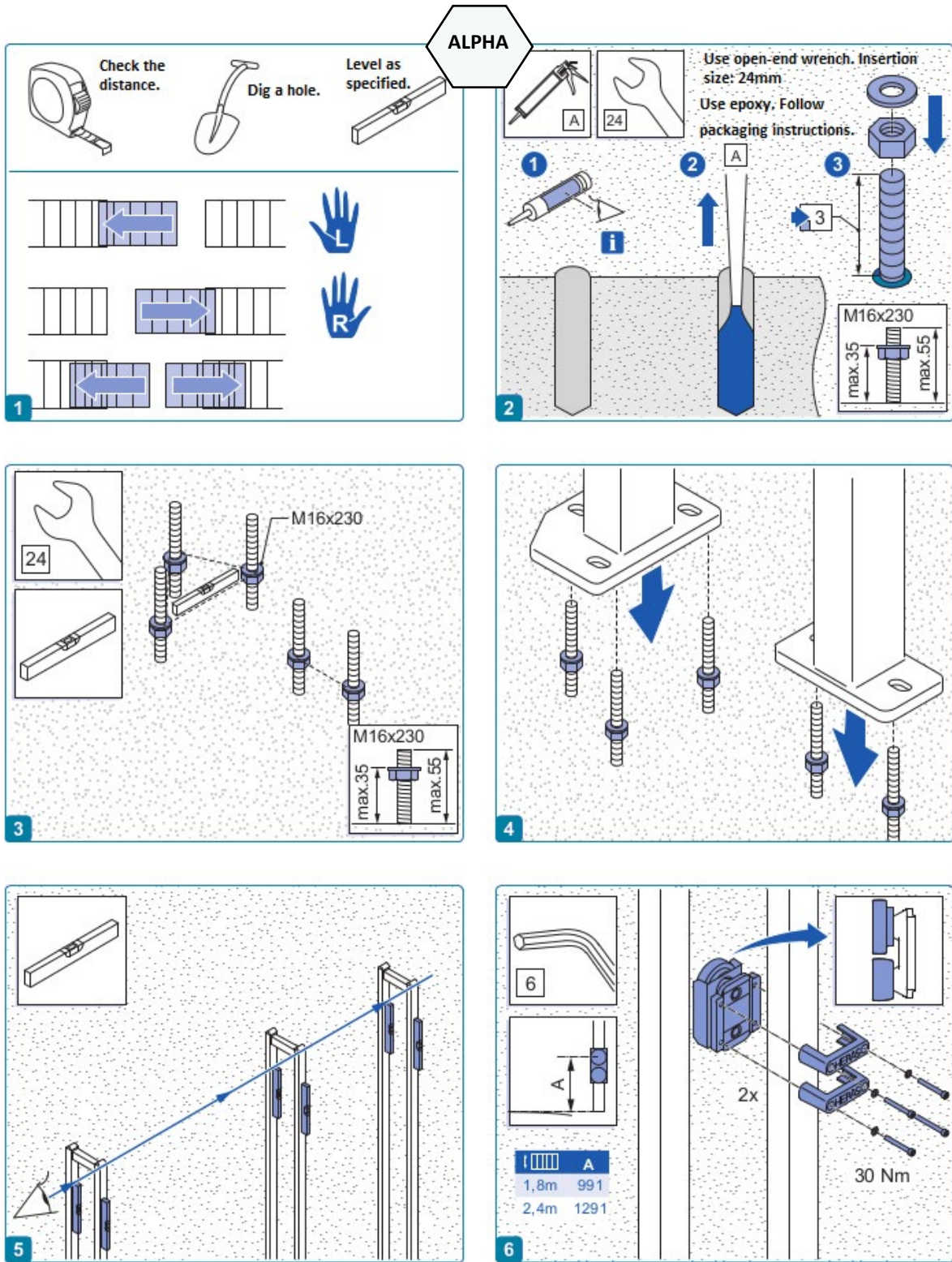
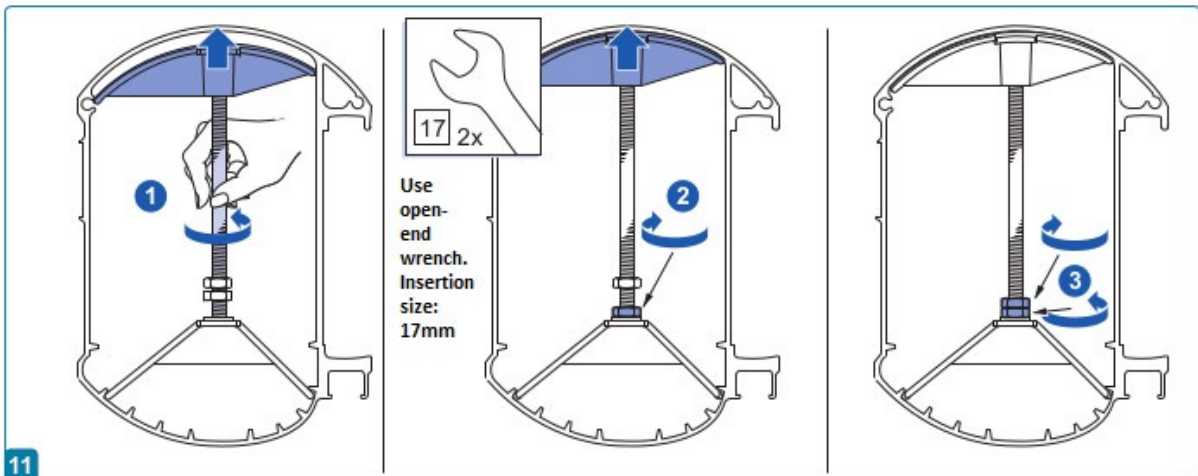
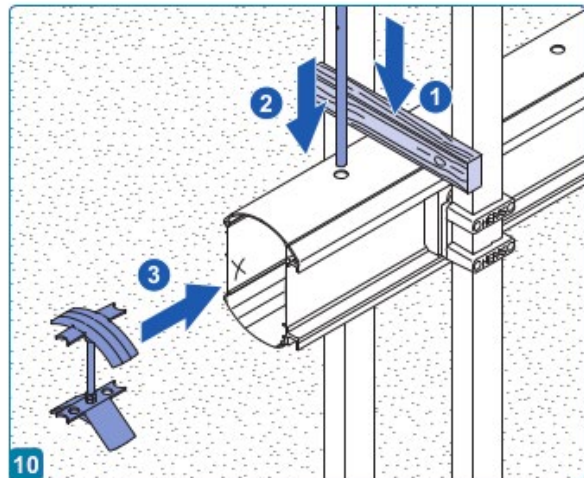
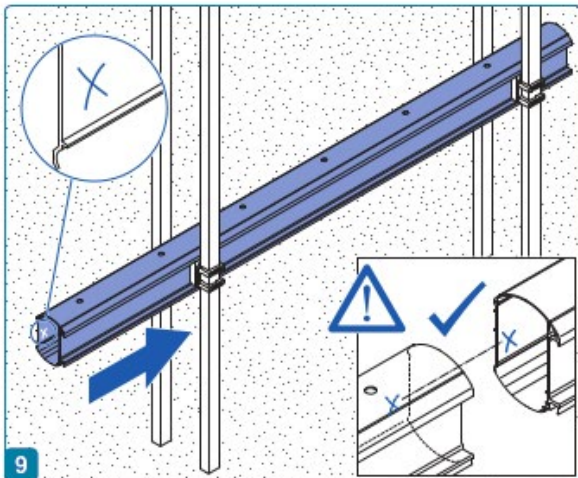
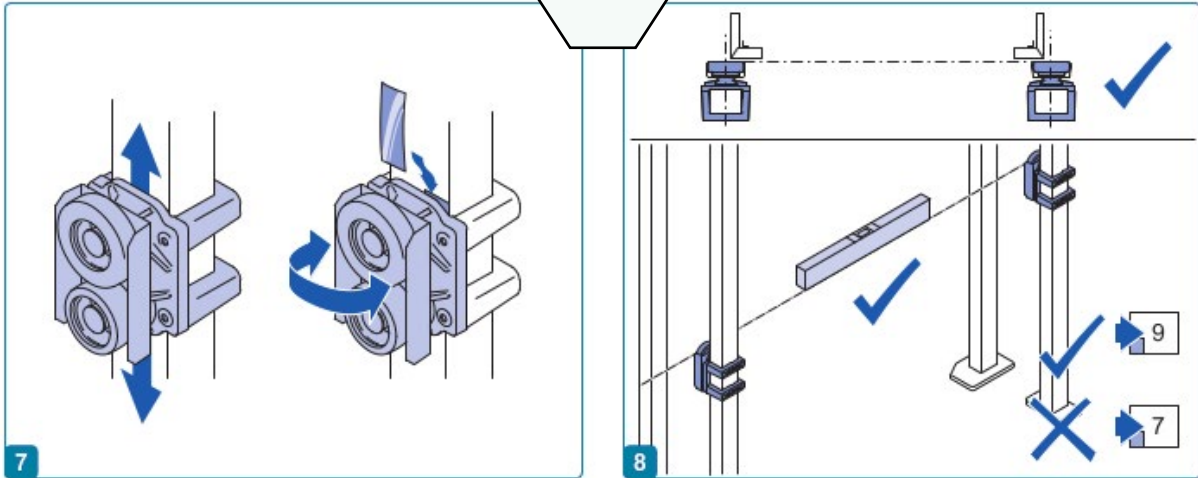


Figure 1. Site Overview

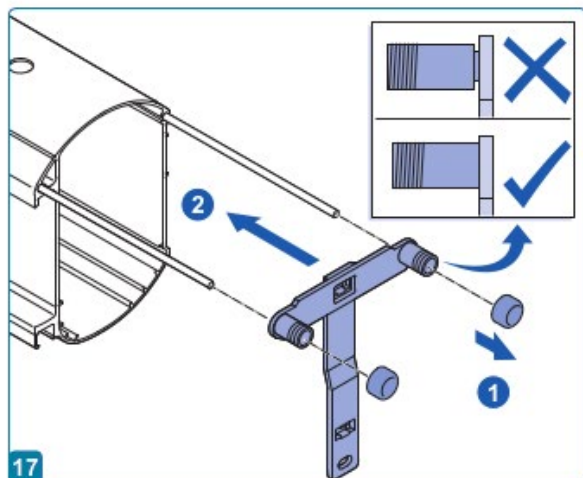
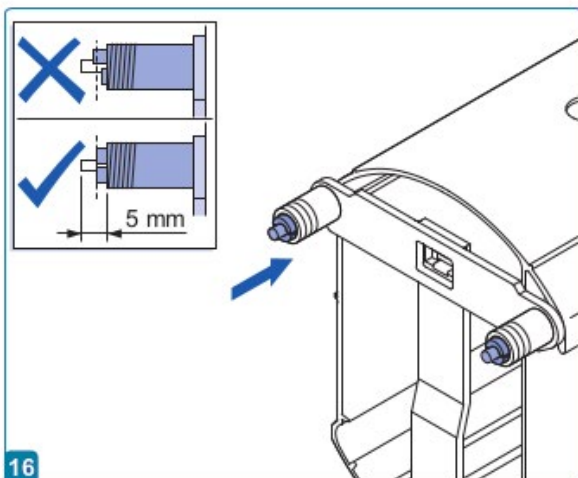
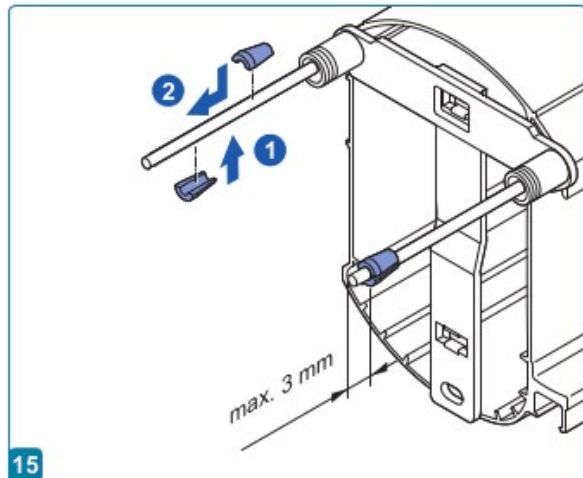
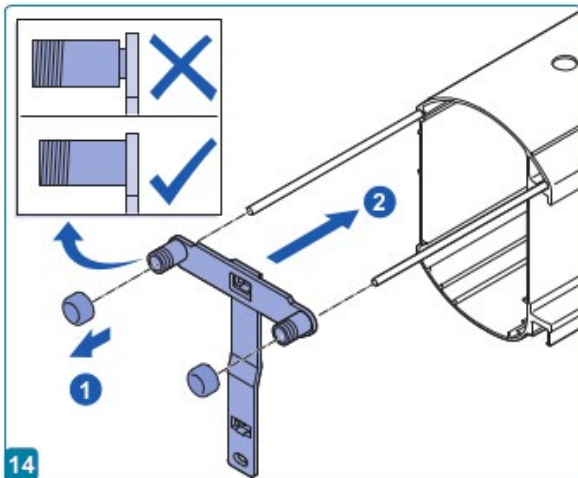
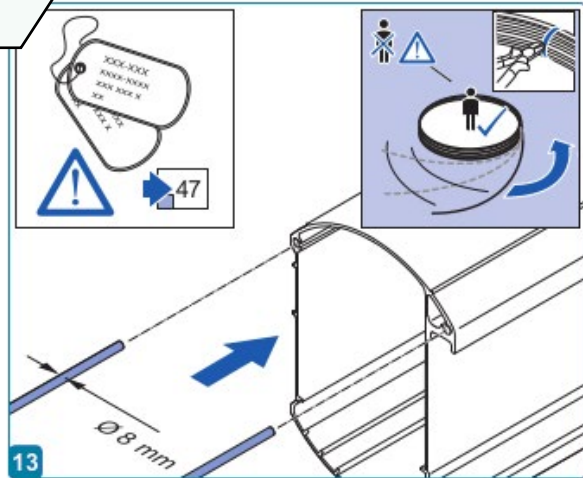
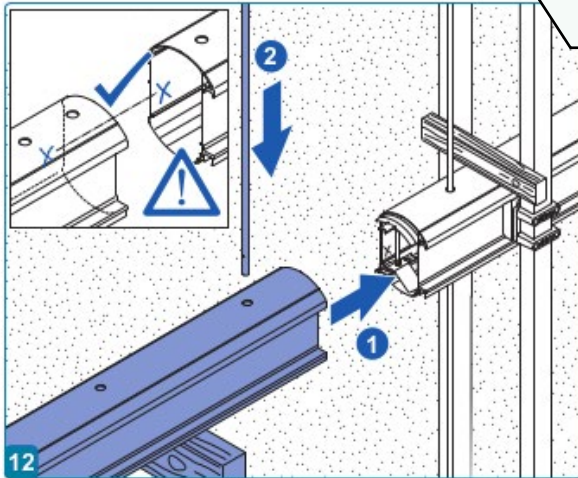
# ALPHA Gate Model Step-by-Step Installation Diagrams

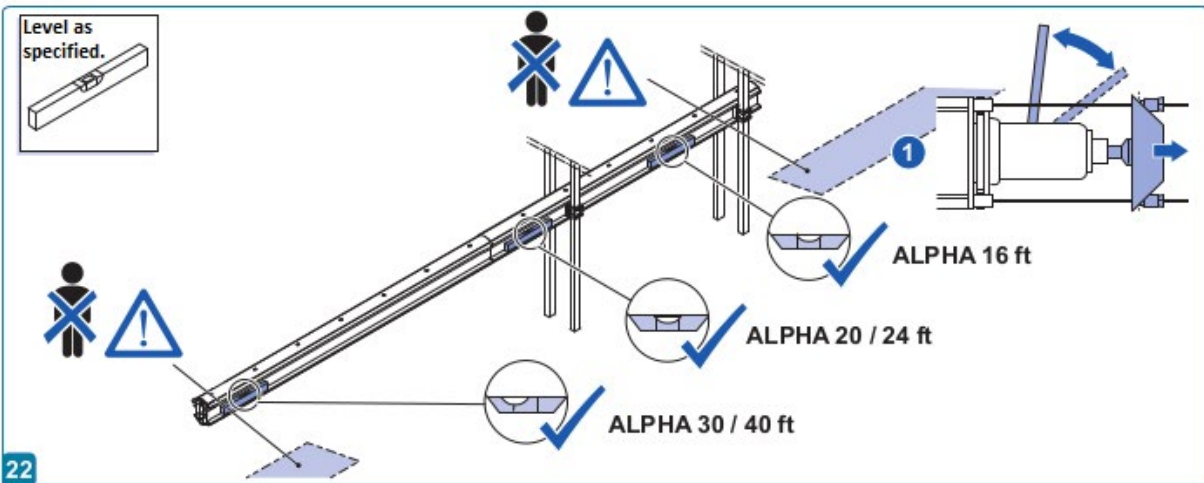
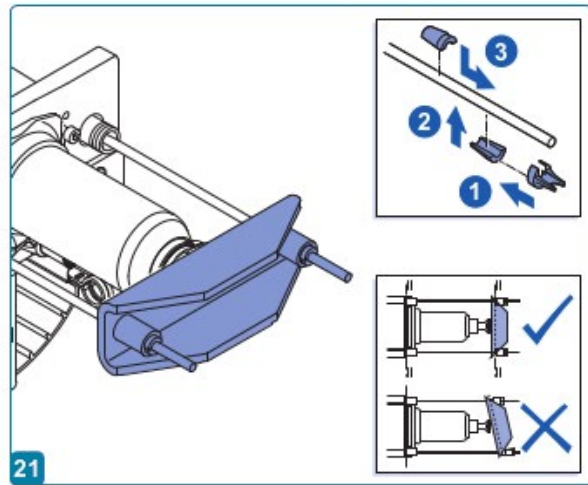
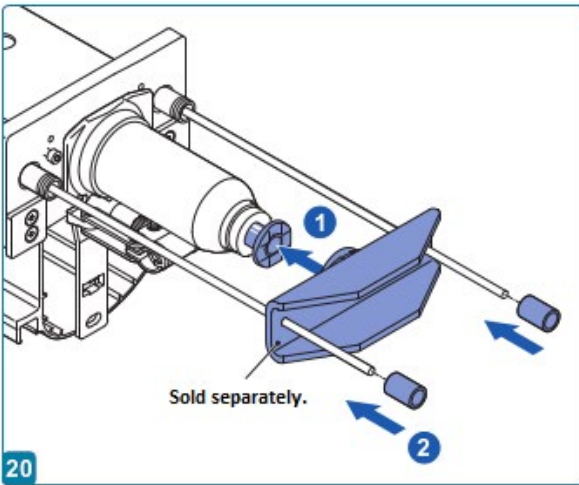
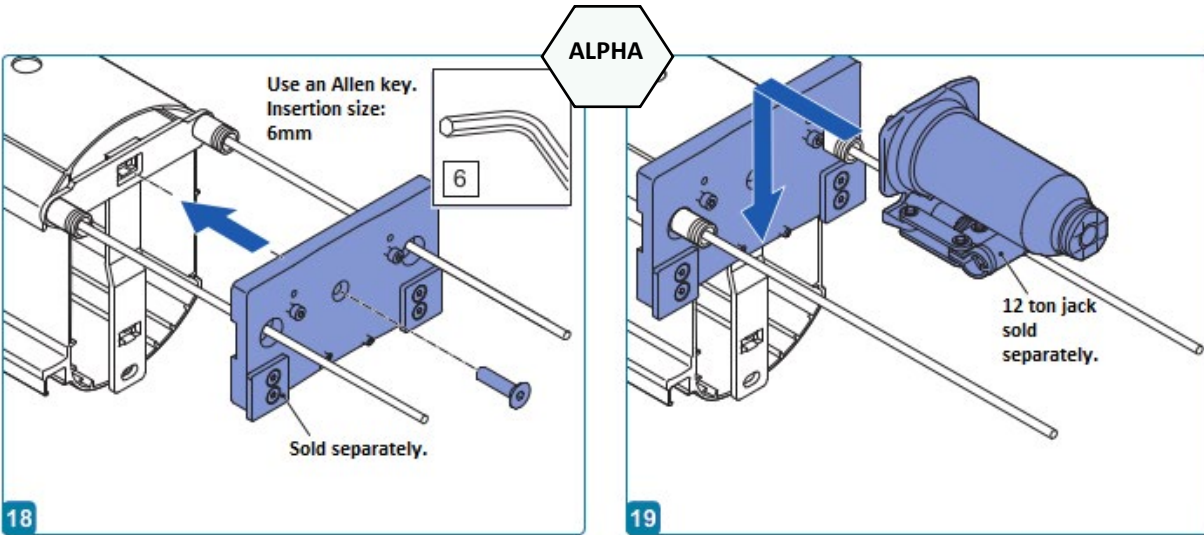


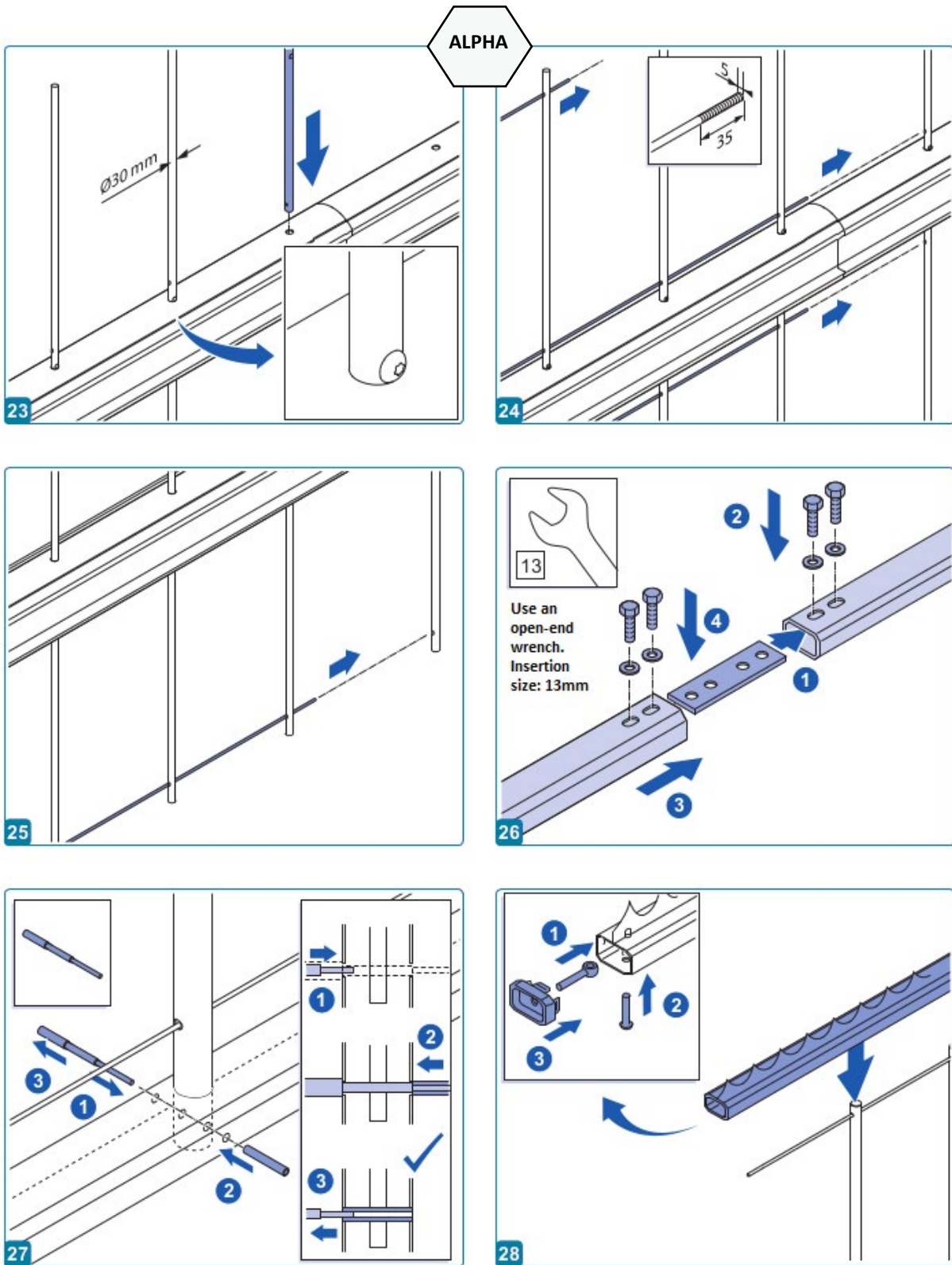
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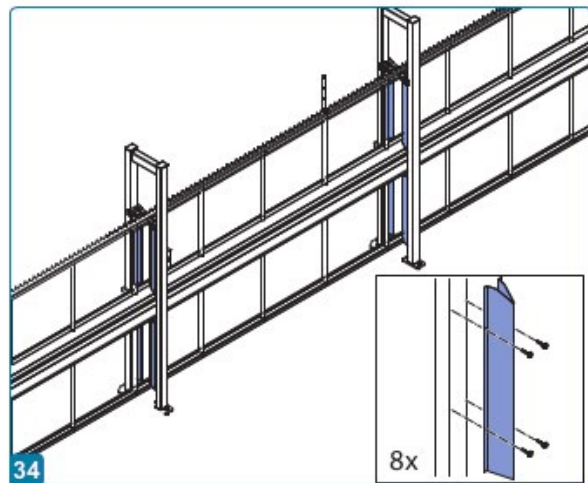
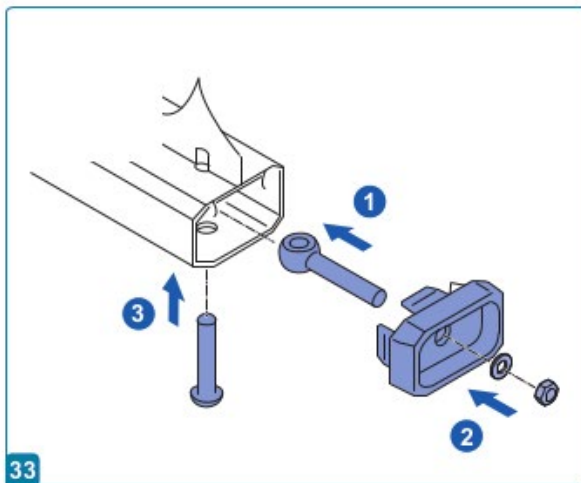
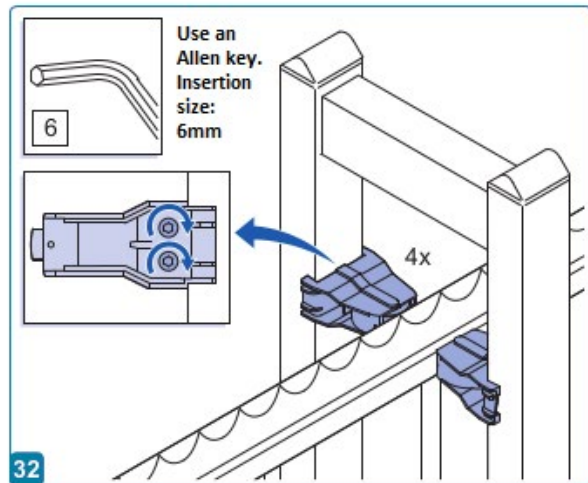
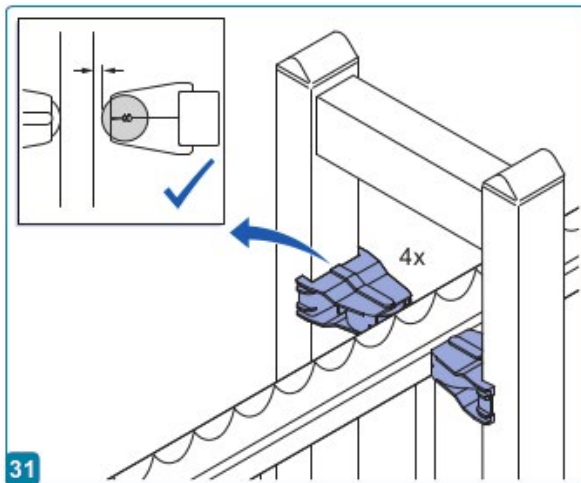
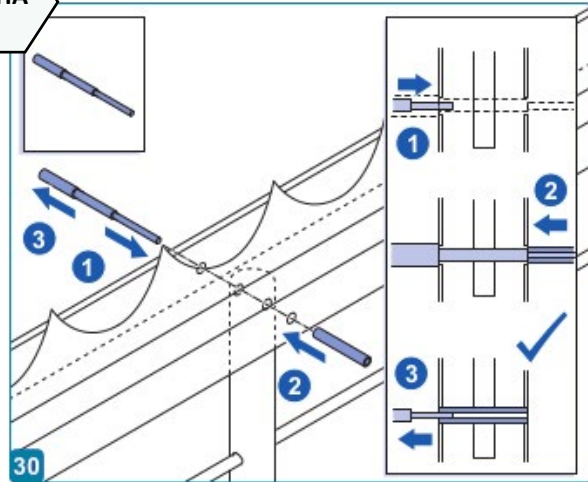
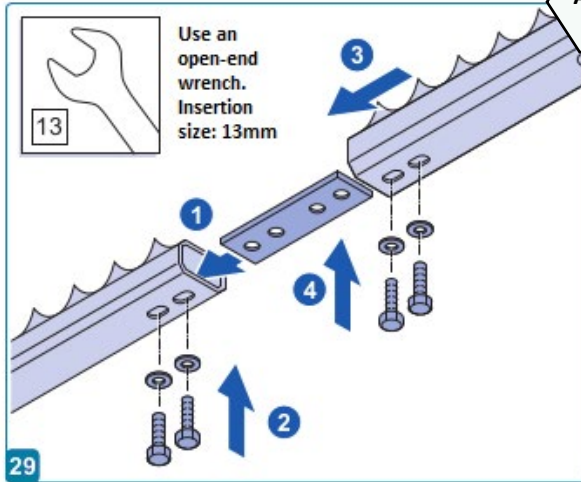
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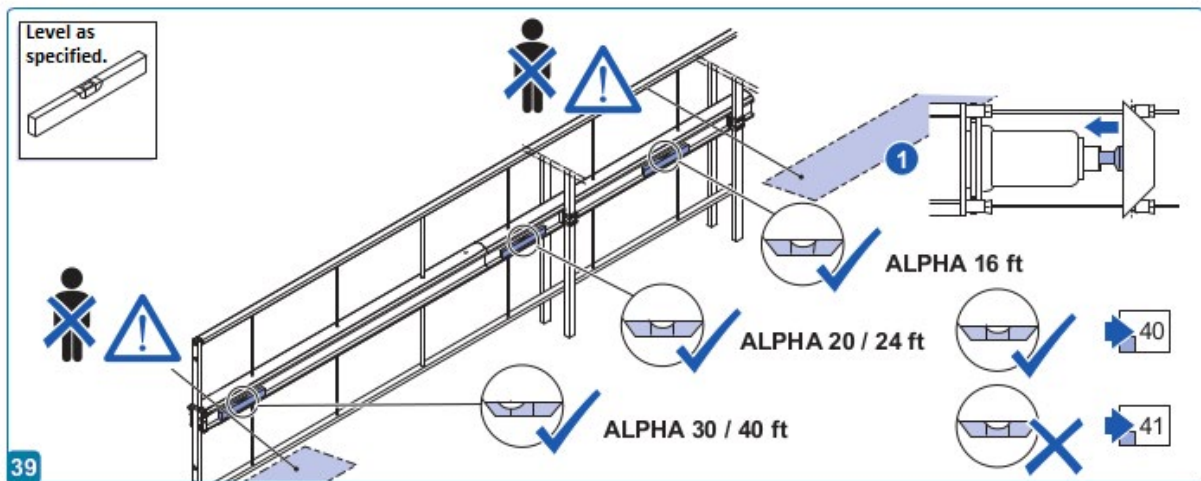
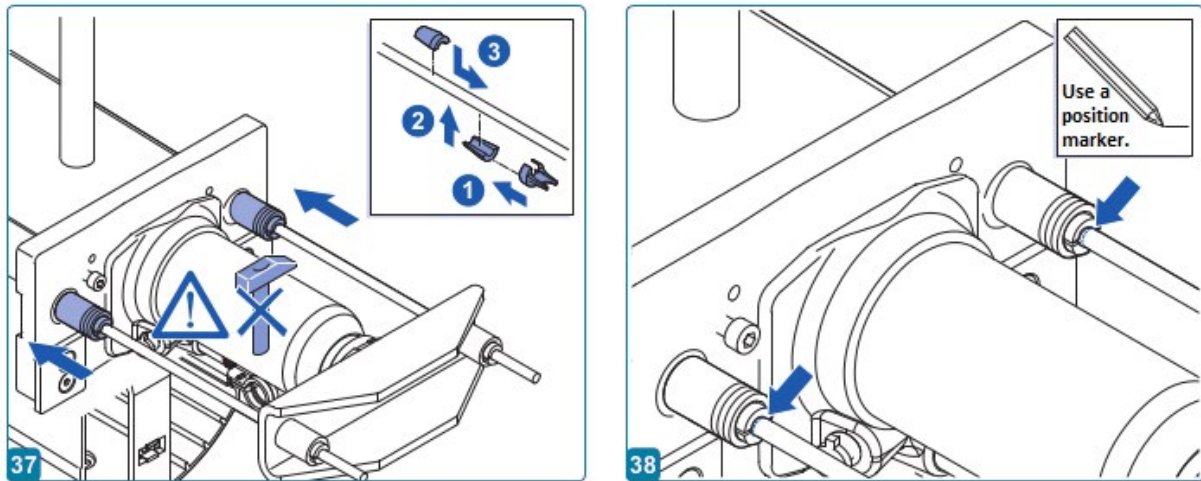
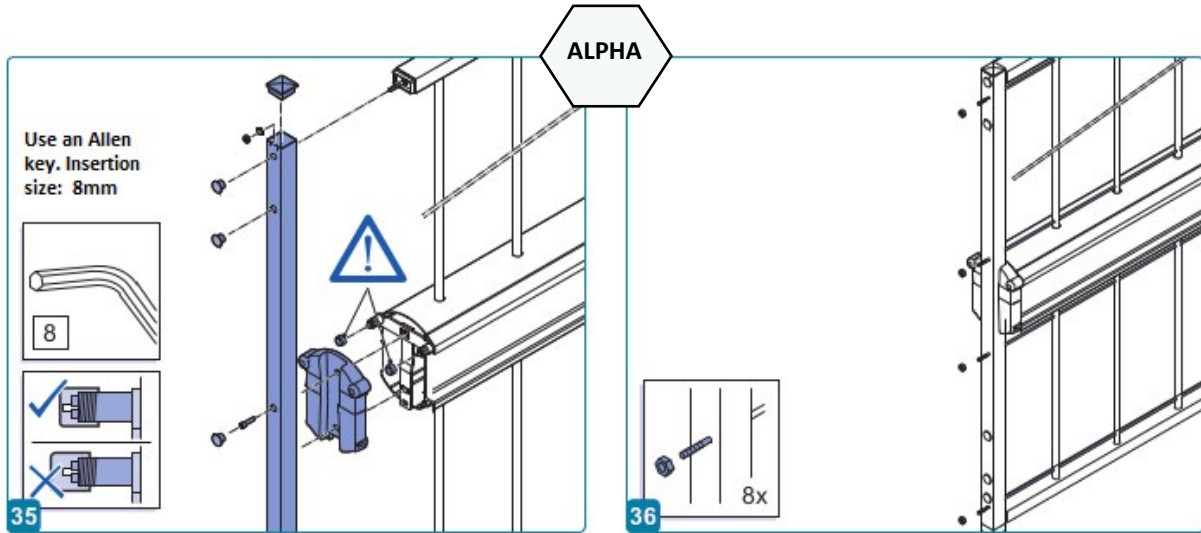




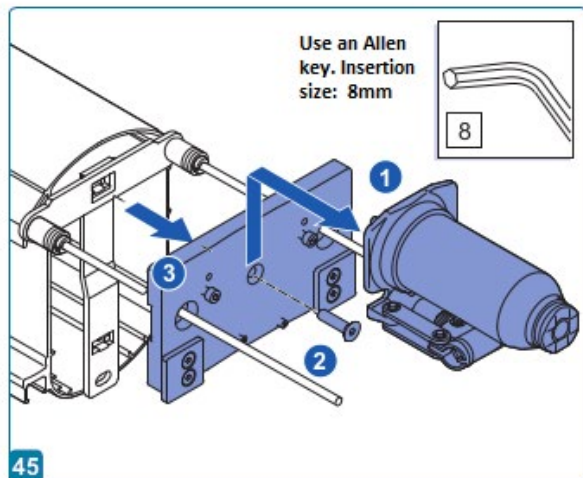
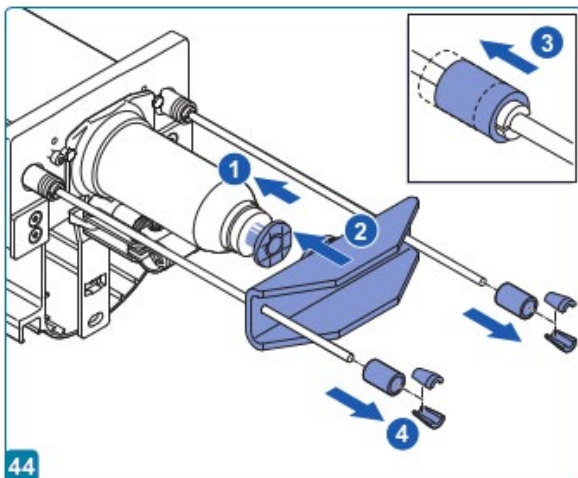
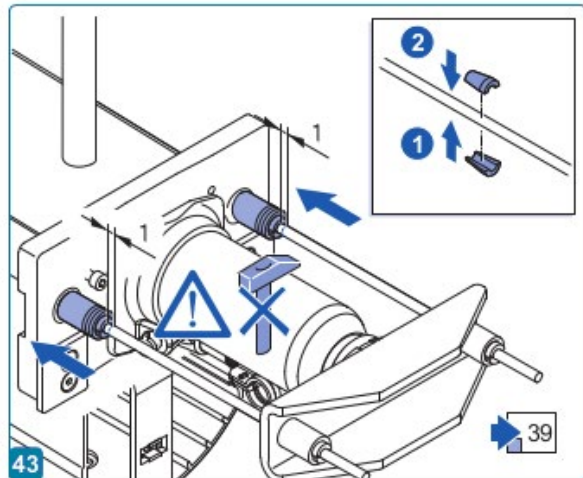
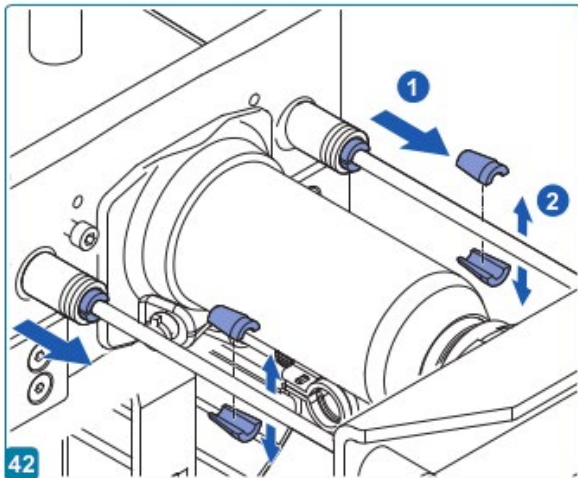
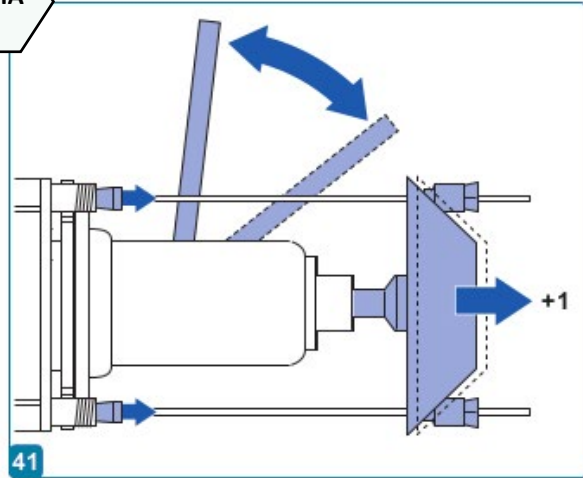
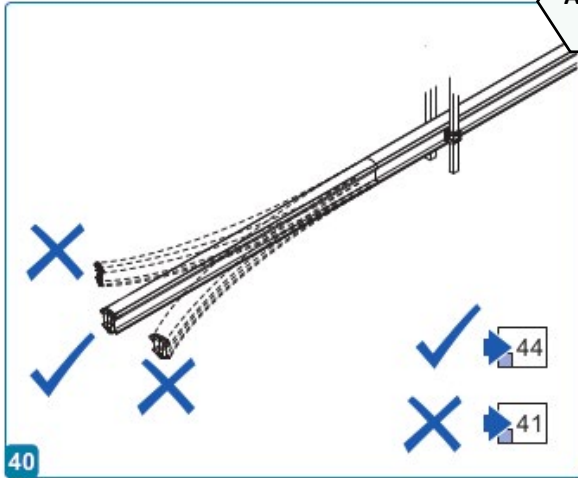
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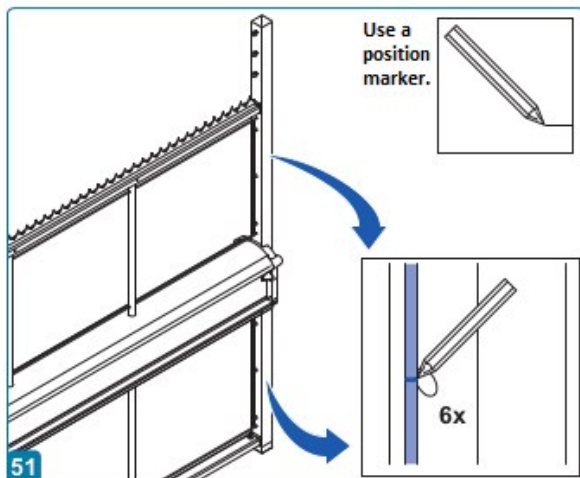
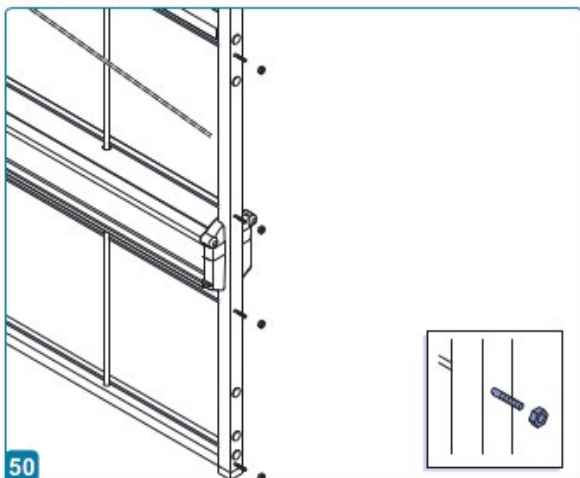
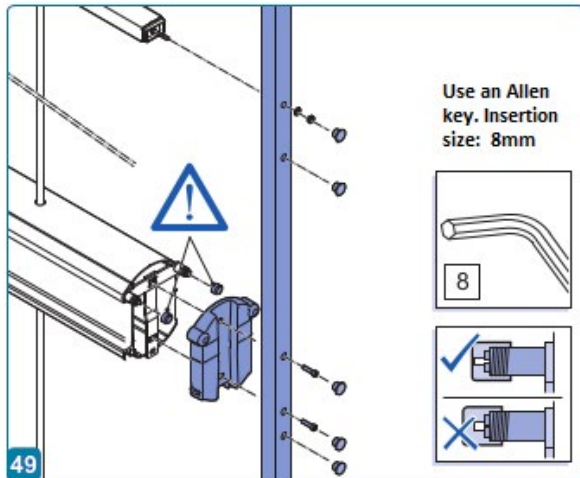
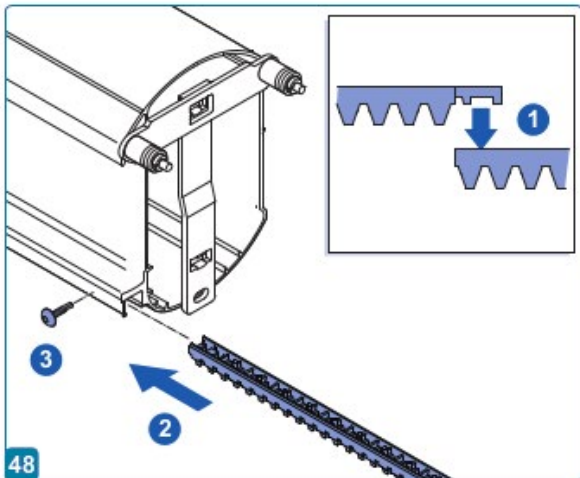
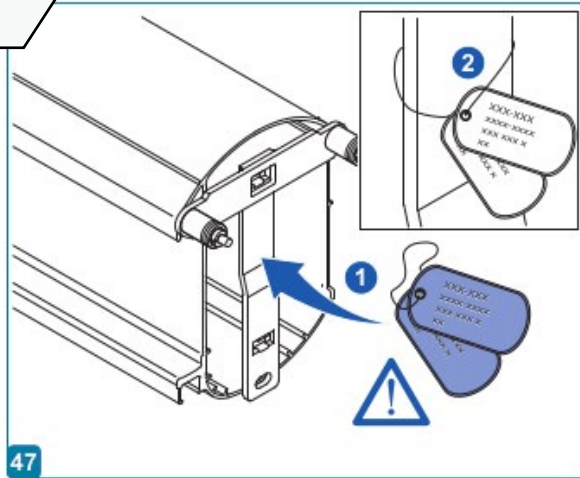
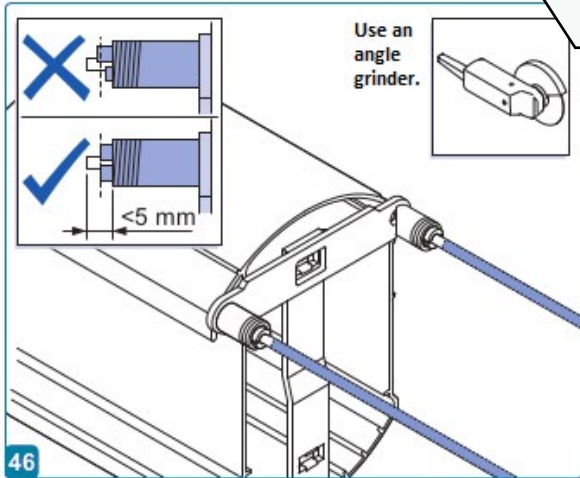




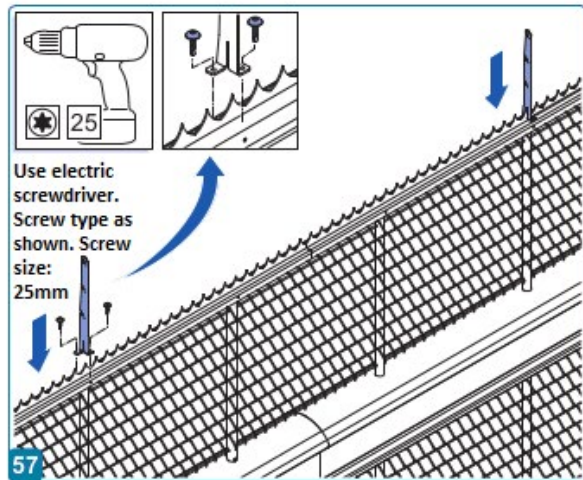
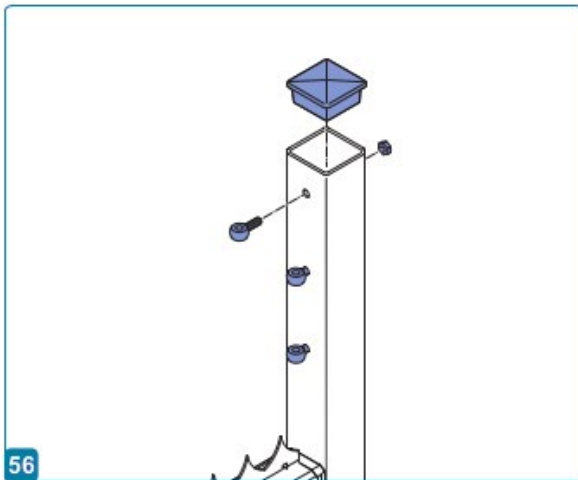
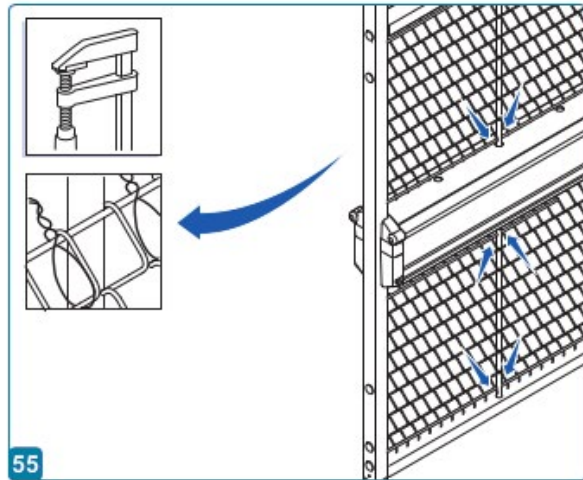
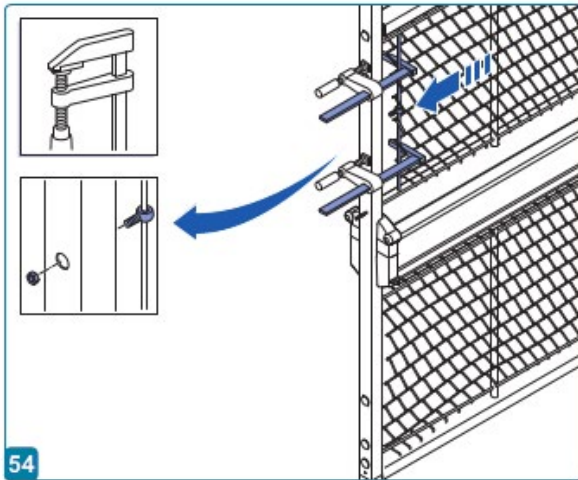
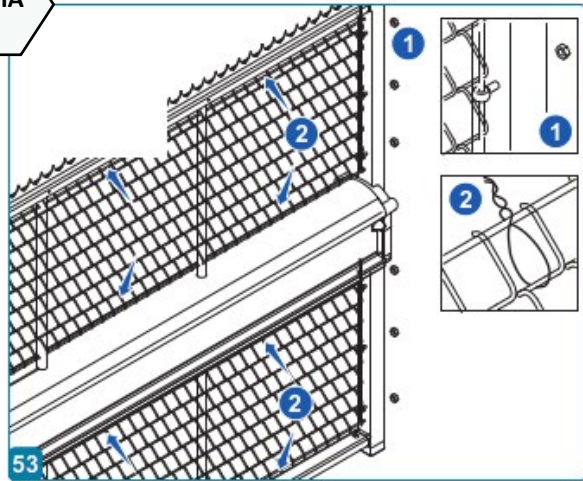
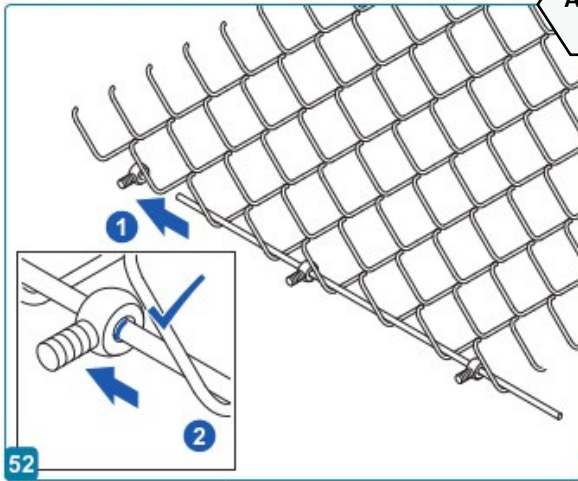
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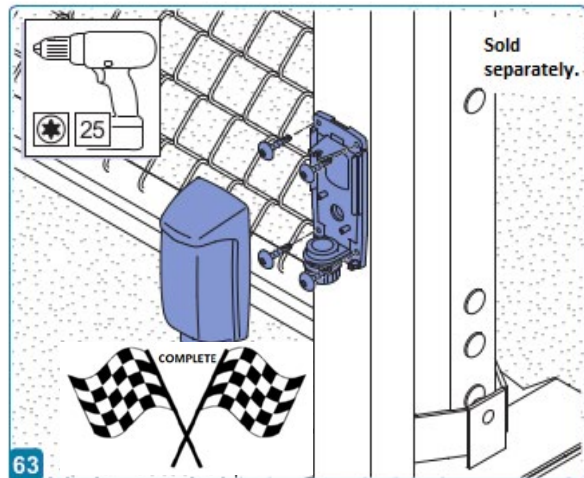
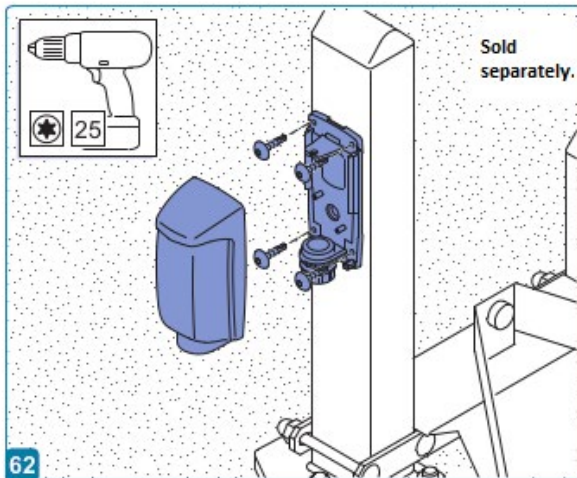
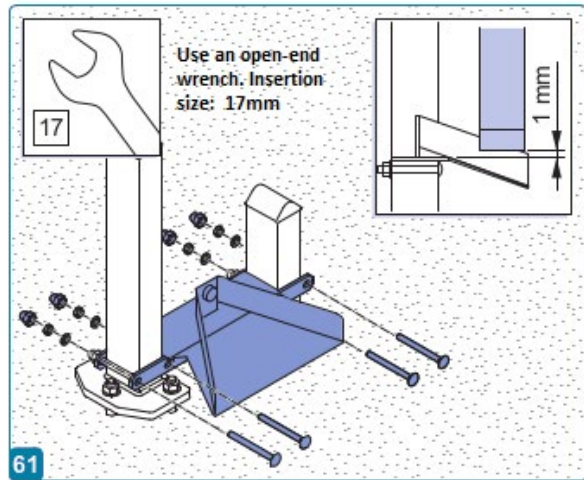
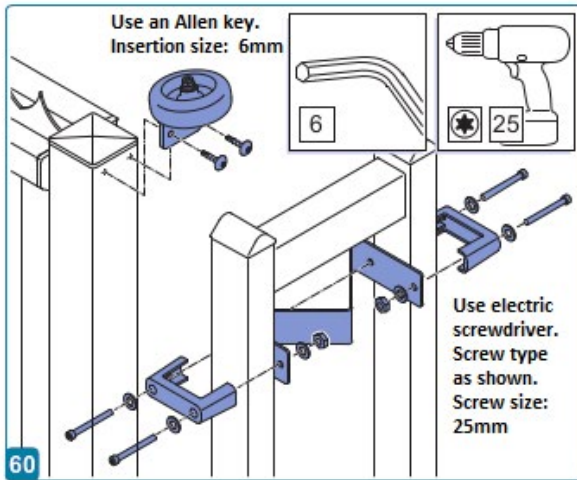
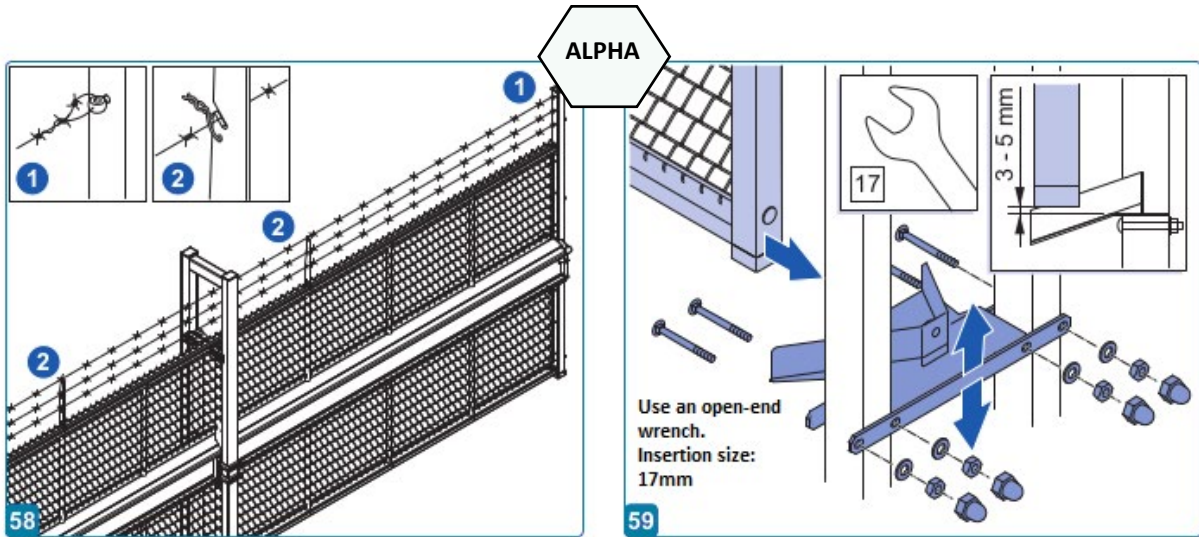


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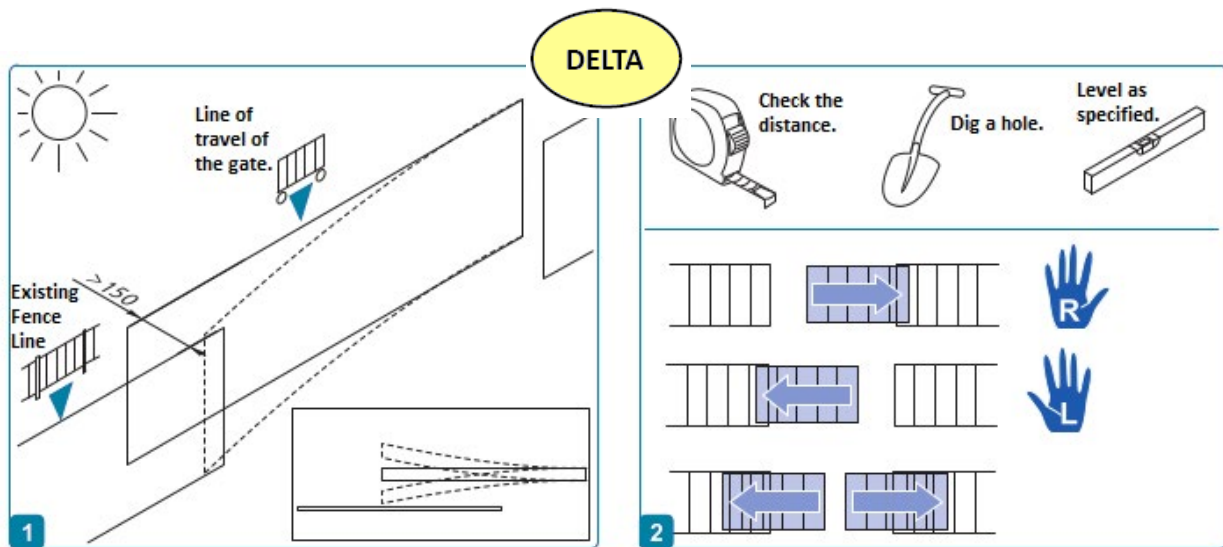


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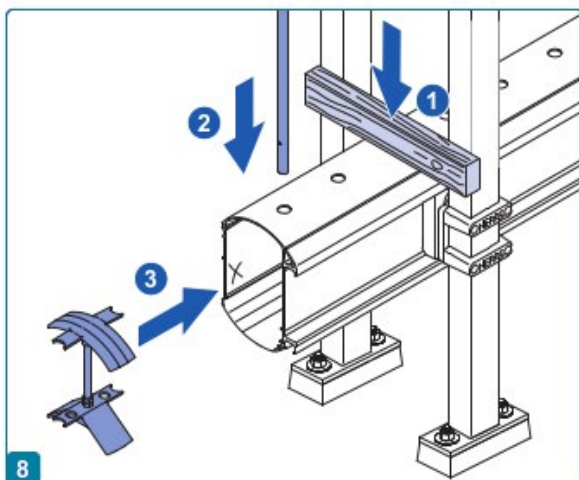
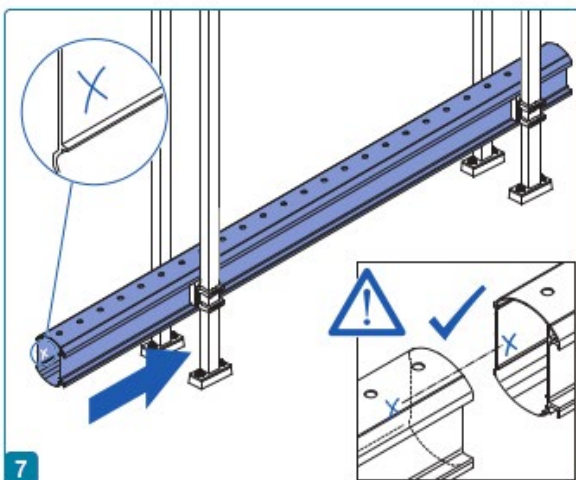
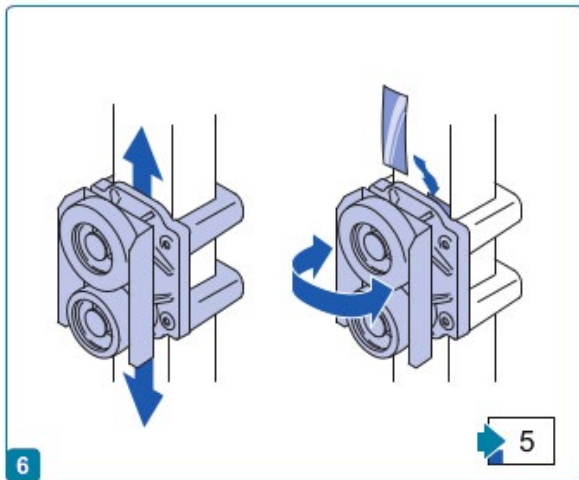
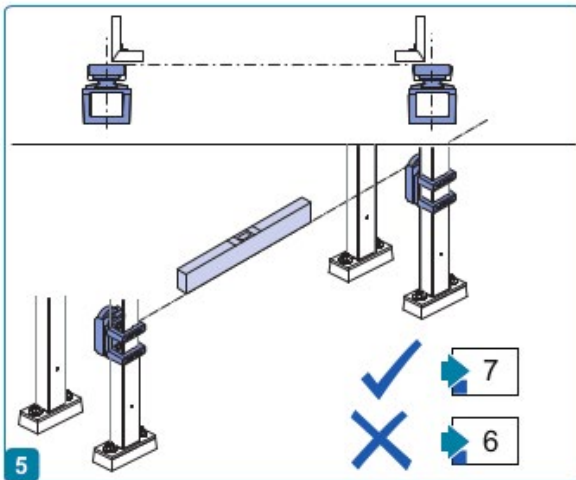
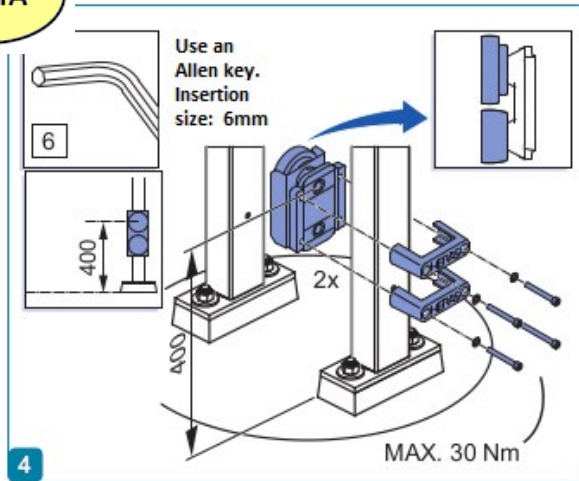
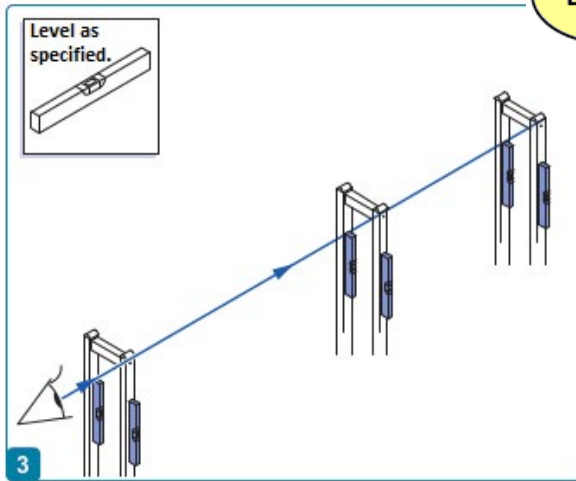




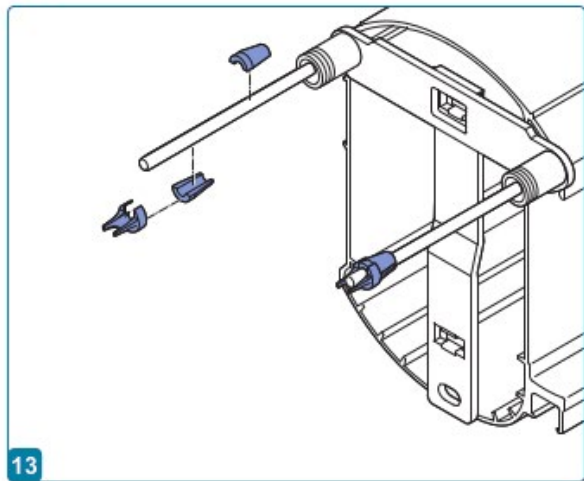
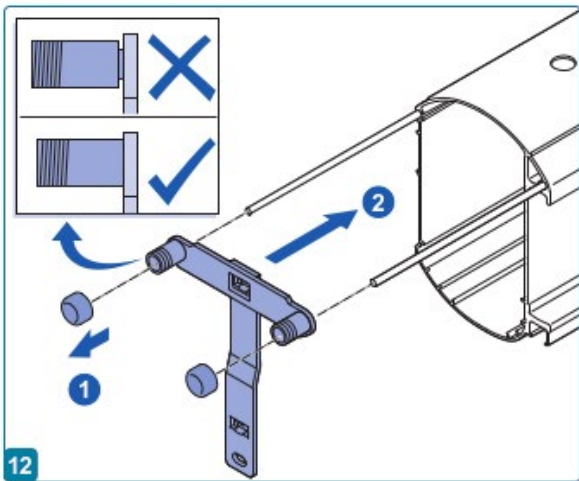
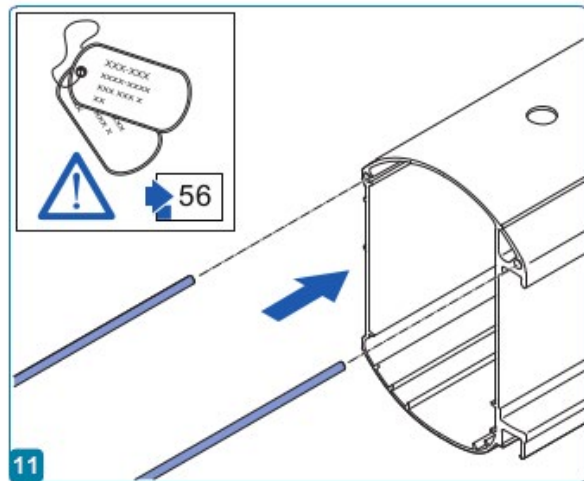
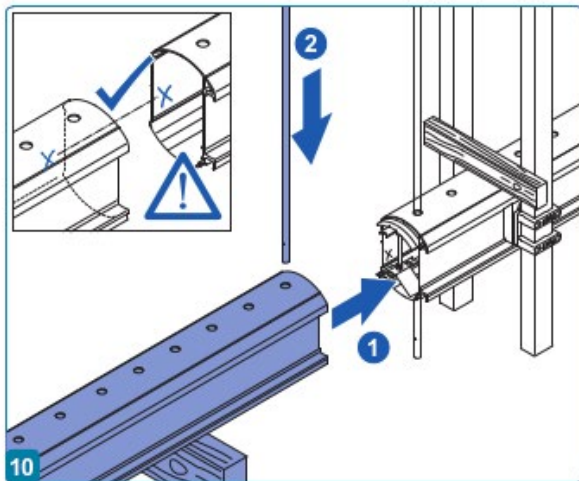
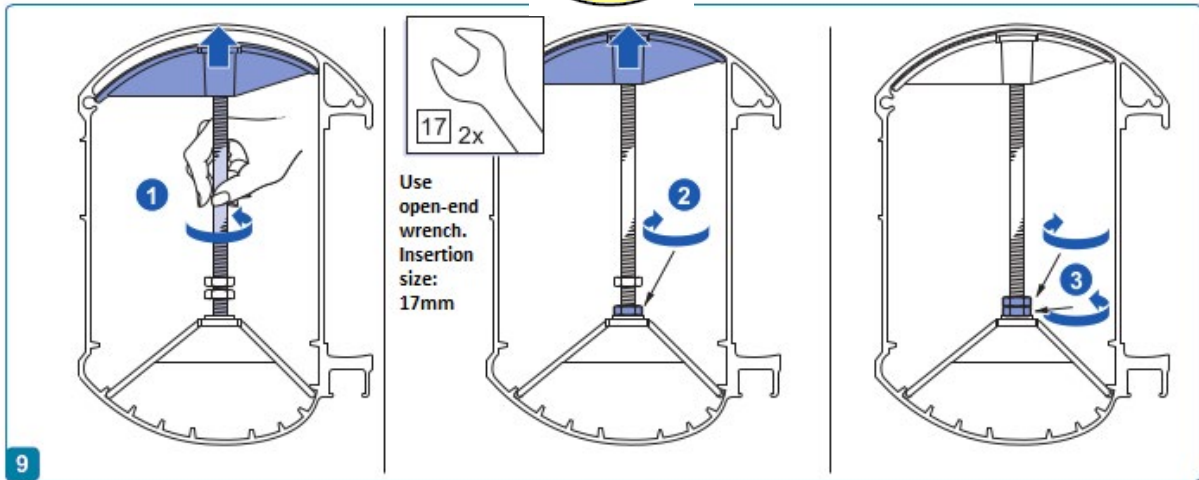
## DELTA Gate Model Step-by-Step Installation Diagrams



DELTA

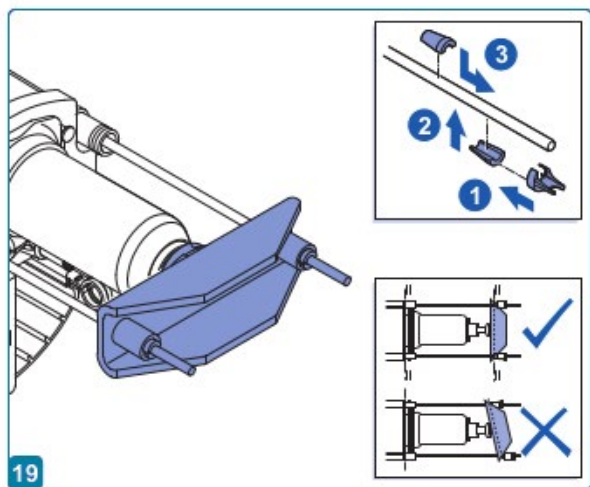
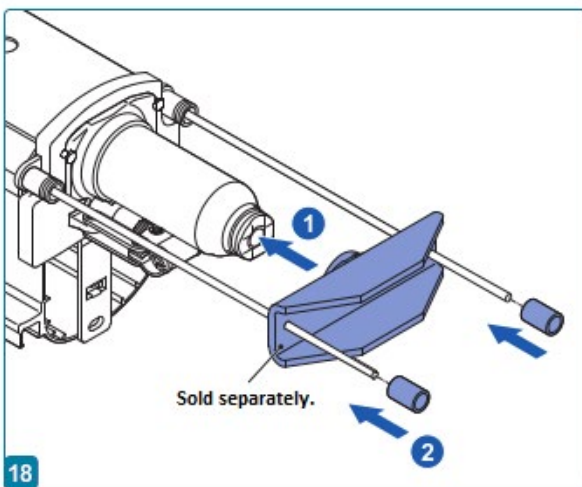
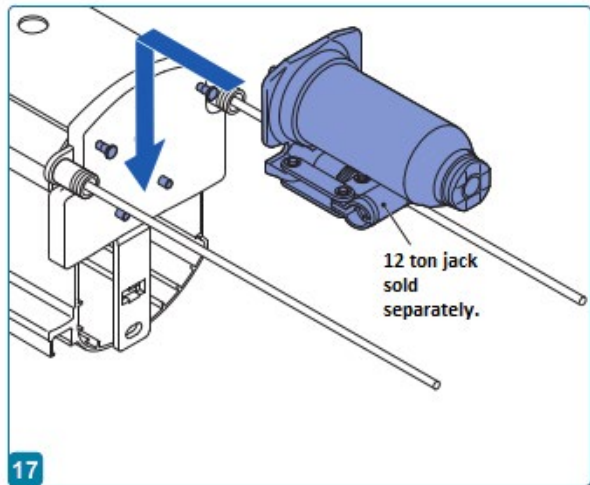
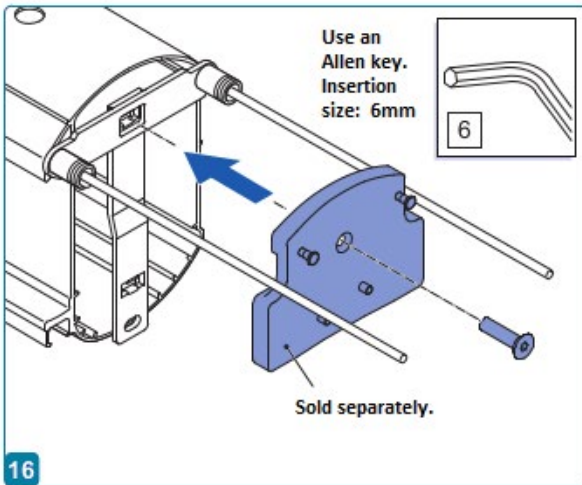
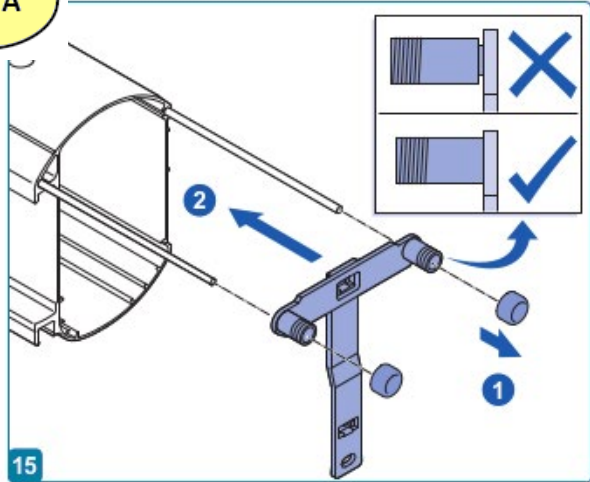
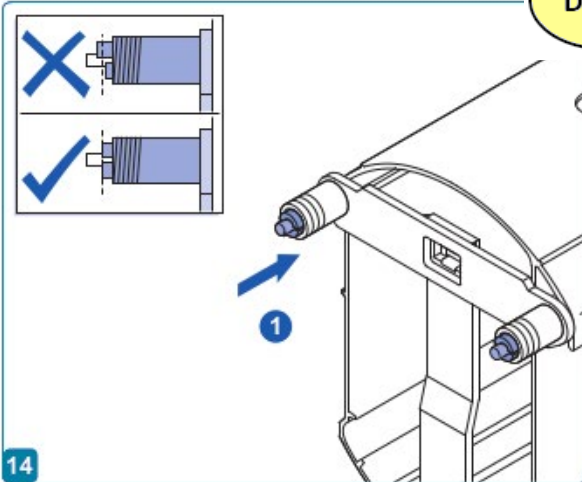


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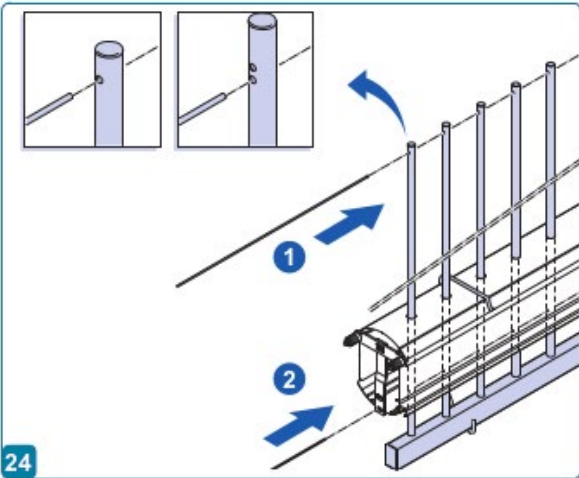
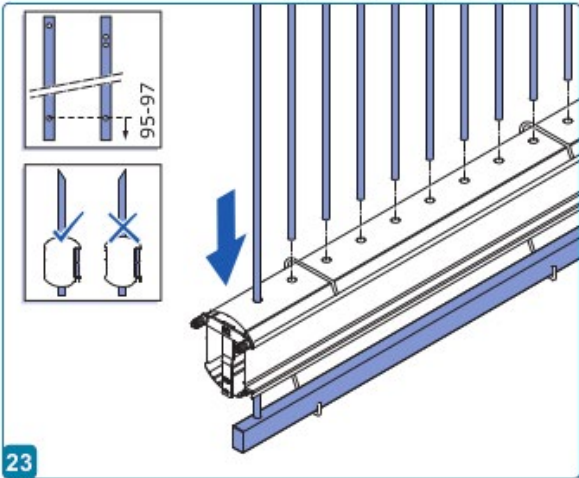
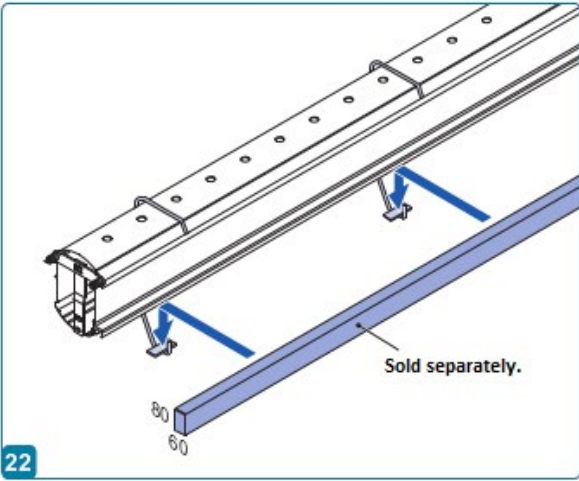
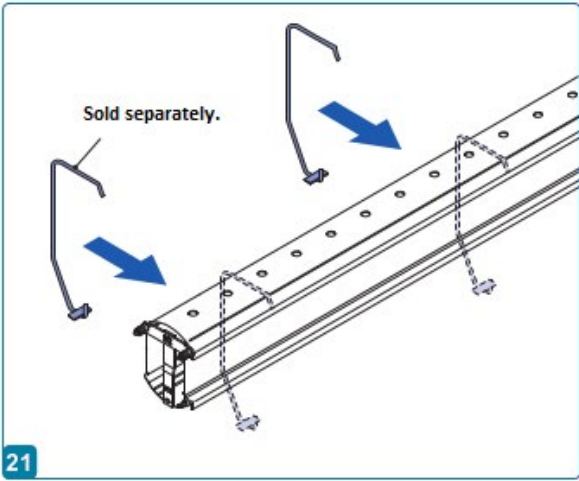
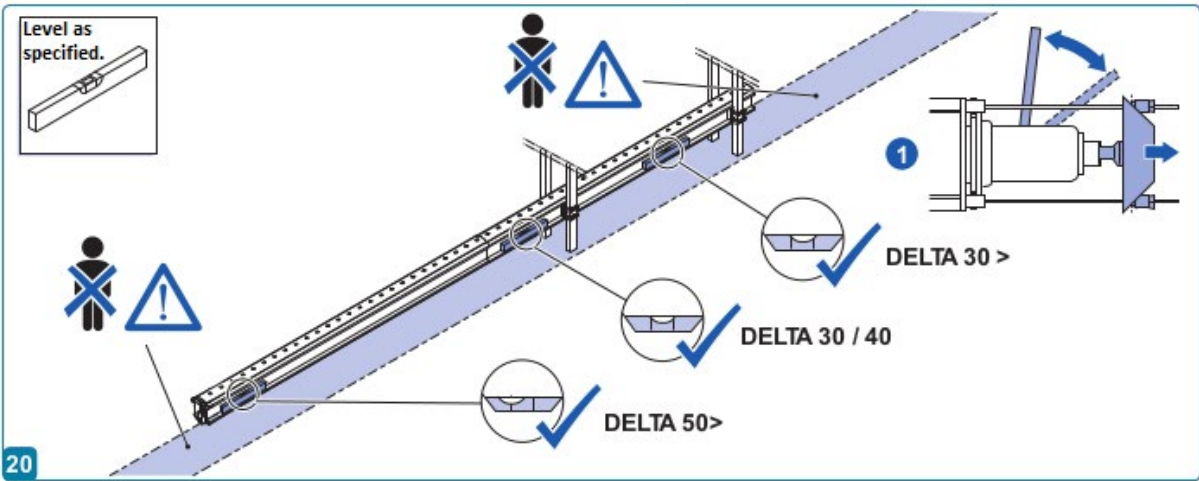




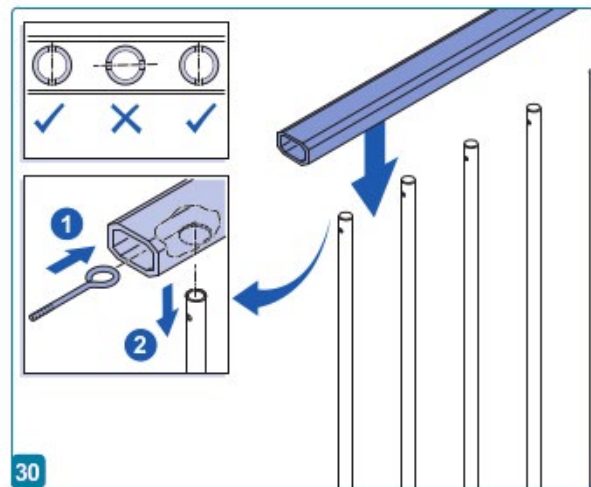
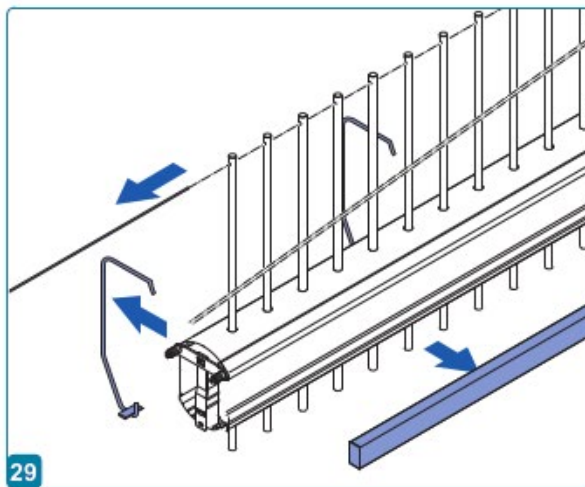
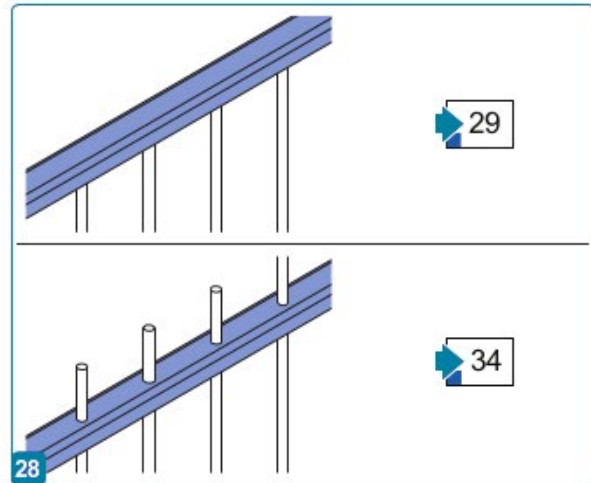
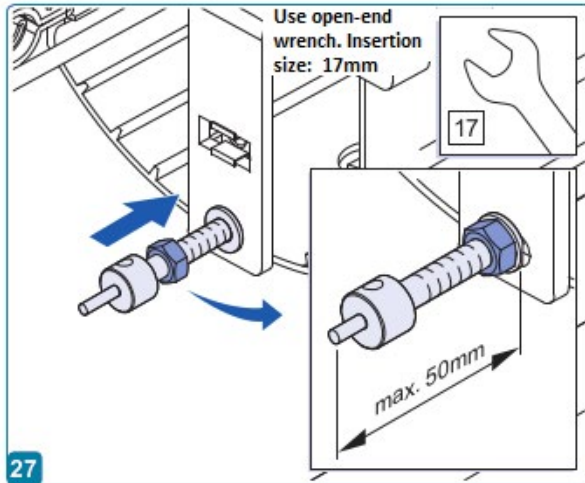
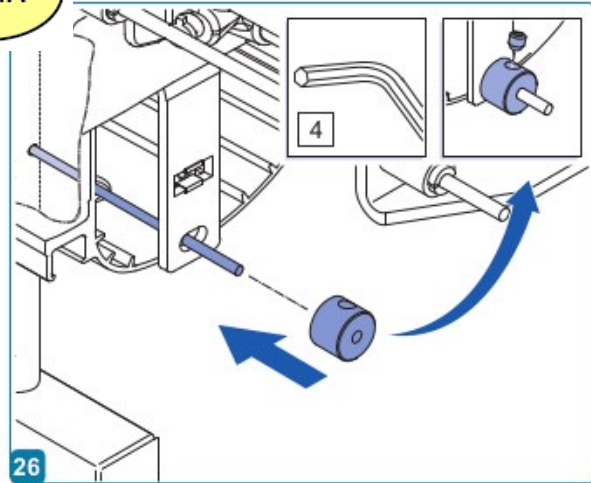
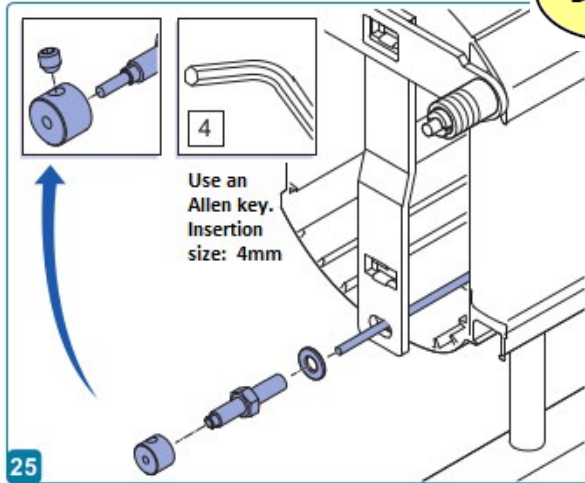
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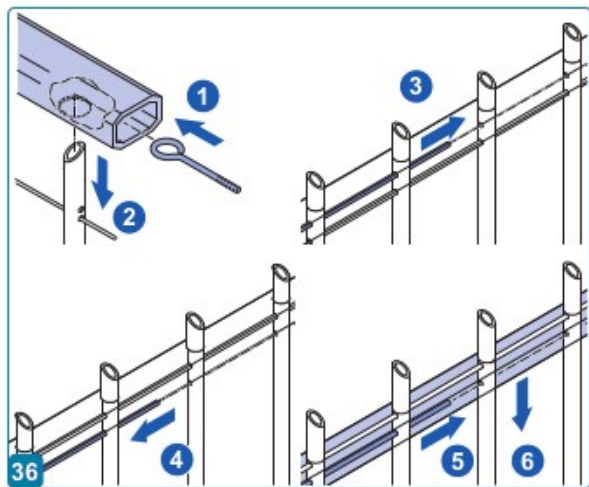
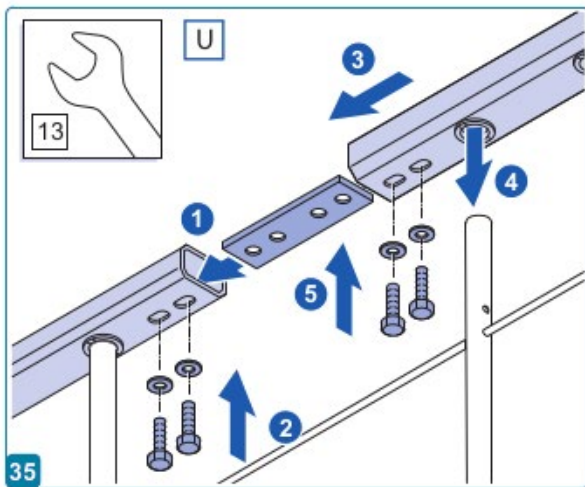
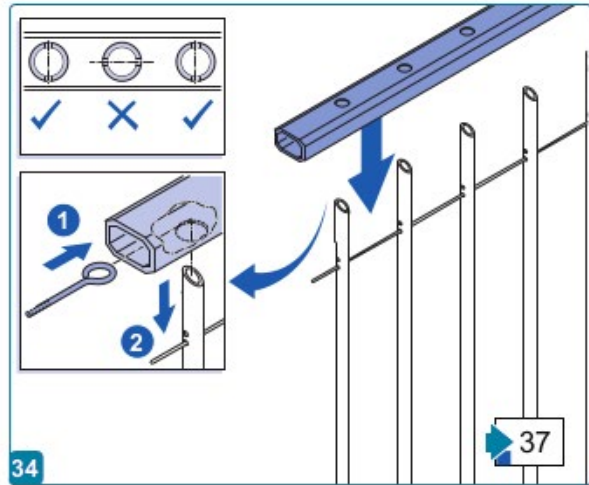
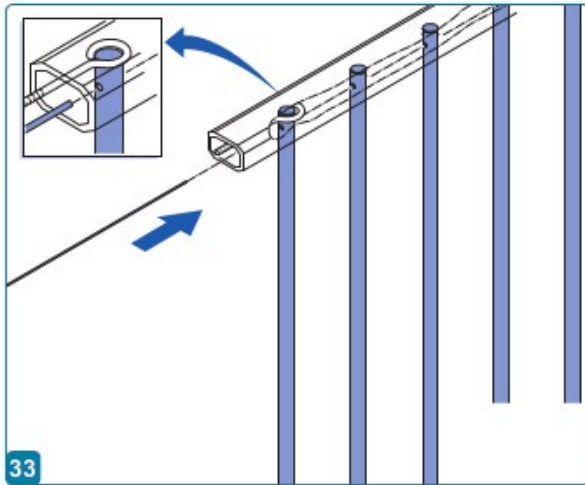
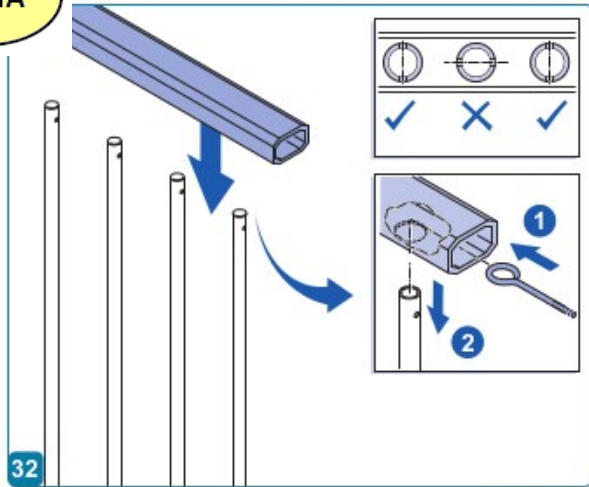
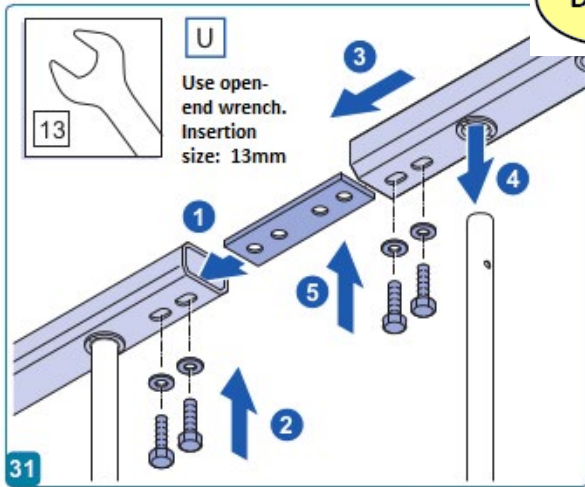
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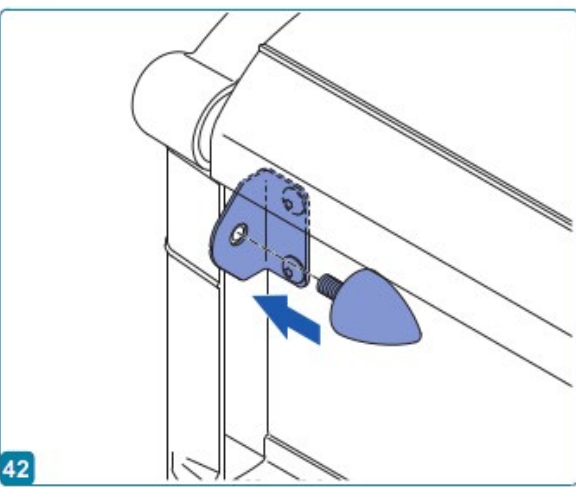
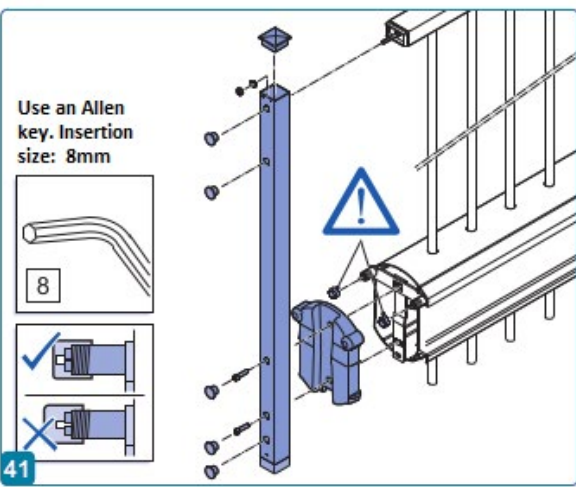
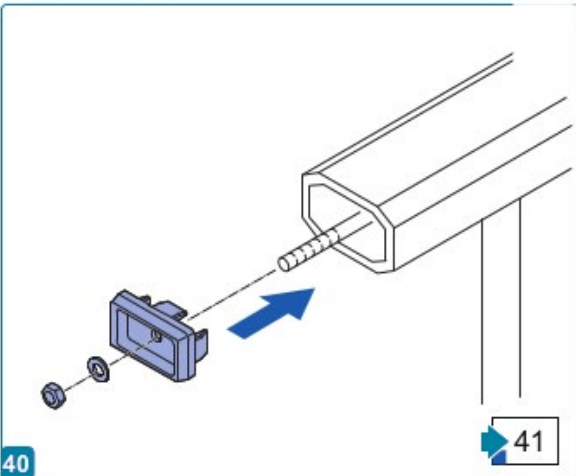
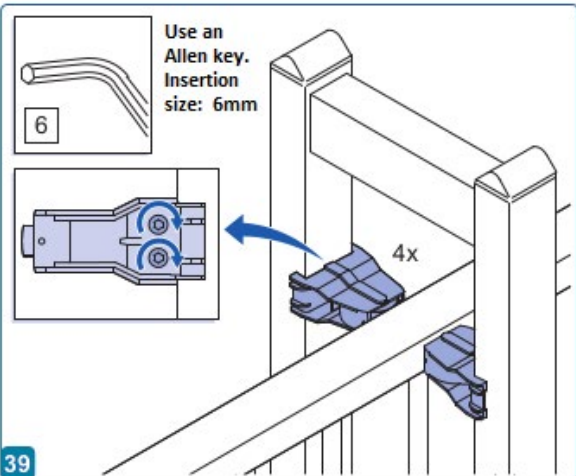
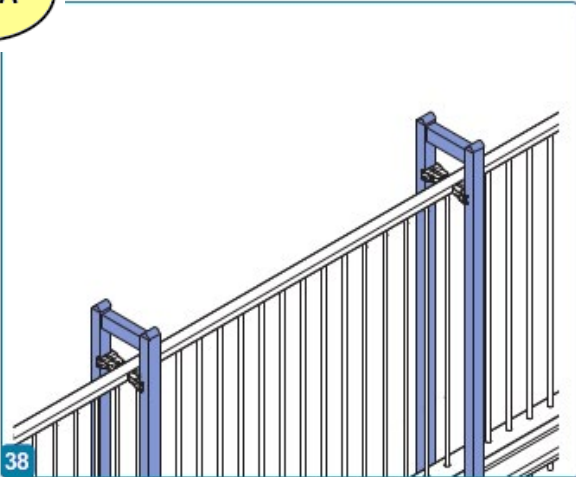
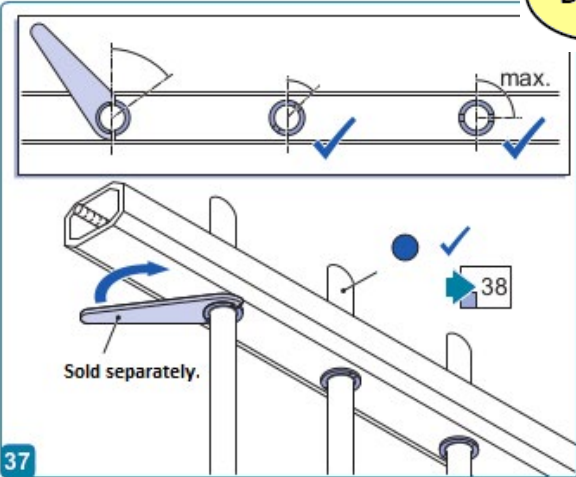
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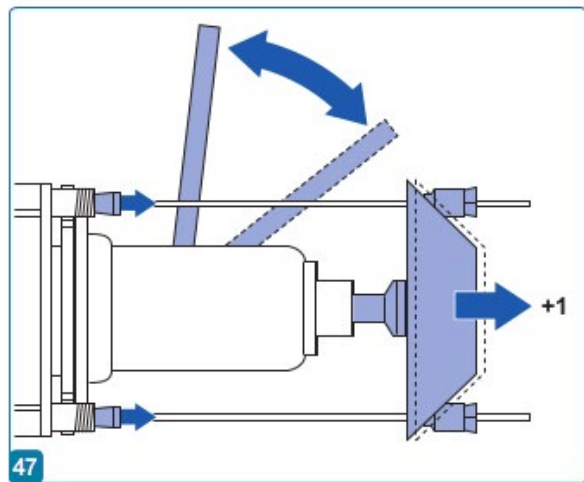
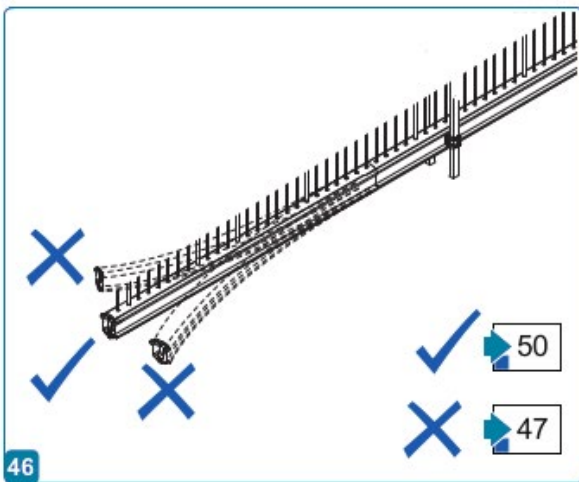
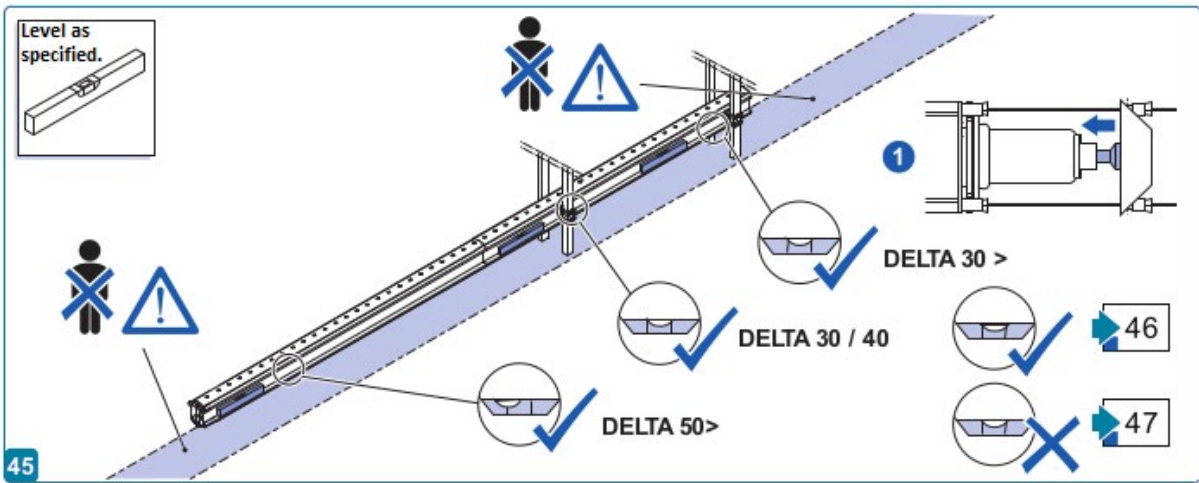
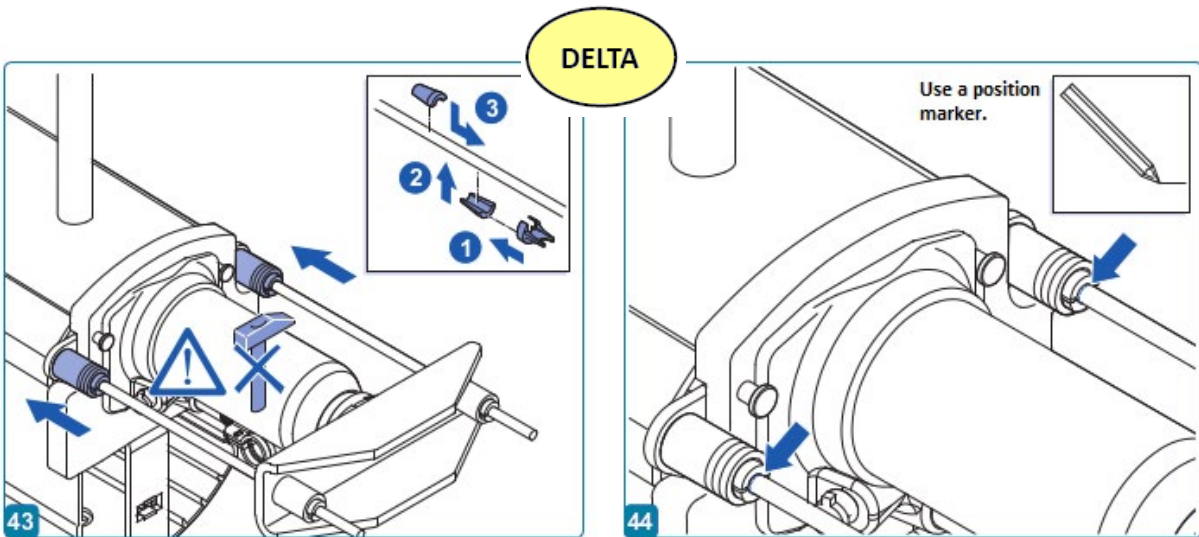


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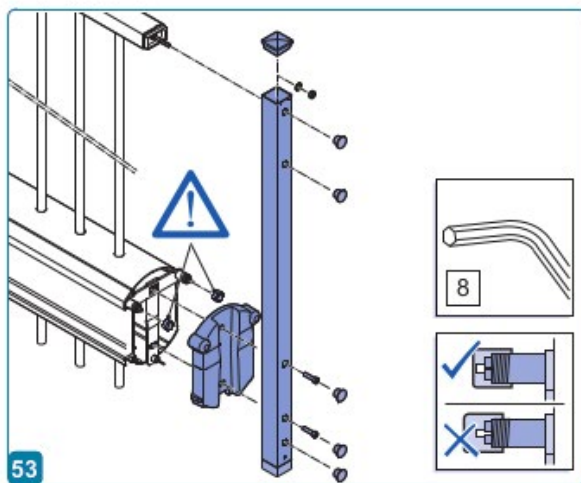
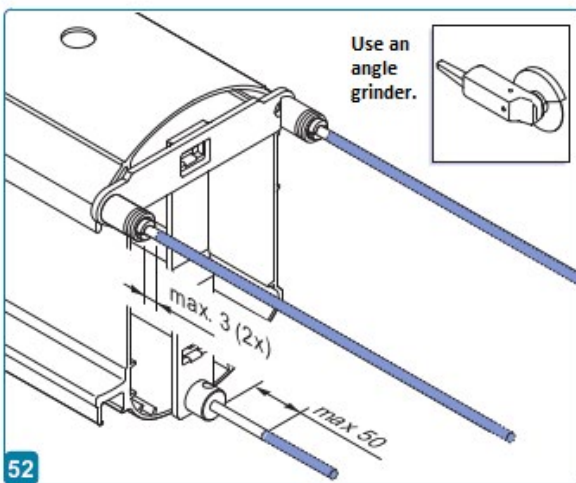
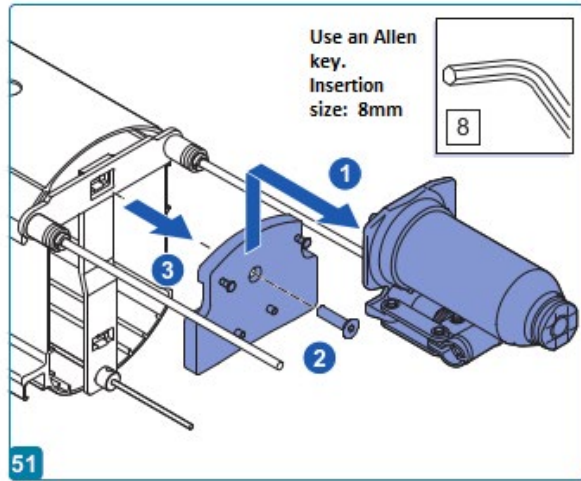
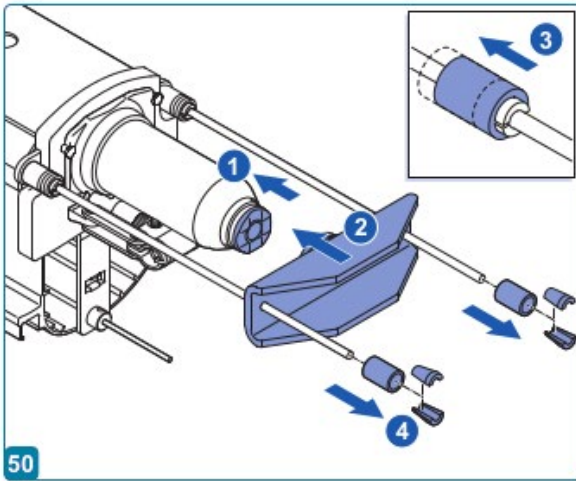
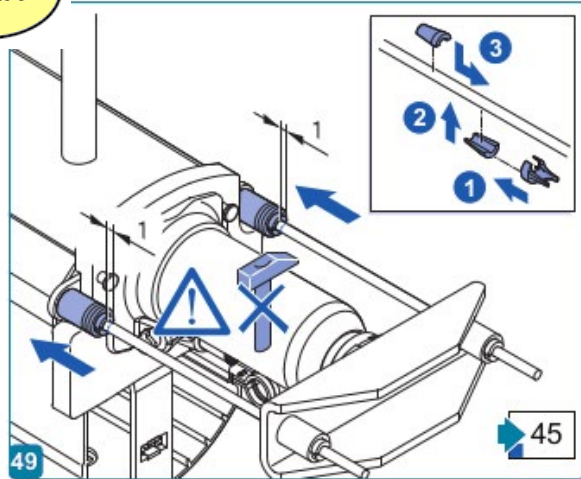
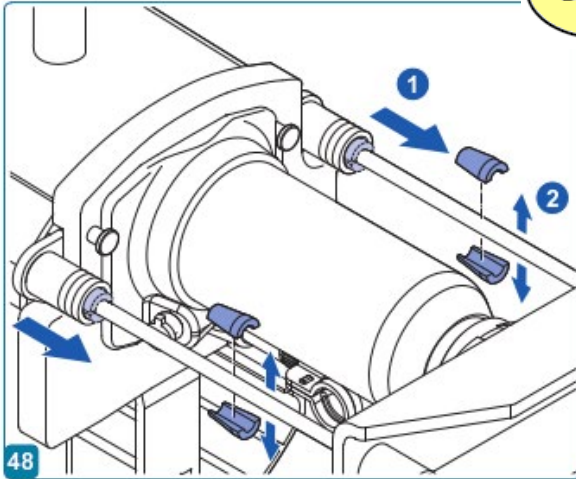


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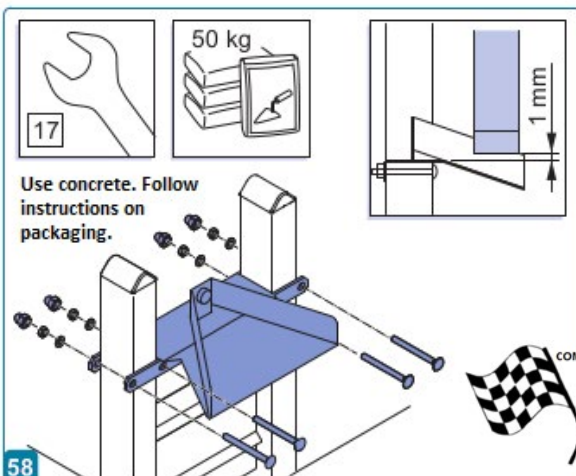
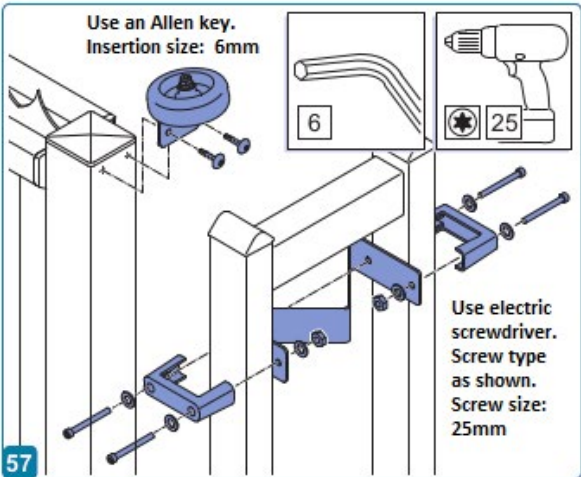
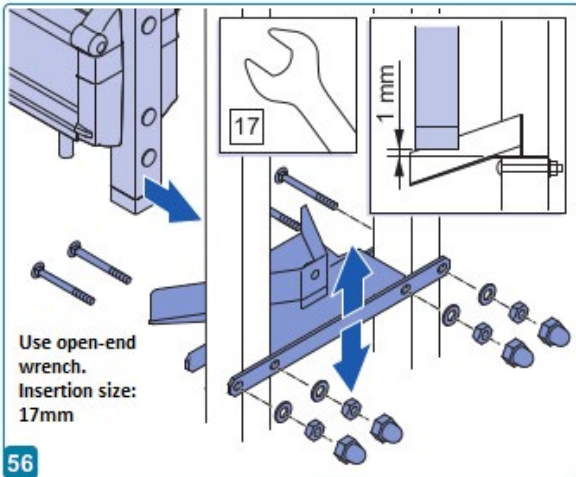
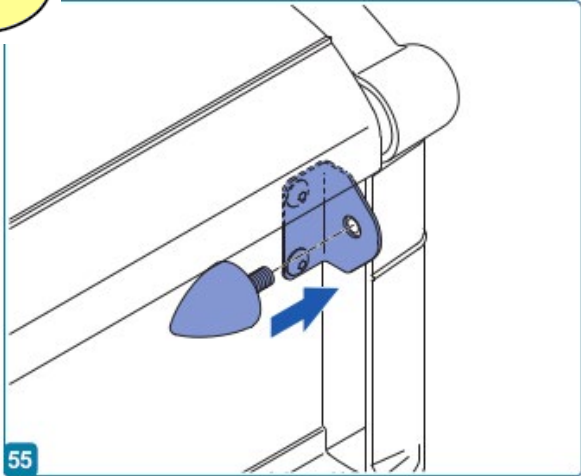
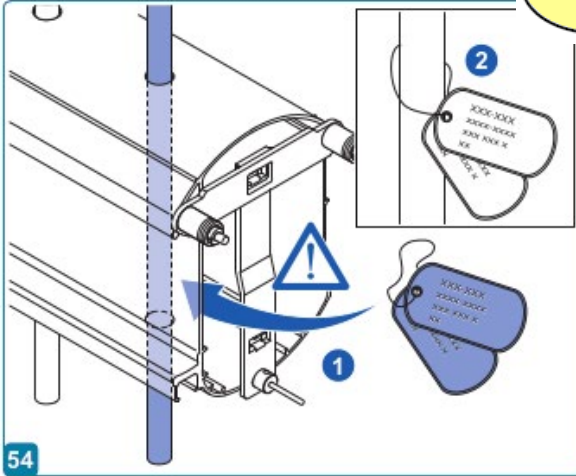




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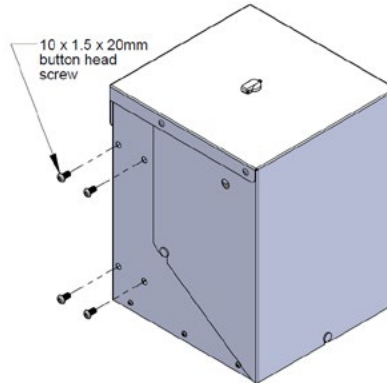
# Operator Installation and Gate Adjustments

Kinetic DC 15W [Kinetic 1]	Kinetic DC 10FW [Kinetic 2]
Duty cycle: continuous	Duty cycle: continuous
Power: single phase, Switch selectable	Power: single phase, Switch selectable
115 volts, 3 amps, 50/60 Hertz	115 volts, 3 amps, 50/60 Hertz
230 volts, 1.5 amps, 50/60 Hertz	230 volts, 1.5 amps, 50/60 Hertz
Motor: ½ hp	Motor: ½ hp
Gate Speed: 1ft/s	Gate Speed: 2ft/s
Gate weight: Maximum 1500lbs (675kg)	Gate weight: Maximum 1000lbs (450kg)

## Installing the Kinetic Operator on Gate Posts

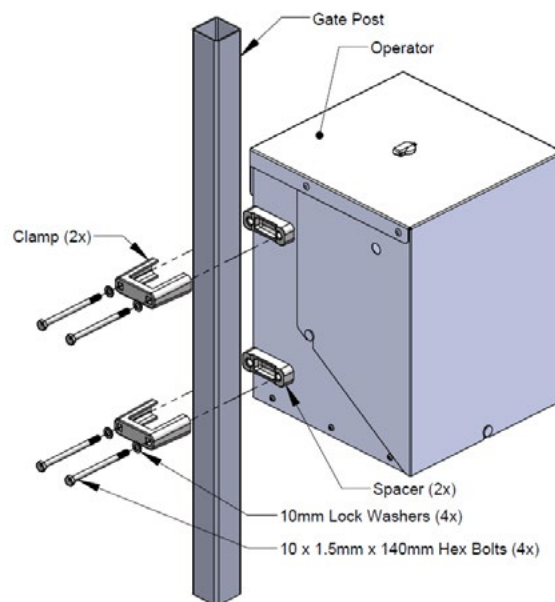
RH & LH mounting options can be configured by the following steps:

1. Remove the 4 - 10 x1.5 x 20mm button head screws on the side of the operator that will be mounted to the gate post. See Figure 2. Discard the screws.



**Figure 2. Operator Mounting Screws**

2. Place the Spacers between the operator and gate post. Align the spacers with the mounting holes.
3. Slide the clamps over the gate post.
4. Insert and tighten the 4 – 10x1.5 x 140mm hex bolts to secure the operator to the gate post. See Figure 3.



**Figure 3. Mounting Operator on Gate Post**

## Adjusting the Drive Height

Raise the operator to the correct height so that it engages the tooth rack in the gate beam. Clearance between the tooth rack and spur gear should be 0.11" (2.7mm); an 11ga tie wire can be used as a gauge. See Figure 4.

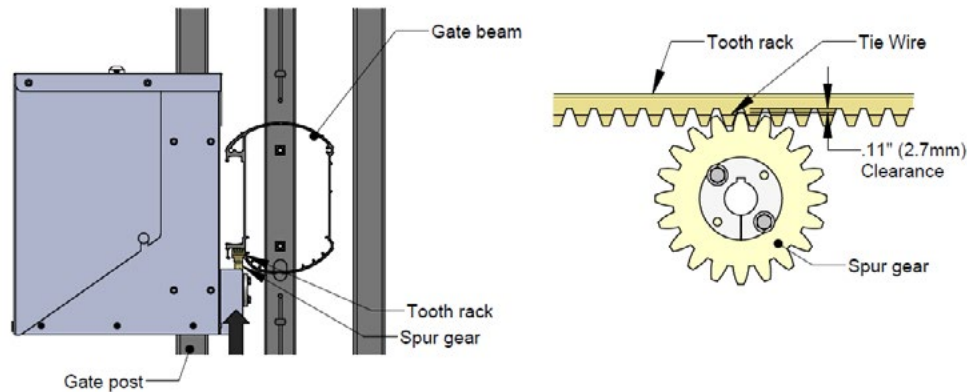


Figure 4. Adjusting Drive Height

## Adjusting the Spur Gear Alignment

1. To adjust spur gear alignment with the tooth rack, loosen but DO NOT REMOVE the two (2) – ¼ -20 x 2.0" retaining bolts and lock nuts on spur gear. See Figures 5 and 6.
2. Insert two (2) – ¼ -20 hex bolts into the threaded holes in the taper bushing. Alternately tighten the hex bolts to release the taper bushing. When bushing is loose remove the 2 hex bolts. See Figure 7.
3. Adjust spur gear so it is centered on the tooth rack. Re-tighten the two (2) - ¼ -20 x 2.0" retaining bolts and lock nuts on spur gear.

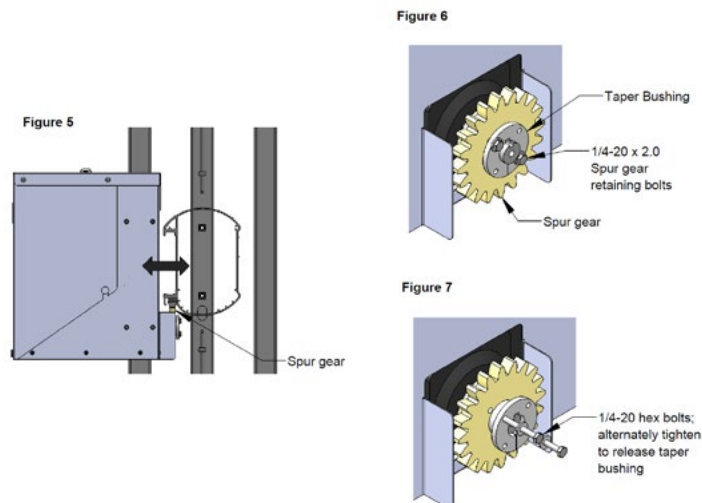


Figure 5, 6 & 7. Adjusting Spur Gear Alignment

## Installing the Tooth Rack

Hook tooth racks together and slide them into rail throughout the entire length of gate. See Figure 8. Tooth racks can be .80" (2cm) to 1.18" (3cm) shorter than gate length; tooth rack must not protrude past the end of the gate beam. See Figure 9.

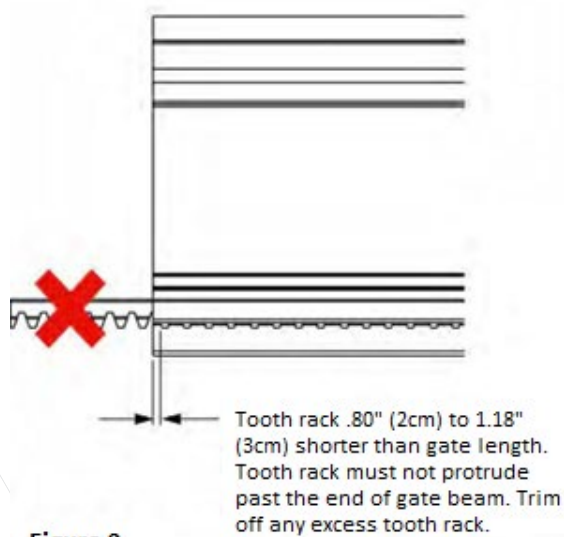
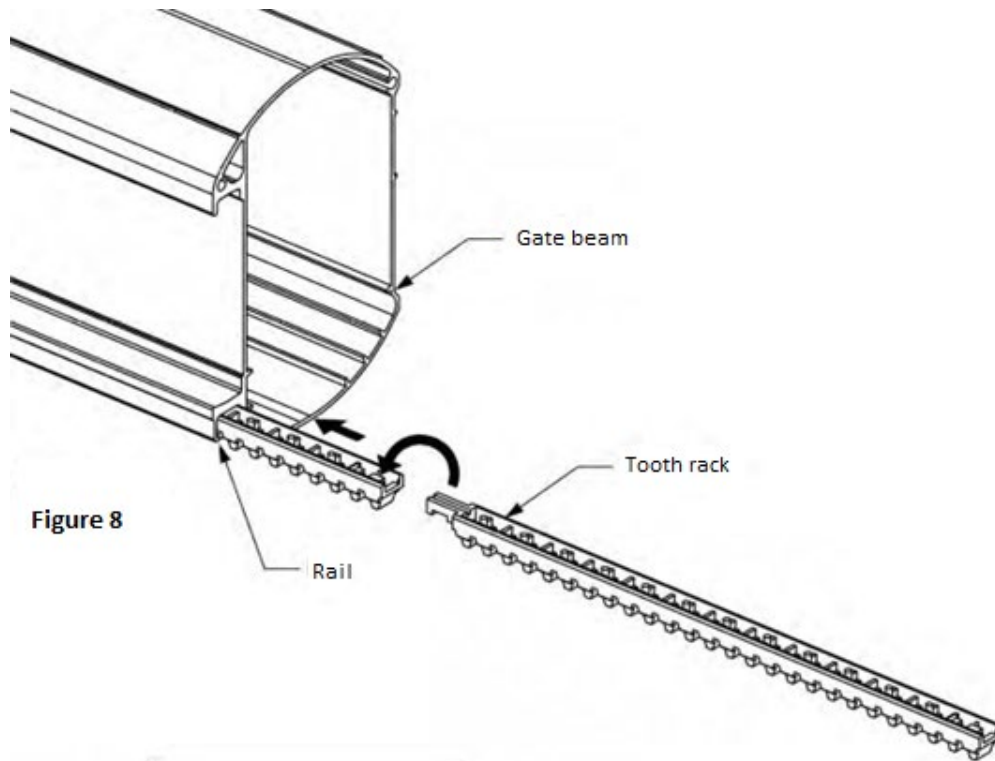


Figure 8 & 9. Tooth Rack Installation

## Connecting the Battery and Turning DC Power ON

1. Connect the red battery wire to its spade terminal. See Figure 10.
2. Turn DC power ON. The USAGE CLASS appears when power is first supplied to the operator.
3. To navigate within the Setup Menu, use the SELECT, NEXT and PREV buttons as shown in Table 1.

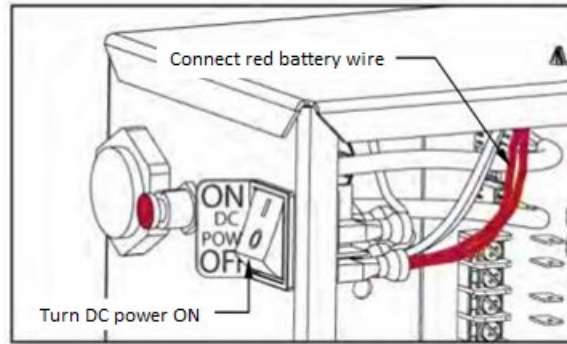


Figure 10. Connecting Battery

## Programming the Initial Setup Menu

Several sequential displays present information which must be configured before the Kinetic operator will function. Once the configuration is complete, the information is retained even when a power loss occurs.

Table 1. Menu Mode Navigational Buttons

To edit the menu	To navigate through the SELECTIONS	To choose what is on the display	To navigate between menus
Press SELECT. Two top characters blink.	Press NEXT. Continue pressing NEXT to view all selections.	Press SELECT. Blinking characters become static.	Press NEXT or PREV. Advance – Press NEXT. Previous – Press PREV.
<p><b>NOTE:</b> Programming the Setup Menu is usually a one-time occurrence unless factory defaults are reinstated through the Installer Menu. The RESET and MENU buttons do not function during the initial configuration of the Setup Menu.</p>			

**USAGE CLASS SELECTIONS:**

- 0 -No Usage Class set.
- 1 -Single family residential up to four units.
- 2 -Multi-family, hotel etc.
- 3 -Industrial use, not for general public.
- 4 -Guarded and monitored facility, not for general public.

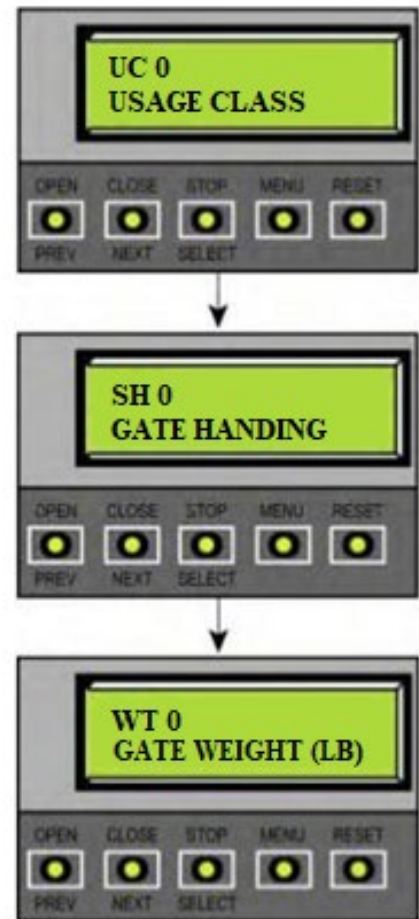
**GATE HANDING SELECTIONS:**

- 0 -No handing set. Gate will not move until handing is set.
- Looking at gate from secure side:
- L -If the gate slides open to the left.
  - R -If the gate slides open to the right.

**GATE WEIGHT SELECTIONS:**

- 0 -Gate weight not set.
- Kinetic DC 15W [Kinetic 1]**
- 1 -Gate weight 0 to 400lbs (0 to 181kg)
  - 2 -Gate weight 401 to 800lbs (181 to 363kg)
  - 3 -Gate weight 801 to 1100lbs (363 to 499kg)
  - 4 -Gate weight 1101 to 1500lbs (499 to 680kg)
- Kinetic DC 10FW [Kinetic 2]**
- 1 -Gate weight 0 to 250lbs (0 to 114kg)
  - 2 -Gate weight 251 to 500lbs (114 to 227kg)
  - 3 -Gate weight 501 to 750lbs (227 to 340kg)
  - 4 -Gate weight 751 to 1000lbs (340 to 454kg)

Once gate weight is set, program Sensor 1, Sensor 2, Sensor 3:



**Figure 11. Initial Setup Menu Programming**



- 0 = disabled
- 1 = (NOT USED)
- 2 = (EYE CLOSE)
- 3 = (EDGE CLOSE)
- 4 = (EYE OPEN)
- 5 = (EDGE OPEN)
- 6 = (EDGE BOTH) – Swing Gates Only
- 7 = (EYE BOTH) – Solo Slide Gates Only



Same as Sensor 1.



Same as Sensor 1.

## Establishing the OPEN and CLOSE Limits

The LEARN LIMITS display automatically appears after you set the gate weight. To set the open and close limits, take the following steps:

1. Hold the OPEN button until the gate slides to full open. Release the OPEN button. Note that if you go too far, you can press CLOSE to reverse direction. Press STOP twice to store the open stop location in memory.
2. Hold the CLOSE button until the gate slides to full close. Release the CLOSE button, press STOP twice to store the full close location in memory.

**Note:** Pressing the OPEN button will reverse direction.

3. GATE CLOSED appears on the display and ALERT 15 flashes until the target magnet is installed and its location stored in memory. See *“Installing the Target Magnet”* on page 66.

### CAUTION

Do not install the target magnet before setting the OPEN and CLOSE limits. If the target magnet is installed before setting the limits, the location of the sensor hole in the beam may be incorrect and additional holes or repairs to the gate beam may be required to relocate the target magnet.

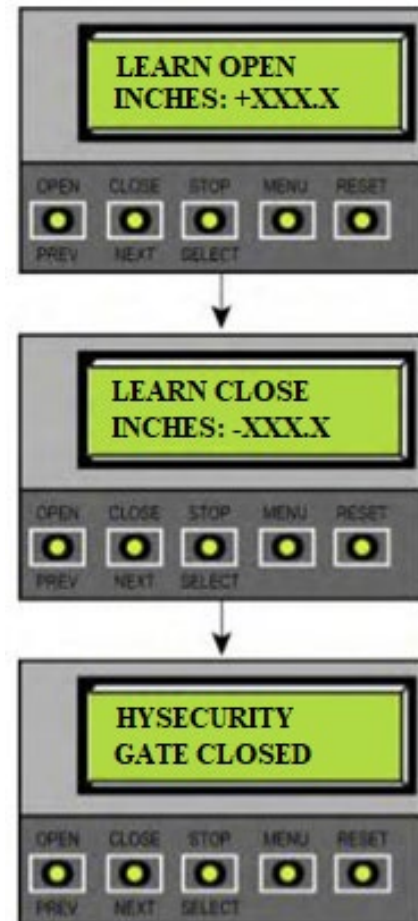
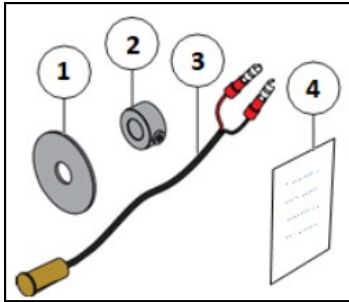


Figure 12. Open and Close Limits

## Target Sensor Rack Drive Installation Instructions

The following instructions are intended to assist the user in the new Wallace Kinetic gate operators target sensor rack drive kit installation, available from Wallace Perimeter Security. To order, ask for Kit Part No. **951WG-WH**). The new rack drive kit provides a fender washer and zinc collar to secure the target sensor past the operator’s outer cover and close distance between sensor and chain magnet, minimizing any positioning challenges. No tools are required.



### Wallace Rack Drive Ship-With Kit

	Item	Qty
1.	Washer, Fender	1
2.	Collar, 3/8" Shaft, Zn	1
3.	Sensor, Magnetic Proximity	1
4.	Wallace Target Sensor Rack Drive Installation Instructions	1

#### NOTE

Only a qualified service technician with proper training should perform this installation. Follow all shop safety rules when performing this installation.

#### CAUTION

DO NOT overtighten zinc collar to target sensor, or you may damage target sensor.

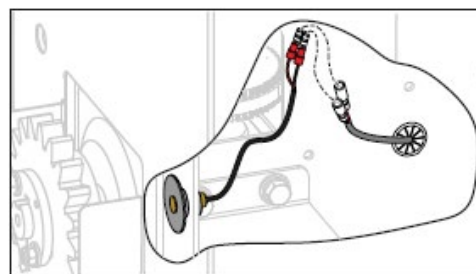
#### Preparation:

1. Make sure AC and DC power is turned off.
2. Unlock, remove, and set aside front cover.
3. Back cover may remain installed.
4. Determine if target magnet sensor will be installed on the left or right of operator.

#### Target Magnet Sensor Assembly:

1. Slide fender washer onto magnetic proximity sensor until fender washer and sensor are flush. See Figure A.
2. Route connected fender washer and target sensor through operator chassis outer cover. See Figure B.

3. Slide and secure 3/8” shaft zinc collar to target sensor back to secure fender washer and target sensor. See Figure C.
4. Connect target sensor male connectors to appropriate female connectors. See Figure D.

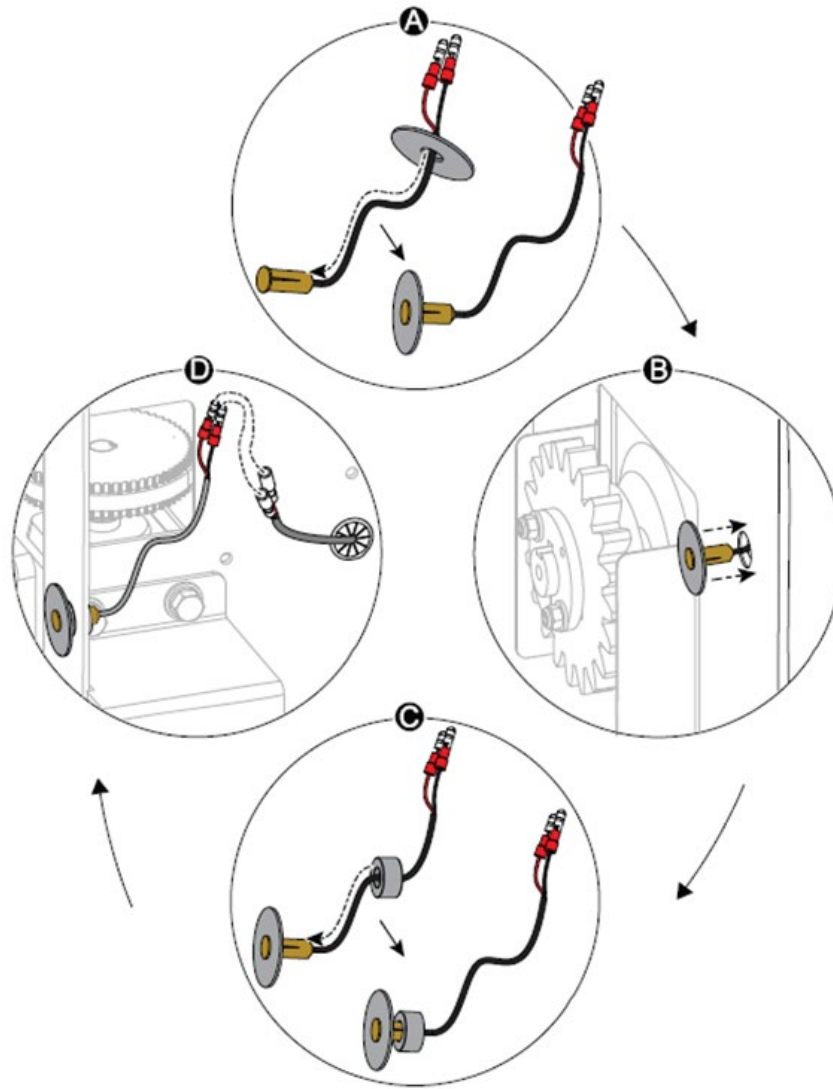


Fully Installed Target Magnet Sensor

#### Post Installation Testing

1. Turn AC and DC power on.
2. Reset and test limits as needed.





**Target Magnet Sensor Installation**

## Installing the Target Magnet

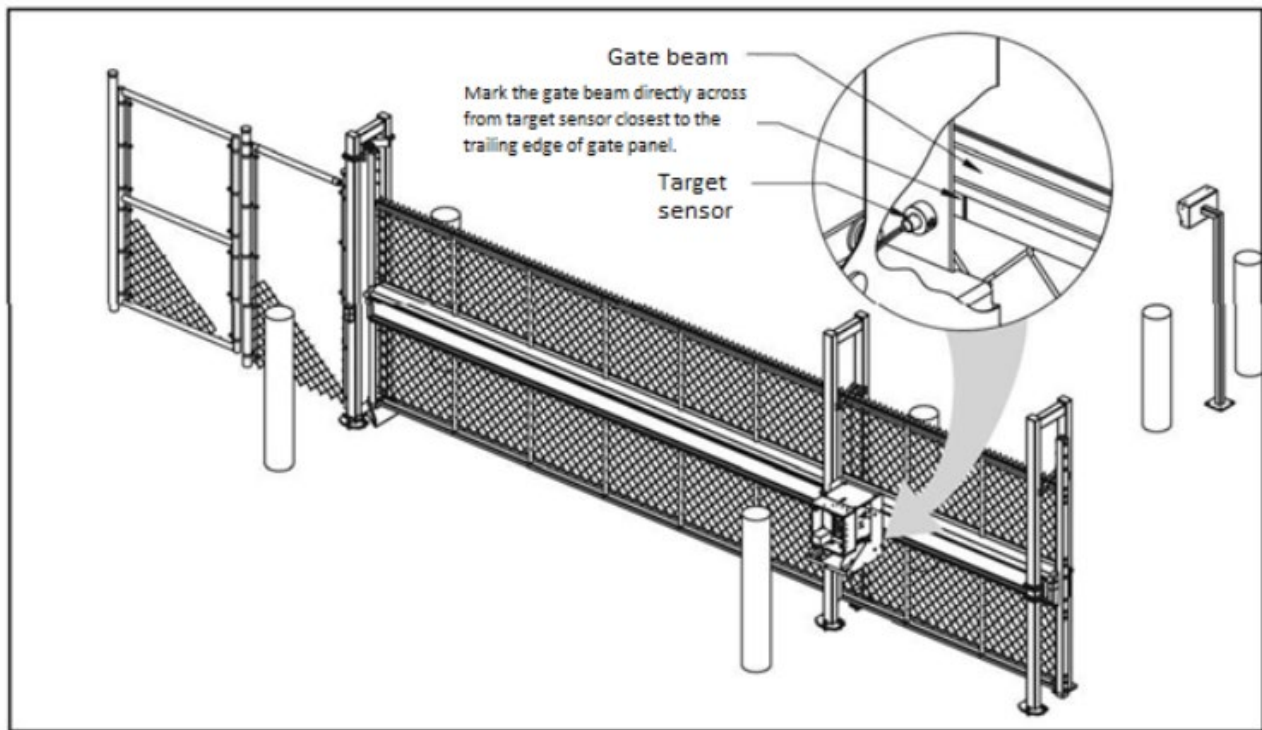


Figure 13. Marking Gate Beam

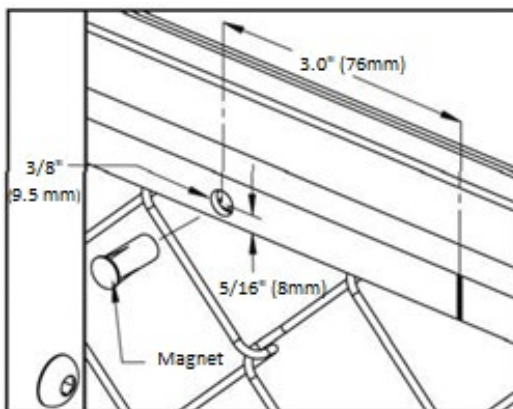


Figure 14. Installing Magnet

1. With the gate CLOSED, mark the gate beam directly across from target sensor that is closest to the trailing edge of the gate. See Figure 13.
2. Press the OPEN button to move the gate a few feet and then press STOP.

3. Find the mark on the gate beam and measure about 3" (76mm) toward the operator.
4. Drill a 3/8" (9.5mm) diameter hole in gate beam and tooth rack 7/8" (22mm) deep as shown in Figure 14.
5. Apply a small amount silicone into 3/8" (9.5mm) hole in gate beam / tooth rack. Fully press the magnet into the hole so the magnet is flush with the gate beam.
6. Press OPEN and wait for the gate to travel and stop at its full open position.
7. Press CLOSE. As the gate approaches the full close position, the target magnet passes the target sensor and an audible beep is heard. Read the following NOTE, and then proceed to step 8 to verify that the operator has learned its limits.

**NOTE**

If “ALERT 15 - NO TARGET” appears on the display after the target magnet has been installed and a full gate cycle completed (steps 6 & 7), it means that the target magnet has not been detected by the operator. Check beam alignment and make sure the target magnet passes across the face of the sensor. See Figure 13. Repeat steps 6 and 7.

8. To verify that the operator recognizes the target magnet, turn off both DC and AC power switches and watch the display go blank. Then, turn both switches on. The operator beeps indicating Limit Relearn Mode. The gate then travels about 6 inches (15cm) in the open direction and stops. The buzzer beeps again and the gate travels in the close direction at a rate of 0.5 ft/s until the target magnet passes the target sensor. The buzzer sounds one last time, the operator resets, and “GATE CLOSED” appears on the display.
9. If “LEARN OPEN” appears, then the target magnet was not detected. Check chain alignment and make sure the target magnet passes across the face of the sensor. See “*Figure 14. Installing Magnet*” on page 66.

**Note:** Repeat steps 6 – 8 if you are still having difficulty with the operator learning its limits.

# Power

## Installing the Earth Ground

An earth ground refers to the grounding rod and accompanying equipment ground which need to be installed to safeguard against potential electrical shock and damage to personnel and equipment.

### DANGER

The potential for lightning discharge exists with all gates, fences and gate operators. National Electric Code (NEC) requires a separate earth ground in addition to the required equipment ground.

Wallace Perimeter Security recommends grounding the operator with a separate earth ground rod to shield the operator against electromagnetism and other electrical signals that may cause erratic operation with or damage to the SmartDC Controller.

### NOTE

If you do not ground the operator with a separate earth ground rod, you risk voiding the Limited Warranty.

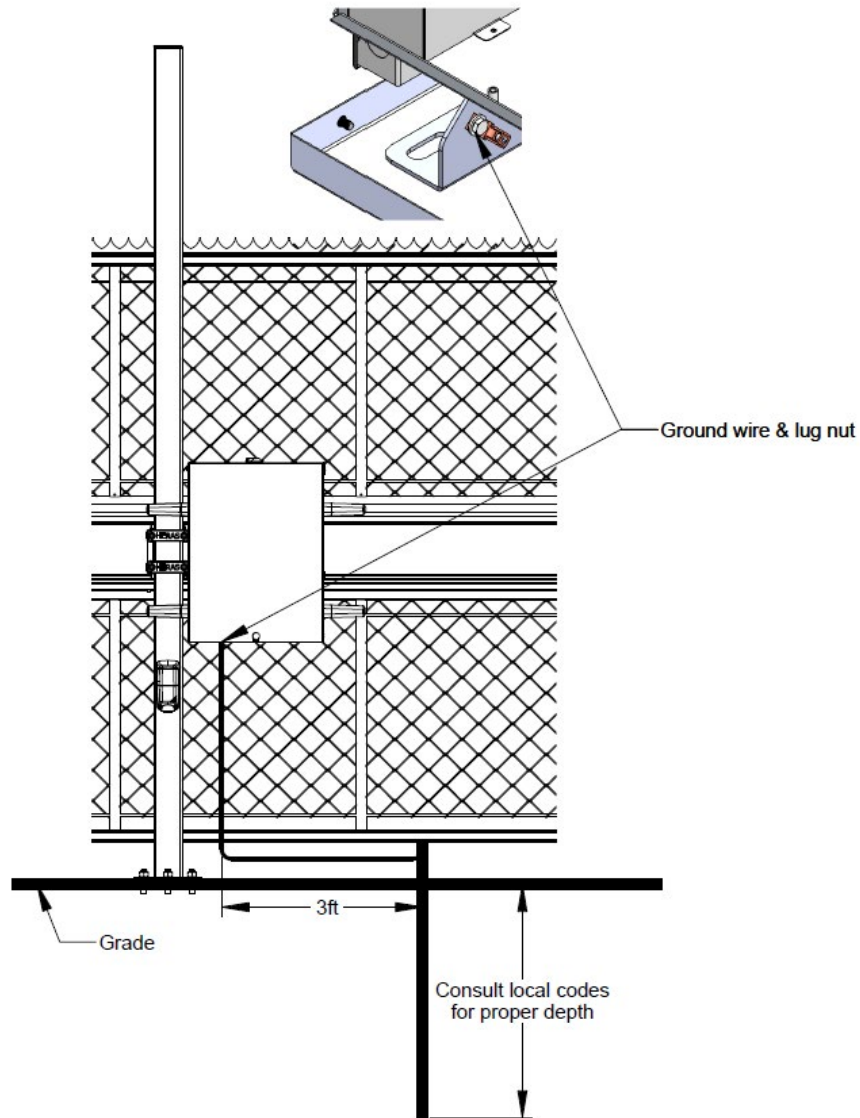
For earth grounding requirements, refer to the National Fire Protection Association (NFPA) 780 - ***Standard for the Installation of Lightning Protection Systems***. Highlights of the standard include:

- **The ground rod is solid copper rod: minimum requirements 5/8" (16mm) diameter and 10 ft. (3m) in length.**
- **The ground rod is driven into the earth (refer to local codes for depth requirements).**
- **The ground rod is electrically bonded to the chassis with a single length of un-spliced 6AWG copper wire less than 3 ft. (91cm) in length.**
- **Local jurisdictions may impose additional requirements above the NEC and NFPA 780. Consult the local codes and regulations regarding requirements in your area.**

Take the following steps to comply with NEC and NFPA 780 standards:

1. **Install a grounding rod per local building codes. See Figure 15.**
2. **Attach a large earth ground wire (6AWG) from the grounding rod to the lug nut on the base of the chassis.**

Properly grounding the gate operator is critical to gate operator performance and the life of its electrical components. Use sufficient wire size during installation. Refer to **“Wiring 115VAC Power” on page 71** or **“Wiring 230VAC Power” on page 72**.



**Figure 15. Installing Grounding Rod**

## Wiring AC Power

**DANGER**

Turn off AC power at the source (circuit breaker panel) before accessing the wires in the Kinetic junction box. Follow facility Lock Out/Tag Out procedures. Make sure both the DC and AC power switches, on the side of the Kinetic control box, are in the off position. See Figure 16.

**CAUTION**

Wiring of gate operators must conform to the NEC standards and comply with all local codes. If you plan to connect to 230VAC power, read the WARNING in Figure 16. The voltage selector switch on the AC Power board must be moved to the 230V position or damage to the operator will occur and void the Limited Warranty.

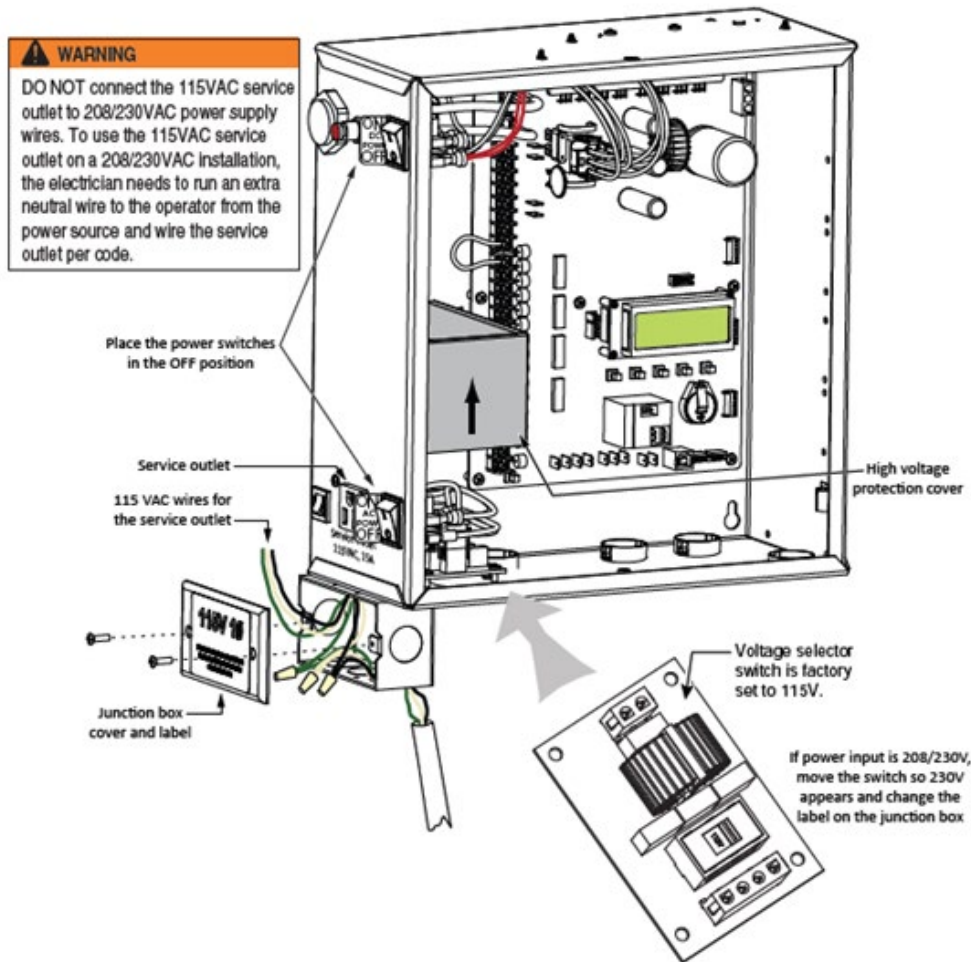


Figure 16. Wiring AC Power

## Wiring 115VAC Power

For standard 115VAC power connection:

- **Verify AC power supply wires and low voltage (12V & 24V accessory power wires) run through two separate conduits. The higher voltage from the AC power supply may cause interference and anomalies in Kinetic operation if the high and low voltage wires are routed through the same conduit.**
- **Maximum gate system current draw is 3 amps on a dedicated 115VAC circuit (20A dedicated circuit is recommended).**
- **Make sure the proper wire size is used. The following table shows the maximum allowable wire run from the power source to the operator for various wire sizes.**

**Table 2. Wire Gauge versus Run**

AC Power	14-gauge wire	12-gauge wire	10-gauge wire
One operator 115V	730 ft (223 m)	1200 ft (366 m)	1900 ft (579 m)
Two operators 115V	460 ft (140 m)	750 ft (228 m)	1160 ft (354 m)

Table 2 assumes a dedicated circuit with an accessory power load up to 2A. Additional loads require that the wire size be increased or the distance of the run be decreased.

To connect to 115VAC power, take the following steps:

1. **Make sure the AC power is turned off at its source and the DC and AC power switches on the operator are in the OFF position.**
2. **Access the input power wires and service outlet wires by removing the two Phillips-head screws that secure the high voltage junction box cover. See “Figure 16. Wiring AC Power” on page 70.**

### NOTE

The service outlet wires are solid copper and are labelled and bound together to keep them separate from the AC power switch wires.

3. **Wire nut or crimp bond the power supply wires to the black and white lead wires coming from the AC power switch (no label). See Figure 16.**
4. **Wire nut or crimp bond the equipment ground wire to the green ground wire in the junction box.**
5. **To activate the 115VAC service outlet, include the black and white outlet lead wires and the green ground wire in the connections made above.**
6. **Neatly organize all wire connections and replace the high voltage junction box cover. Secure it with the two Phillips-head screws.**

## Wiring 230VAC Power

**CAUTION**

All Kinetic operators are shipped from the factory as 115VAC units. When connecting to 230VAC power, the voltage selector switch on the AC power board must be moved to the 230V position or damage to the operator will occur and void the Limited Warranty.

For the 230VAC power connection:

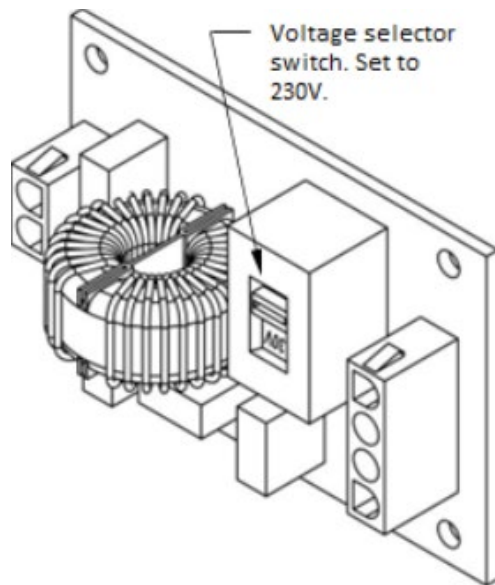
- **Verify AC power supply wires and low voltage (12V & 24V accessory power wires) run through two separate conduits as discussed in Wiring 115VAC Power.**
- **Maximum gate system current draw is 1.5 amps on a dedicated 230VAC circuit (20A dedicated circuit is recommended).**
- **Make sure the proper wire size is used. The following table shows the maximum allowable wire run from the power source to the operator for various wire sizes.**

**Table 3. Wire Gauge versus Run for 230VAC**

AC Power	14-gauge wire	12-gauge wire	10-gauge wire
One operator 230V	2095 ft (639 m)	3350 ft (1021 m)	5300 ft (1615 m)
Two operators 230V	1465 ft (446 m)	2350 ft (716 m)	3750 ft (1143 m)

Table 3 assumes a dedicated circuit with an accessory power load up to 2A. Additional loads require that the wire size be increased or the distance of the run be decreased.





**⚠ DANGER**

Do not connect the 115VAC service outlet to 230VAC power supply wires. To use the service outlet with 230VAC supply power, a separate neutral wire (white) must be run from the power source. Follow guidelines according to National Electrical Code Article 250.

**Figure 17. Voltage Selector Switch Set to 230V**

To connect to 230VAC power, take the following steps:

1. **Make sure the AC power is turned off at its source and the DC and AC power switches on the operator are in the OFF position.**
2. **Remove the High Voltage Protection cover by unscrewing the two Phillips-head screws that secure it. See “Figure 16. Wiring AC Power” on page 70.**
3. **Toggle the voltage selector switch from 115V to 230V. See Figure 17. Replace the cover and secure it.**
4. **Access the input power wires by removing the two Phillips-head screws that secure the Junction Box Cover. See “Figure 16. Wiring AC Power” on page 70.**
5. **Wire nut or crimp bond the power supply wires to the black and white lead wires coming from the AC power switch (no label).**
6. **Wire nut or crimp bond the equipment ground wire to the green ground wire in the junction box.**
7. **Neatly organize all wire connections and secure the junction box cover with the two Phillips-head screws.**
8. **Place the 230V 1Ø label on the Junction Box Cover over the 115V 1Ø label.**

## Using a Solar Powered Operator

Wallace Perimeter Security offers a solar version of the Kinetic operator in 1ft/s or 2ft/s models. The solar models have different internal wiring and include software programmed for solar use. The SmartDC Controller has a built-in charger which allows a 24V solar panel (or two 12V panels) a direct connection to the Kinetic operator with no additional electronic devices required.

To plan a solar-powered site, read through this entire section. Keep in mind that the solar Kinetic DCS operator does not have the following components:

- Transformer
- AC power supply board
- AC service outlet
- Various wiring adaptations that are standard in a Kinetic DC operator

### NOTE

Solar panels are NOT included in the purchase of the Kinetic DCS 15 [Kinetic 1S] and 10F [Kinetic 2S] operators. Also, adapting a standard Kinetic DC operator to a solar application is not recommended. For ease of installation and proper functionality, be sure to order a solar model, Kinetic DCS, for a solar-powered site.

## Design Requirements and Considerations

1. Use 14-gauge wire or larger to connect the solar panel(s) within 100ft of the operator. Check NEC and local regulations if other distances apply.
2. Use one 24VDC solar panel or two 12VDC solar panels in series with a total capacity of at least 20W. Mount them according to the manufacturer's installation instructions.
3. Make sure both DC power switches on the Kinetic control box are in the OFF position, and then remove the two Phillips-head screws that secure the 24VDC cover to the junction box.
4. Wire nut or crimp bond the solar panel wires to the black and red input wires. See ***"Figure 18. Solar Panels and Wiring Connections"*** on page 75.
5. Wire nut or crimp bond the equipment ground wire to the green ground wire in the junction box.
6. Slide the plastic cover off the control box and attach the red spade connector to the battery terminal on the upper DC power switch. See

***"Figure 19. Kinetic DCS Control Box"*** on page 75.

7. Turn both DC power switches ON and program the SmartDC Controller. See ***"Programming the Initial Setup Menu"*** on page 61.

### NOTE

For extended battery backup installation instructions, refer to ***"Installing the Extended Battery Backup Kit"*** on page 80.

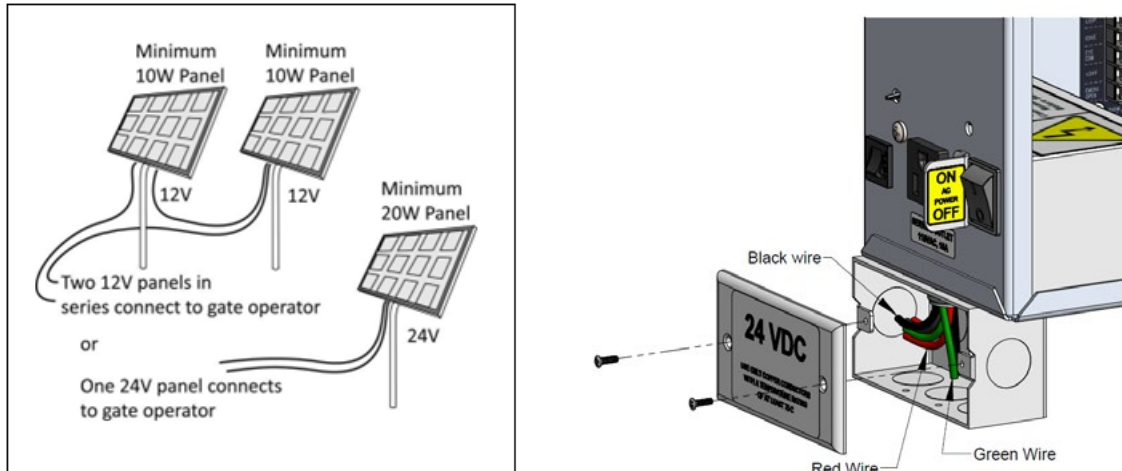


Figure 18. Solar Panels and Wiring Connections

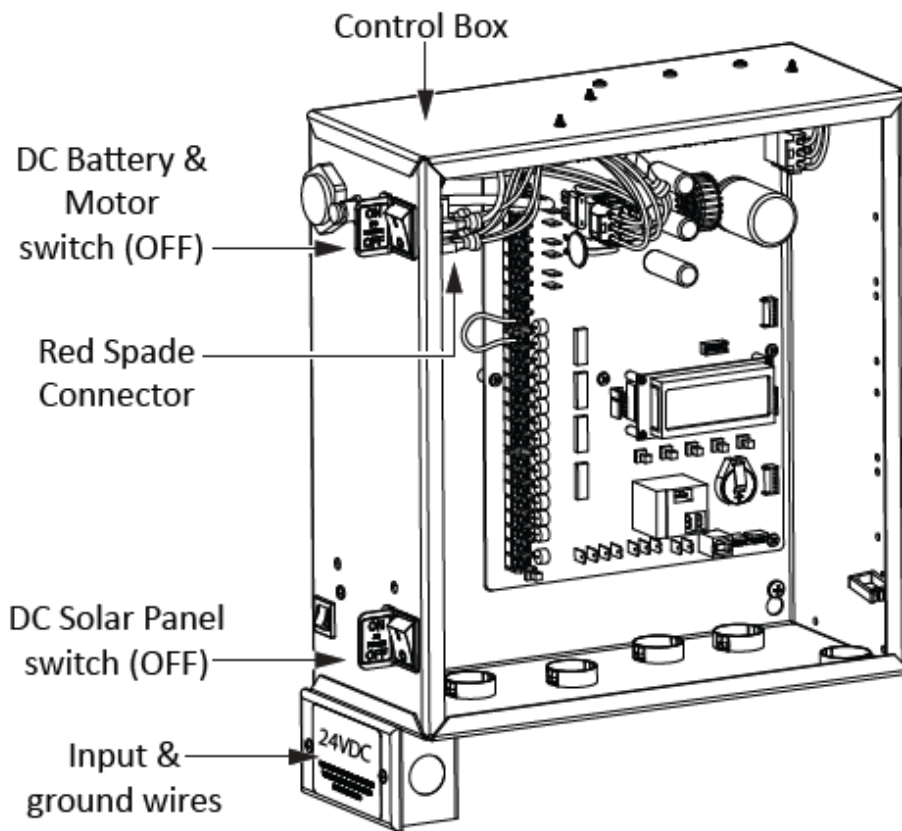


Figure 19. Kinetic DCS Control Box

## Connecting Peripherals to a Solar Operator

### NOTE

Photoeyes connected to these terminals receive power when the motor engages which means the draw on the battery is minimal.

Two power supplies are available for peripheral connections:

24VDC and 12VDC

NOTE: The 24VDC and 12VDC power supplies each have two terminals that can be used to draw the available 1A maximum.

### Example of Peripheral Amp Draw

0.015A = 3 HY-5B vehicle detectors

0.029A = 1 multi-code radio receiver

0.000A = 3 photo eyes (see NOTE)

0.044A = Total amps needed for site design purposes

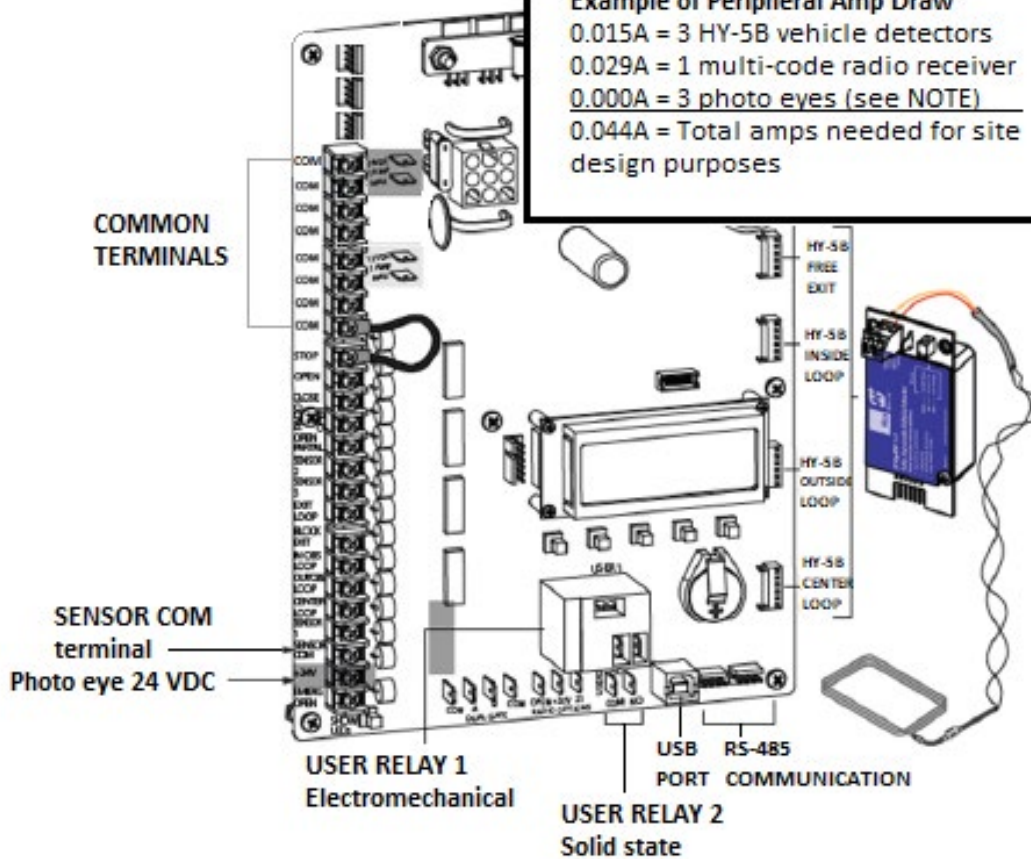


Figure 20. Connecting Peripherals to a Solar Operator

To connect any peripheral devices to a solar operator, use the 24VDC or 12VDC terminals. Because a solar operator gets its energy from the sun and stores the energy produced by the solar panels in batteries that are constantly discharging, it is important to use peripheral devices that draw and consume as little power as possible.

For example, the SmartDC Controller has specific connections for photo eyes. When you attach photo eyes for entrapment protection, you have the option to wire the photo eyes to the SENSOR COM and +24VDC. When wired to these connections, the photo eyes only draw power when the motor engages, thereby extending battery life. The same can be said for HY5B vehicle detectors which draw a minimal 0.005A per detector; compared to box detectors which usually draw, at minimum, 0.009A. For more information on photo eyes, refer to the section titled, ***“Installing Photoelectric Sensors for External Entrapment Protection Only” on page 145.*** To review information about vehicle detectors, refer to ***“Vehicle Detector Installation Options” on page 120.***

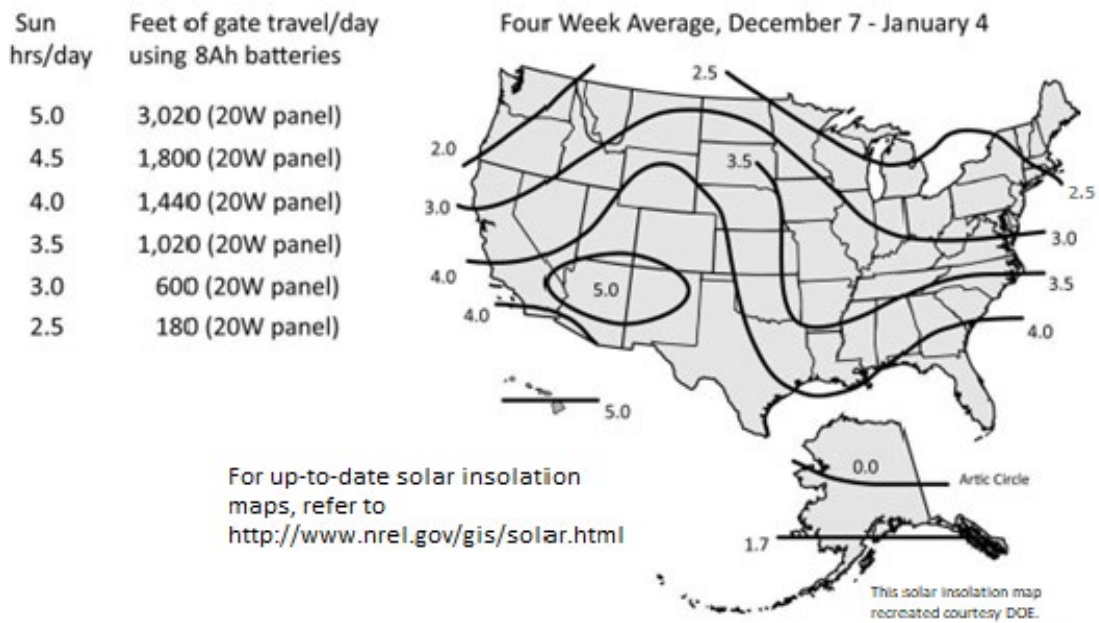
## Understanding Gate Activity based on Solar Zones

Use the solar maps to determine the number of solar hours per day that can be reasonably expected in a particular zone. The number of solar hours per day affects the amount of gate travel for a free-rolling gate powered by the Kinetic solar operator.

### NOTE

Remember, the sun is the only source of energy. If you need to increase the amount of gate travel per day (i.e., feet of gate travel), additional solar panels may be required. Also, the greater the battery capacity, the longer the operator can cycle the gate on cloudy days without the recharge provided by the solar panels. Sites requiring more than 1,500 feet (457m) of gate travel per day or those sites located in less sunny climates, need larger capacity batteries.

Wallace Perimeter Security offers a 50Ah battery option which provides six times the storage capacity of the standard 8Ah batteries.



**Figure 21. Solar Insolation Map**

The chart is based on a 20 Watt (24VDC) solar panel system with Kinetic DC powering a 30 foot (9m), 1000 lbs, 1ft/s [Kinetic 1S] gate with the following peripherals attached:

- One low current multi-code radio receiver
- Two HY5B vehicle detectors

The number of amps that the peripherals draw coupled with the gate travel occurring throughout the night determines the battery capacity required.

The number of amps that the peripherals draw coupled with the gate travel during the day, determines the solar panel size needed.

## Important Considerations for DC-Power Connection

- Since the operator is intended to run on batteries, control of the load is important. Gates that move easily and do not bind will drain less energy from the battery, preserving capacity for more cycles during a power failure.
- Be certain to observe polarity when connecting the batteries or adding accessories. Reversed polarity may result in a non-functional operator or damage to a component. Red (+) is positive and black (-) is negative. If shorted, the batteries will generate a very high current. The batteries are connected in a series circuit: Join the positive (+) terminal from one battery to the negative (-) terminal of the next battery.
- Batteries have a finite life and age more quickly when exposed to temperatures above 80°F (27°C). Battery temperatures above 104°F (40°C) are damaging, and significantly shorten battery life.
- As the batteries age, they will progressively lose their capacity to store energy. If the total amount of back up capacity is critical, plan to replace the batteries after two years of use especially in hot climates. Properly discard used batteries. Refer to *“Hazardous Materials and Proper Disposal”* on page 24.

**⚠ WARNING**

Batteries contain sulphuric acid. Acid in your eyes, on your skin, or on your clothing can cause injury and severe burns. If batteries are dropped or damaged dispose of them properly.

- Batteries are rated to perform to capacity at certain temperatures. Variations in temperature affect performance of the batteries. An example of amp-hour performance is shown in Table 4. Wallace Perimeter Security mounts the battery pack near the transformer to provide residual heat around the batteries which guards against amp-hour loss.

**Table 4. Amp-Hour - Example of Battery Performance**

Temperature	Capacity
77°F (25°C)	100
32°F (0°C)	80
-22°F (-30°C)	50

**NOTE**

The Kinetic operator stores all User and Installer Menu settings in non-volatile memory (EEPROM). Configurations are saved if a power loss occurs and reinstated once power is restored.

- Wallace Perimeter Security uses a permanently sealed AGM-type battery which lasts much longer than wet cell batteries and needs no maintenance over its life span. Batteries are protected from over discharge by a low voltage sensing circuit. The charger circuit regulates to allow high charger output when the battery is partially discharged. The charger circuit automatically reduces the output to near zero as the batteries become fully charged.

## Installing the Extended Battery Backup Kit

Wallace Perimeter Security offers an extended DC power back up option with two 50Ah batteries. Contact Wallace Perimeter Security parts department to order extended battery backup kit with base extension.

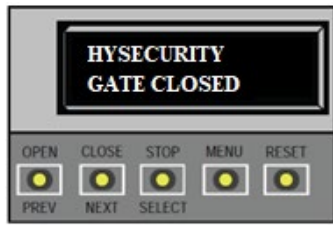
To install the extended battery backup kit:

1. Turn off the DC and AC power switches.
2. Place the accessory tray on the studs inside the base riser.
3. To access the 8Ah batteries and disconnect its wires, cut the two black wire ties and slide the 8Ah batteries through the access window. Another option is to remove the four screws that hold the control box to the chassis.
4. Place the two 50Ah batteries on the tray.
5. Attach the blue wire from the red terminal on one 50Ah battery to the black terminal on the other 50Ah battery.
6. Run the red and black wires (disconnected from the 8Ah batteries) through the hole in the support bracket.
7. Using the wires supplied in the 50Ah battery kit, attach the red wire to the red positive terminal on the 50Ah battery. Connect its opposite end to the red lead exiting the support bracket.
8. Connect the black wire to the black negative terminal on the 50Ah battery. Connect its opposite end to the black lead exiting the support bracket.
9. Access the Installer Menu on the SmartDC Controller.
10. Change the Battery Setting (BT) in the Installer Menu to a number 1 (Extended). Follow the steps in the menu tree shown on the next page.

**⚠ DANGER**

Make sure both the left and right 8Ah DC battery wires are disconnected. Never mix battery sizes, types, or brands. Wallace Perimeter Security strongly recommends that only sealed AGM style batteries be used. If you plan to remove the batteries from the operator, properly store or discard them. Refer to *“Hazardous Materials and Proper Disposal”* on page 24.





1. Start at a gate status display.



2. Access the User Menu by pressing MENU twice.



3. Access the Installer Menu by simultaneously pressing OPEN and RESET. Release the buttons.



4. Use the NEXT button to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

# Display and Menu Options

This section of the manual provides information about the display and menu options. It includes how to:

- Turn both AC and DC power switches on.
- Review How to use the SmartDC Controller Buttons in Menu Mode.
- Review Run Mode and Gate Status Displays
- Access and Configure User Menu Options
- Adjust the Close Timer
- Set the Time and Date
- Set the AC Power Loss Gate Function
- Adjust the Display Contrast
- Access and Configure Installer Menu Options
- Reset the OPEN & CLOSE Limits
- Set the Open and Close Gate Speed
- Adjust IES Sensitivity
- Reinstate Factory Defaults
- Enable Fire Department Access

This section describes what you will see on the display and explains the functionality of the buttons. User and Installer Menu charts provide information about peripheral connections and the corresponding menu items that need to be configured.

## INITIAL SETUP

Once you’ve completed the installation of the Kinetic operator and attached the wired accessories, you’re ready to program the operator. Two different approaches exist:

### Method 1:

Connect a laptop computer to the USB or serial (RS-232) port and upload the gate settings and set the operator menu configurations via the S.T.A.R.T. software.

### Method 2:

Manually navigate through the User and Installer Menus using the five buttons located under the LCD display on the SmartDC Controller. The instructions for performing this second option are provided in this section.

#### NOTE

Use a laptop computer at your place of business to conveniently download the free S.T.A.R.T. software from <https://hysecurity.com/> before heading out into the field. This makes it easy to adjust settings using a laptop. A S.T.A.R.T. User Guide is also available online.

## Turning Both Power Switches On

AC and DC power switches are located on the outside edge of the control box. See Figure 22. After Programming the Initial Setup Menu, Establishing the OPEN and CLOSE Limits, Installing the Target Magnet, and connecting to main power (Power), take the following steps:

1. Turn both power switches ON. The gate moves and searches for the target magnet to re-establish the limits. An audible beep occurs and a red light pulsates next to the OPEN button on the SmartDC Controller which indicates the system is functioning. If AC power is lost, the rate of flashing slows down. Other indicator lights are described below.

**NOTE: If the target magnet is not detected by the operator, “ALERT 15 - NO TARGET” or “LEARN OPEN” appears on the display. For more information, refer to “Installing the Target Magnet” on page 66.**

2. When the target magnet is detected, the software version briefly appears on the display, and then one of the following modes appears:
  - Gate status - indicates the operator is in Run Mode. Refer to “*RUN MODE*” on page 86.
  - Alert, fault, and error messages - indicates a problem exists with the operator which needs to be resolved before the operator can function properly. Refer to “*SmartDC Controller Troubleshooting*” on page 151.

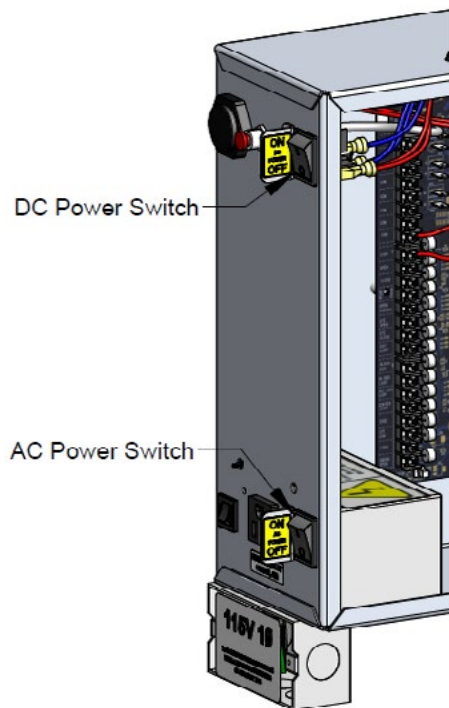


Figure 22. AC and DC Power Switches

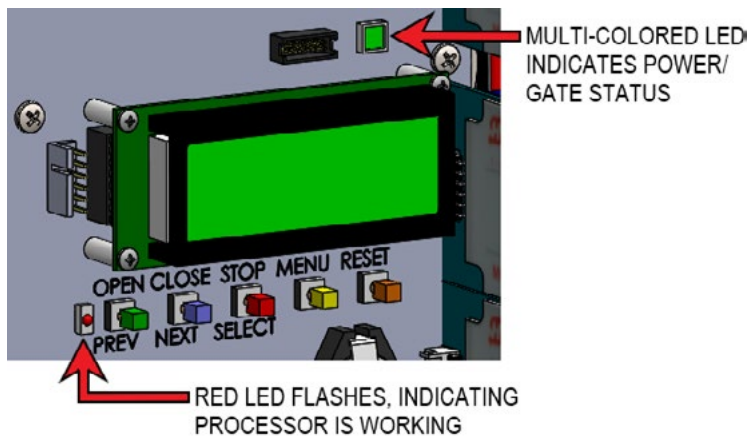
### NOTE

The SmartDC Controller can be powered when either switch is turned on. If the DC power switch is OFF the motor and batteries are disconnected. The operator will not function (even though the AC power switch remains on). When the operator is connected to AC power and both switches are turned ON, the charge level of the battery is being monitored and maintained. On a solar-powered operator, the lower power switch connects and disconnects the DC power from the solar panels.

The flashing red indicator light next to the OPEN button on the SmartDC Controller is considered the 'heart' beat of the system. It indicates that the electronics board is receiving power. When AC power is lost, the rate of flashing slows down.

Another indicator light, above the display, is multi-colored and corresponds to the action that the operator is performing:

- Green – the operator is stopped.
- Flashing Yellow – the operator is running.
- Red – the operator has experienced an error.
- Not lit - AC power is lost. Pressing the SHOW LEDs button indicates which inputs, if any are active. Refer to Figure 23 for SHOW LEDs location on board.



**Figure 23. LED Indicators**

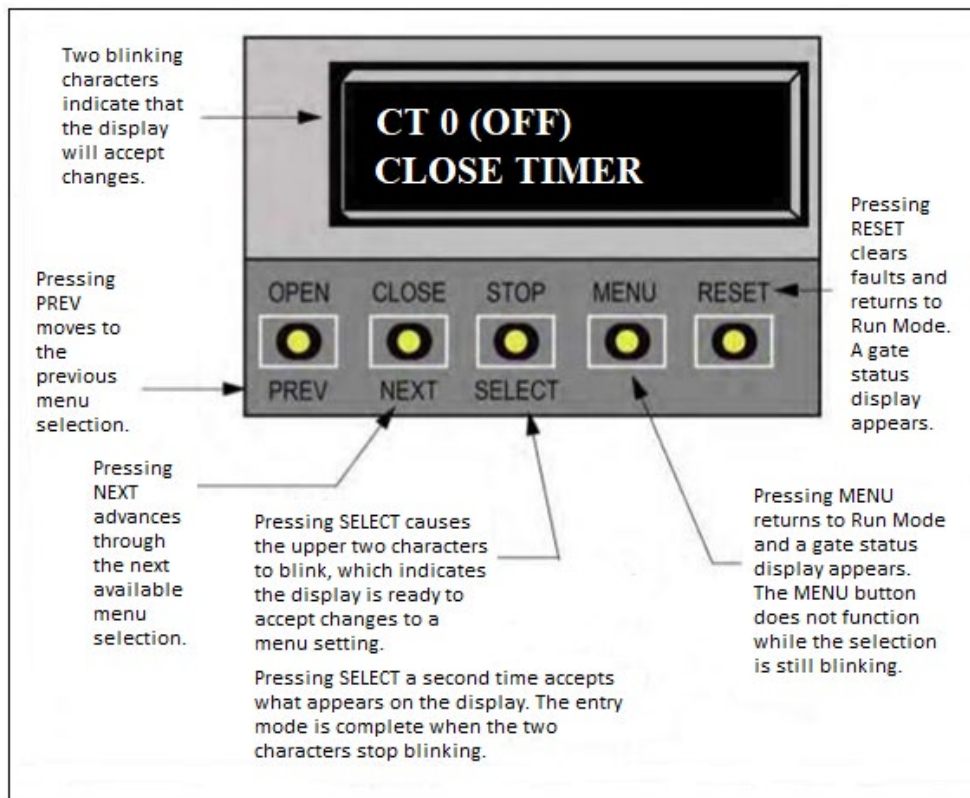
## Using the SmartDC Controller Buttons in Menu Mode

The buttons on the SmartDC Controller let you navigate, change, or clear the information in the display menus. Refer to Figure 24.

The buttons with text above and below have two functions. Use these buttons to enter operating commands or navigate through the User and Installer Menus. The singular use of these keys is dependent on the operator mode.

Three different modes exist:

- **Run Mode** - gate is operational awaiting commands. Refer to *Using the SmartDC Controller Buttons in RUN Mode* herein.
- **Menu Mode** - motor disengages and operator commands are ignored. Data entry, menu navigation, and menu selection can be accomplished via the Controller buttons or through a S.T.A.R.T. software connection using the USB port.
- **Fault Mode** - alerts, faults or errors appear on the display. Some errors or faults can be reset with the STOP button while more serious faults require the RESET button or cycling power. Faults indicate a need for diagnosis and resolution. Refer to *“SmartDC Controller Troubleshooting”* on page 151.



**Figure 24. Function of the SmartDC Controller Buttons in Menu Mode**

## RUN MODE

Gate status displays appear when the operator is ready and waiting for a gate operation command. When the menu display is flashing “GATE OPENING” or “GATE CLOSING” a command has been received which starts the motor and drives the gate. The command may come from a variety of sources: a card reader, push-button remote, or recognition of a vehicle passing over a free exit loop detector. In all cases, the operator “runs” the motor when it receives a gate operation command.

### Understanding Gate Status Displays

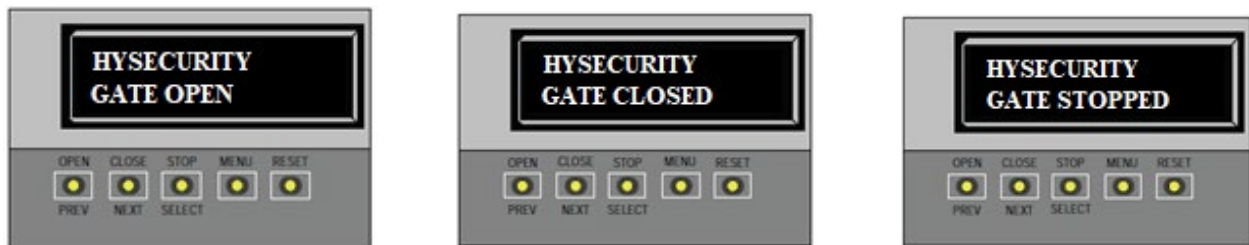


Figure 25. Gate Status Displays

The three gate status displays in Figure 25 indicate the position or status of the non-moving gate. When accessing the User or Installer Menus, you must begin at one of these gate status displays.

**NOTE**

While accessing the User or Installer Menus, the motor cannot engage and the gate will not move.

## Using the SmartDC Controller Buttons in RUN Mode

The Run Mode buttons are distinguished by the fact that their name appears *above* each button. The Controller buttons with text above and below function differently depending on the mode of the operator.

Three different modes exist:

- **Run Mode** - gate is operational awaiting commands.
- **Menu Mode** - motor disengages and operator commands are ignored. Menu navigation and menu selection can be accomplished using the SmartDC Controller buttons or through a S.T.A.R.T. software connection via the USB port. Refer to “*Using the SmartDC Controller Buttons in Menu Mode*” on page 85.
- **Fault Mode** - alerts, faults or errors appear on the display. Some errors or faults can be reset with the STOP button while more serious faults require the RESET button or cycling power. Faults indicate a need for diagnosis and resolution. Refer to “*SmartDC Controller Troubleshooting*” on page 151.

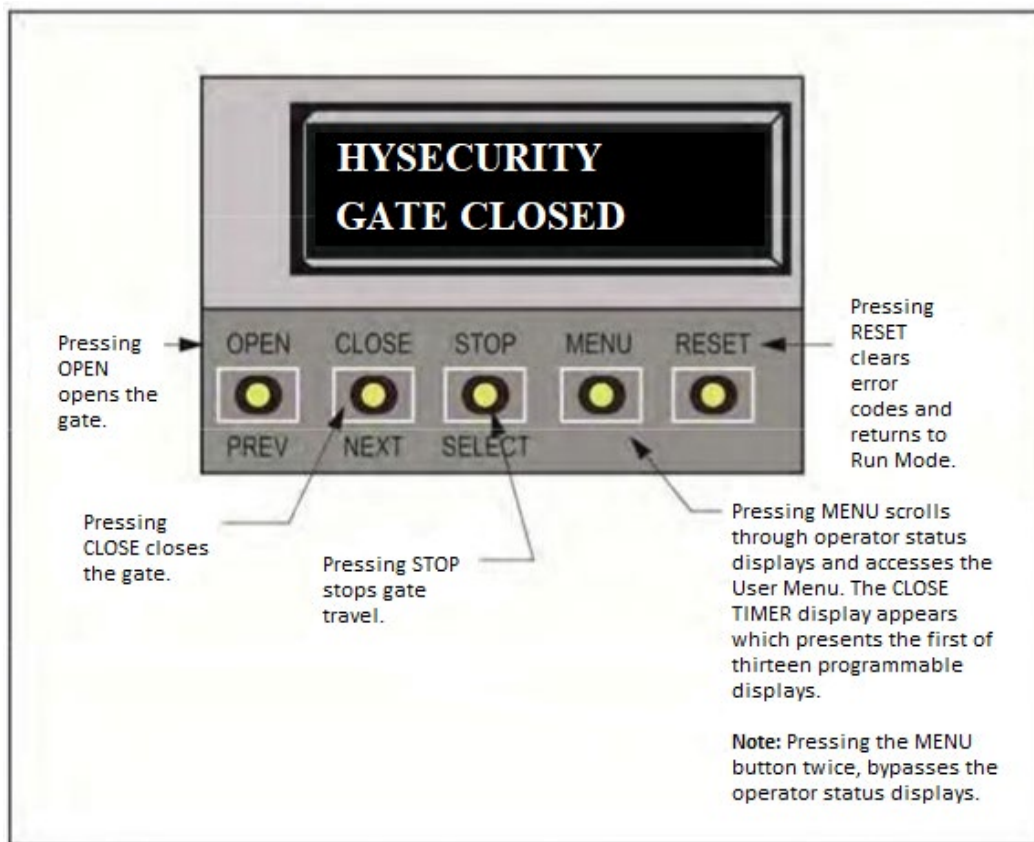


Figure 26. Function of SmartDC Controller Buttons in RUN Mode

## Viewing Operator Status Displays

Press the MENU button once and the operator status displays appear in two second intervals. Pertinent information appears to provide a quick overview of the operator's status or configurations. Refer to Figure 27 below.


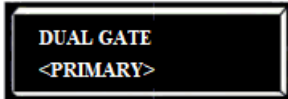
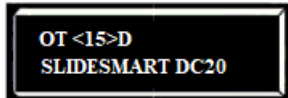

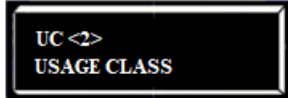

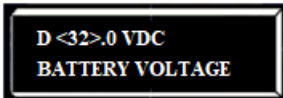
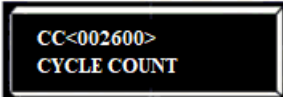

Variables	Description
	<p>The software version and revision number are hard-coded in the SmartDC Controller.</p> <p>This display appears only when you press RESET or cycle the power. It displays the software version which is useful as a maintenance tool.</p>
	<p>PRIMARY or SECONDARY (This display only appears when the operator is used in bi-parting gate systems.)</p> <p>Indicates, in a dual gate setting, whether the operator is set to Primary or Secondary. The setting is assigned in the Installer Menu.</p>
	<p>OT 15 = Kinetic DC15W [Kinetic 1] at 1ft/s; OT 16 = Kinetic DC10FW [Kinetic 2] at 2ft/s</p> <p>Indicates and identifies the operator and charger type.</p>
	<p>LEFT or RIGHT</p> <p>Designates which way a gate opens viewed from the operator. If it slides to the left, it is a left-hand gate. Gate handing is established in the initial Setup Menu.</p>
	<p>1, 2, 3, or 4</p> <p><b>Note:</b> OT 16 only accepts Usage Class 3 and 4.</p> <p>Displays the operator's Usage Class designation per UL 325 standards. Refer to <i>"Identifying Gate Operator Category and Usage Class"</i> on page 27.</p>
	<p>0 = 8Ah (standard factory issue) 1 = 50Ah (optional upgrade) 2 = 110Ah (option)</p> <p>Confirms the operator's battery type. If you use the larger capacity batteries you must configure the operator through the Installer Menu. See <i>"BATTERY TYPE"</i> on page 108.</p>
	<p>Number varies depending on the voltage that the charger is providing.</p> <p>Displays the actual charging voltage.</p>
	<p>One cycle equals a full open and close sequence. Partial cycles are not counted.</p> <p>Displays the number of cycles the gate operator has incurred. Similar to an odometer, it resets to zero after 999,999 cycles.</p>
	<p>The first menu item in the User Menu. See <i>"USER MENU"</i> on page 89.</p> <p><b>Note:</b> You can also access the Installer Menu from this display. See <i>"Installer Menu"</i> on page 98. Displays the number of seconds before the open gate initiates.</p>

Figure 27. Operator Status Displays



## USER MENU

The User Menu consists of several items which can be modified using the SmartDC Controller buttons. Refer to *“Using the SmartDC Controller Buttons in Menu Mode” on page 85.*

To access the User Menu, take the following steps:

1. At a gate status display, press the MENU button. The operator status displays; scroll past and the CLOSE TIMER display appears.



### NOTE

To bypass the operator status displays and access the User Menu, you can press the MENU button twice.

2. Press the NEXT button to cycle through the available menu items.
3. Review *“Table 5. SmartDC Controller - User Menu Functions” on page 94* which supplies the factory defaults for the User Menu items and references the hard-wire connections.

In the pages that follow, a detailed view of the more commonly used menus is provided:

- **Adjusting the Close Timer**
- **Setting the Time & Date**
- **Setting the AC Power Loss Gate Function**
- **Adjusting the Display Contrast**

For information on how the menu buttons function, review *“Using the SmartDC Controller Buttons in Menu Mode” on page 85.*

## Adjusting the Close Timer

The close timer assigns how many seconds will pass before the operator initiates closure of a fully opened gate after all open commands and reversing sensor inputs have ceased. Every gate operator needs to have the close timer set to a specific number of seconds unless a hard-wired closing device is connected to the unit such as a push-button station.

To adjust the time (1 to 99 seconds) it takes before the operator initiates gate closure, take the following steps:

1. **At a gate status display, press the MENU button twice.**  
This accesses the User Menu and the CLOSE TIMER display appears.



2. Use the SELECT and then NEXT or PREV buttons to navigate and change the number on the display.

### NOTE

Keep the close time at zero if gate personnel operate the gate or the owner plans to use a remote control.

3. **To exit the User Menu, press the MENU button.**  
The gate status appears in the display indicating you have returned to Run Mode.

## Setting the Time and Date

A feature of the SmartDC Controller is its 24-hour, 365-day clock. Make sure it is set to the appropriate time zone. An accurate time and date allow the diagnostic log to date stamp operational data which indicates when Alerts, Faults and Errors occur. The log helps in troubleshooting and can be viewed via a laptop connected to the USB or RS232 port, or on the LCD directly. For more information, refer to *“SmartDC Controller Troubleshooting”* on page 151.

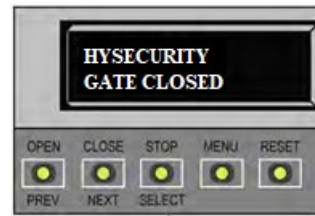
To adjust the time or date, take the following steps:

1. At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.
2. Press NEXT or PREV until the SET CLOCK display appears.
3. Press SELECT. CL blinks.
4. Press NEXT or PREV to change the number to 1.
5. Press SELECT to accept the display.
6. The date and time display appears. Use the SELECT and NEXT buttons in the same manner as before to adjust the date and time.

### NOTE

A date or time field must be blinking before it can be changed.

7. To accept what appears on the date and time display, press SELECT.
8. To exit the User Menu, press the MENU button. A gate status appears in the display indicating you have returned to Run Mode.



1. Start at a gate status display.



2. To access the User Menu, press the MENU button twice.



3. Press NEXT until the SET CLOCK display appears. Use the navigational buttons to select 1.



4. Change the time and date using the NEXT and SELECT buttons.

### NOTE

A lithium coin battery on the SmartDC Controller board, supports the clock so the date and time is retained even when the main power is turned off. Replace the battery every five years with a DL 2025, DL 2032 or CR 2025 or CR 2032 battery. Refer to *“Clock Battery Replacement”* on page 178.

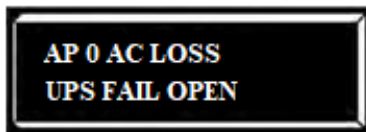
## Setting AC Power Loss Gate Function

The setting in the AC LOSS display determines what action the operator performs during an AC power loss. The settings help reduce drain on the battery. You can choose between four settings depending on customer preferences.

**NOTE**

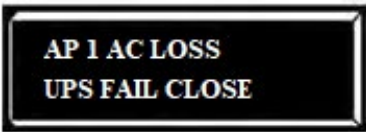
DC Solar Powered units can only be set for AP0 or AP1.

**Menu Setting**



**Description**

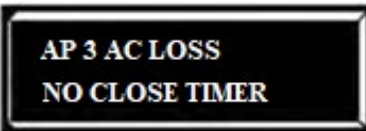
Normal gate functions continue until the system detects a battery voltage drop below 21V. DEAD BATTERY appears on the display and the gate automatically opens. Any push-button CLOSE command will close the gate and any open command will re-open the gate. If the battery continues to diminish and the system detects 18V or less, the system initiates an automatic open cycle. Any new open or close command is ignored and the LCD appears blank. The system remains in this disabled state until reset or the battery recovers to 24V.



Normal gate functions continue until the system detects a battery voltage drop below 21V. DEAD BATTERY appears on the display and the gate automatically closes. The gate can be opened by a special sequence of a STOP input followed by an OPEN push-button or directly opened with the Fire Department Open command. Any push-button CLOSE command will close the gate. If the battery continues to diminish and the system detects 18V or less, the system initiates an automatic open cycle. Any new open or close command is ignored and the LCD appears blank. The system remains in this disabled state until reset or the battery recovers to 24V.



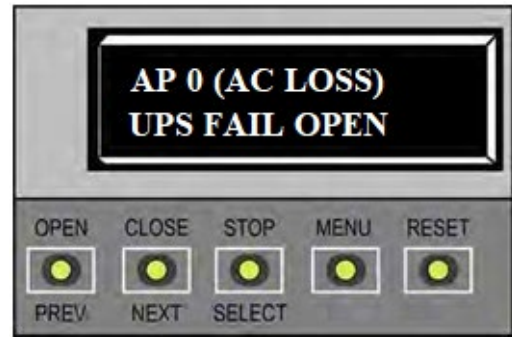
The operator automatically opens the gate five seconds after it detects an AC power loss. The gate remains open until AC power is restored. Any push-button CLOSE command will close the gate and any open command will open the gate. When the battery voltage drops below 21V or less, the system initiates an automatic open cycle. The gate will remain open until the battery recovers to 24V.



The operator initially does nothing after it detects AC power loss until it receives an open command. Once an open command is received, the operator opens and remains in that state. Any push-button CLOSE command will close the gate and any open command will open the gate. When the battery voltage drops below 21V or less, the system initiates an automatic open cycle. The gate will remain open until the battery recovers to 24V.

To designate what you want the operator to do during an AC power loss, access the User Menu (see **“USER MENU” on page 89**) and scroll through the items until the AP (AC LOSS) display appears.

1. Use the SELECT and NEXT buttons to navigate and change the number on the display. Review *“Using the SmartDC Controller Buttons in Menu Mode”* on page 85.
2. To exit the User Menu, press the MENU button. A gate status appears in the display indicating you have returned to Run Mode.



## Adjusting the Display Contrast




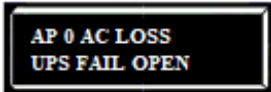

The display contrast can be adjusted from 1 to 9 to increase visibility and ease of use. It is set at the factory to level 5. The text becomes darker as you go up the scale.





To adjust the contrast (1 to 9), take the following steps:





1. At a gate status display, press the MENU button. The operator status displays; scroll past and the CLOSE TIMER display appears. Press the NEXT button until the LCD CONTRAST display appears.
2. Use the SELECT and NEXT buttons to navigate and change the number on the display.
3. To exit the User Menu, press the MENU button. A gate status appears in the display indicating you have returned to Run Mode.
4. To exit the User Menu, press the MENU button. A gate status appears in the display indicating you have returned to Run Mode.



## USER MENU FUNCTIONS

Ref. No.	User Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
1	 <p>CT 0 (OFF) CLOSE TIMER</p>	<p><b>0 = Timer disabled</b> 1 second to 99 seconds</p>	<p>Assign how many seconds before the open gate initiates closure. Keep the setting at 0 if a hard-wired, push-button control device is being used. <b>Note:</b> The CLOSE TIMER display does not appear when the HOLD TO CLOSE is set to 1.</p>	Not applicable (N/A)
2	 <p>HC 0 (OFF) HOLD TO CLOSE</p>	<p><b>0 = off</b> 1 = on</p>	<p>Set to 0 produces a gate closure when a momentary signal is transmitted. Set to 1 if a constant hold to close signal, such as a push-button control, is being used. A setting of 1 also deactivates the automatic close timer and causes its menu to disappear. You must set HC to 1 to comply with UL 325 Type D protection. Refer to <i>“Table Notes” on page 97.</i></p>	COM CLOSE
3	 <p>HO 0 (OFF) HOLD TO OPEN</p>	<p><b>0 = off</b> 1 = on</p>	<p>Similar to HOLD TO CLOSE, but configures the OPEN push-button for a constant-hold function. 0 = Momentary open signal 1 = Constant hold OPEN push-button required. You must set HO to 1 to comply with UL 325 Type D protection. Refer to <i>“Table Notes” on page 97.</i></p>	COM OPEN
4	 <p>AP 0 AC LOSS UPS FAIL OPEN</p>	<p><b>0 = UPS FAIL OPEN</b> 1 = UPS FAIL CLOSE 2 = AUTO OPEN 3 = NO CLOSE TIMER</p>	<p>The setting designates what action the gate performs during an AC power loss. Refer to <i>“Setting AC Power Loss Gate Function” on page 92.</i></p>	(N/A)
5	 <p>RO 0 (OFF) RADIO OPEN CLOSE</p>	<p><b>0 = off</b> 1 = on</p>	<p>Configures radio input for open only (0). If changed to setting 1 then adds the capability for radio input to close the gate, but only when the gate is fully open.</p>	COM RADIO OPEN

Ref. No.	User Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
6	 BF 2 (ON 2 SEC) WARN BEFORE OPER	0 = off 1 = on 2 = on	Controls the warn-before-operate buzzer and can be configured three ways: Set to 0: Buzzer is disabled. Set at 0 the buzzer will still beep when alerts, faults, errors, or entrapment are detected. Set to 1: Buzzer beeps for 3 seconds before gate motion begins and continues through entire gate travel. Set to 2: Buzzer beeps for 3 seconds before gate motion begins and continues for 2 seconds of gate travel.	(N/A) <b>WARNING :</b> Do NOT cut the wires to the buzzer or unplug it as the operator will not be in compliance with UL 325. Failure to comply may result in serious injury or death.
7	 PE 0 (OFF) PHOTO EYE ALIGN	0 = off 1 = on	When set to 1, the operator serves as an aide in photo-eye transmitter/receiver alignment. The buzzer chirps once when the emitter and the receiver are not aligned. When the emitter and receiver are aligned, the buzzer chirps twice. If they go out of alignment again, the buzzer will chirp once. The Alignment Mode is reset with a close-limit input or reset input.	Sensor Common, Sensor 1, Sensor 2, Sensor 3
8	 CL 0 SET CLOCK	0 = Display 1 = Set Clock	To set or adjust minute, hour, day, month or year, select 1. Once clock is set, display automatically returns to 0 setting. Significant gate events are logged and stamped with the time and date. This feature is useful to read historical operation data, which can be accessed with a computer via the USB or RS232 port or the LG setting in User Menu. See <b>“Setting the Time and Date” on page 91.</b>	(N/A)
9	 LD 5 LCD CONTRAST	5 0 through 9	Under some extreme high or low temperature conditions, it may be necessary to adjust the contrast of the LCD display. The display is adjustable from 0-9 with a factory default setting of 5.	(N/A)

Ref. No.	User Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
10	 DS 0 (OFF) DIAGNOSTIC LOGS	<b>0 = off (standard)</b> 1 = on (detailed)	Set this item to 1 to record all gate operator open and close events, in addition to the normal alert, fault and error logs. This parameter automatically resets to the default 0 (off) after 24 hours, which is useful when experiencing intermittent problems. Set to 0, the DC Controller logs pertinent gate operator events such as faults, errors, or menu manipulation.	USB or RS232 cable and laptop computer with HySecurity's free S.T.A.R.T. software is required to read the log file.
11	 FA 0 (OFF) FORCE OPEN ALERT	<b>0 = off</b> 1 = on	Intended for highly secure facilities. Set to 1, the operator sounds the 3-second "warn before operate" buzzer alarm, and then initiates a closure if the gate is forced open and the closed limit switch disengages. The motor restarts to secure the gate. If the gate does not fully close within 4 seconds, the motor turns off and the alert buzzer sounds for 30 seconds. The display shows ALERT 1 – FORCED OPEN.	(N/A)
12	 DA 0 (OFF) DRIFT CLOSE ALERT	<b>0 = off (standard)</b> 1 = on	Set to 1, the operator sounds the 3-second "warn before operate" buzzer alarm and initiates an open command if the gate is forced, or drifts, off the open limit switch. The motor starts to reopen the gate. The motor runs for a maximum of 4 seconds and, if the gate is not fully open at the end of this period, the buzzer sounds for 10 seconds. The display shows ALERT 2 – DRIFT CLOSED.	(N/A)
13	 LG 0 (OFF) VIEW EVENT LOG	<b>0 = off</b> 1 = on	With v5.53 (or later) software, you can set LG to 1 and view abbreviated event logs on the display. These messages are helpful for diagnostic purposes and reviewing the gate operator's event history. Over 300 events can be logged before the software begins overwriting the existing history.	(N/A)



<b>Table 5. SmartDC Controller - User Menu Functions</b>				
Ref. No.	User Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
<b>Table Notes</b>				
The following conditions apply to the indicated reference-numbered menu selections.				
Table Note 1: For gate operators using Type D entrapment protection, an automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed. For additional information, refer to <b>“Choosing External Entrapment Protection” on page 28.</b>				
Table Note 2: <b>WARNING:</b> Do NOT cut the wires to the buzzer or unplug it as the operator will not be in compliance with UL 325. Failure to comply may result in serious injury or death.				

## Installer Menu

The Installer Menu consists of several functions which can be modified using the SmartDC Controller buttons or configured through the use of a laptop computer and the S.T.A.R.T. software available from the Nice | HySecurity website.

The Installer Menu options provide more advanced configurations for the Kinetic operator. Access to the Installer Menu is through the User Menu. The navigational buttons are the same in both menu modes. To review how to use the navigational buttons on the SmartDC Controller, refer to **“Using the SmartDC Controller Buttons in Menu Mode” on page 85.**

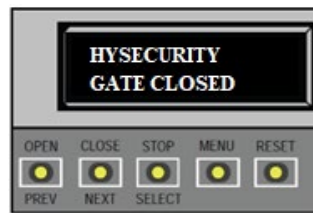
To access the Installer Menu, take the following steps:

**NOTE**

To access the User or Installer menus, the operator must be in Run Mode with a gate status showing on the display. The motor cannot be engaged and the gate cannot be moving.

**NOTE**

The menu items *Usage Class*, *Gate Handing*, *Gate Weight*, and *Gate Length* must be configured before the operator will function. Refer to **“Programming the Initial Setup Menu” on page 61.**



1. Start at a gate status display. To bypass the Operator Status Displays, press the MENU button twice.



The CLOSE TIMER display appears indicating you have accessed the User Menu.

2. To access the Installer Menu, simultaneously press OPEN and RESET.



Release the buttons and the LEARN LIMITS display appears indicating entrance to the Installer Menu. The LEARN LIMITS display is the first item in the Installer Menu.

In the pages that follow, a detailed view of the more commonly used menus is provided.

- **Resetting the OPEN & CLOSE Limits**
- **Adjusting the Gate Speed**
- **Adjusting the IES Sensitivity**
- **Reinstating the Factory Defaults**
- **Enabling the Fire Department Override**

**“Table 6. SmartDC Controller - Installer Menu Functions” on page 106** describes the Installer Menus, supplies the factory defaults, and references the hard-wire connections.

For information on how the menu buttons function, review **“Using the SmartDC Controller Buttons in Menu Mode” on page 85.**

## Resetting the OPEN and CLOSE Limits

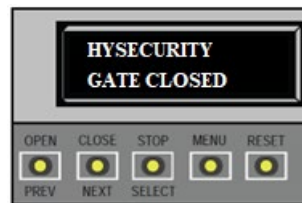
On occasion, the open and close limits may need to be fine-tuned. Resetting the open and close limits is easily accomplished by accessing the Installer Menu. Examples where resetting the limits is necessary, include:

- Removing or Replacing the Target Magnet.
- Setting the LEARN LIMITS display to 1 (erases the open and close target positions from memory).

To re-learn limits, take the following steps:

1. At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.
2. Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu. Release the buttons and the LEARN LIMITS display appears. It is the first item in the Installer Menu.
3. Press SELECT, and then NEXT to change the setting to 1. Press SELECT again. LEARN OPEN flashes on the display indicating that operator is ready to relearn the open limit.
4. Hold the OPEN button until the gate reaches the desired open limit. Release the OPEN button. (Note that if you go too far, you can press CLOSE to reverse direction.)
5. Press STOP twice to preserve the open stop location. LEARN CLOSE appears on the display.
6. Hold the CLOSE button until the gate slides to full close. Release the CLOSE button. (Note that if you go too far, you can press OPEN to reverse direction.)
7. Press STOP twice. The full close stop is retained in memory. For more information, refer to ***“Establishing the OPEN and CLOSE Limits” on page 63.***
8. An ALERT 15 message appears on the display. To clear the alert, perform a full cycle so the software recognizes the target. Press OPEN, and then CLOSE. The gate will stop

automatically on the close cycle when it reaches the programmed limit. As the target magnet passes the sensor, the operator beeps and the ALERT 15 message is cleared.



1. Start at a gate status display.



2. Access the User Menu by pressing the MENU button twice.



3. Access the Installer Menu by simultaneously pressing the OPEN and RESET buttons.



4. Press SELECT and change the setting to 1 using the NEXT button. Press SELECT again. The LEARN OPEN display appears. Refer to steps 4 through 8.

## Adjusting the Gate Speed

To adjust gate speed, take the following steps:

1. At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.
2. Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu. Release the buttons and the LEARN LIMITS display appears. It is the first item in the Installer Menu.
3. Press NEXT until the OPEN SPEED (or CLOSE SPEED) display appears. Select the desired setting based on operator type.

<b>Kinetic DC 15W - Kinetic 1</b>	0 = 0.75 ft/s
	1 = 1.00 ft/s
	(Usage Class 3 & 4 only) 2 = 1.25 ft/s
<b>Kinetic DC 10FW - Kinetic 2</b>	4 = 1.75 ft/s
(The DC 10FW is designed for Usage Class 3 & 4 only.)	5 = 2.00 ft/s
	6 = 2.25 ft/s
<b>NOTE:</b> Certain speeds are allowed only when the operator's Usage Class is set appropriately.	

4. Use the SELECT and NEXT buttons to navigate and change the speed setting on the display.
5. To exit the Installer Menu, press the MENU button. The gate status appears in the display indicating you have returned to Run Mode.



1. Start at a gate status display.



2. Access the User Menu by pressing the MENU button twice.



3. Access the Installer Menu, by simultaneously pressing the OPEN and RESET buttons.

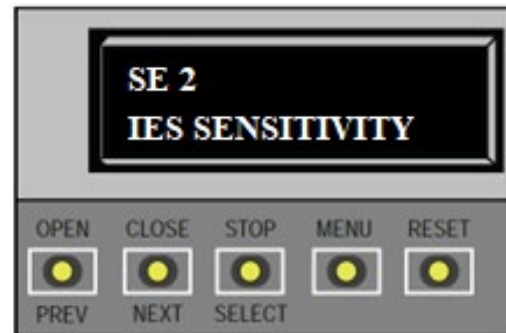
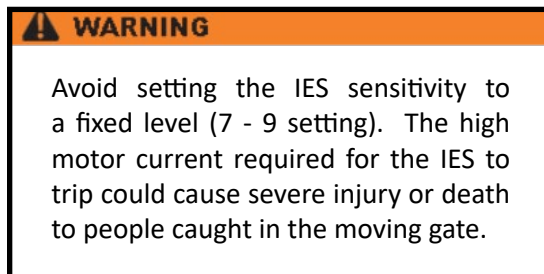


4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

## Adjusting the IES Sensitivity

The adaptive IES (Inherent Entrapment Sensor) software monitors the average running motor current while the gate is in motion and reverses the gate when the current exceeds an automatically self-adapting average.

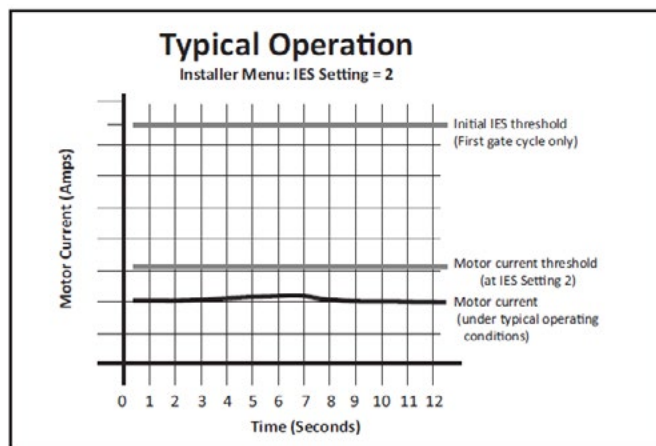
The IES display, accessed through the Installer Menu, allows you to input a number between 0 and 9. The settings (0 through 6) allow an increasingly higher threshold (amount of headroom) above the average current draw before tripping. For IES settings 7 through 9, the current limit is a fixed relatively high value before the IES will be tripped. The factory setting is 2, which is adequate for most sites.



For IES settings (0 through 6) the motor current is continually being measured and the IES threshold automatically set to trip at the average current plus the additional “headroom” provided by the IES setting selected.

To prevent false IES trips, the software boosts the IES current threshold for one gate cycle after an IES event, then returns to the normal sensitivity threshold.

Over time, degrading gate hardware and other site issues, such as road settling or debris on the gate rail, can occur. As the gate hardware ages and becomes stiffer, the Kinetic motor current increases and this may create the need to use a higher IES setting level. The higher settings should only be used on a TEMPORARY basis until the gate, gate track, or wheels are repaired so the gate rolls smoothly with minimum resistance.



**NOTE:** When wind load increases, IES software adapts and changes the threshold allowance. The IES threshold automatically increases by 50% when the temperature drops below 32°F (0°C).

**NOTE**

When changing the IES setting, consider the site design and vehicular gate traffic. It is recommended that you use the most sensitive setting while still allowing for reliable gate operation.

Examples of conditions which affect IES sensitivity include:

**Gate design** - For long and/or solid gates in windy environments, large variations in motor current may occur. In these types of scenarios, you may want to use a higher (less sensitive) IES setting.

**Gate condition** - If the gate environment is near salty sea air, rusty wheels or chains might impede gate travel over time. Additionally, gates that are hit and bent may have very stiff areas during travel that cause a large variation in motor current. For these issues, you may want to use a higher (less sensitive) IES setting until repairs are made.

**Gate maintenance** - Gate rollers will deteriorate and begin to fail over time. Gravel or dirt roads will incur more debris in the gate rail or inverted V-track than a paved surface. In poorly maintained gate areas, the chance for false IES trips is higher.

To adjust the IES sensitivity, take the following steps:

- 1. At a gate status display, press the MENU button twice. The CLOSE TIMER display appears.**
- 2. Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu. Release the buttons and the LEARN LIMITS display appears.**
- 3. Press NEXT until the IES SENSITIVITY display appears. The factory default setting is 2.**
- 4. Use the SELECT and NEXT buttons to navigate and change the number on the display.**
- 5. To exit the Installer Menu, press the MENU button. The gate status appears in the display indicating you have returned to Run Mode.**

If IES errors occur, SAFE MODE or ENTRAPMENT MODE will appear on the display. For more information about troubleshooting, refer to *“SmartDC Controller Troubleshooting” on page 151.*

**WARNING**

Avoid setting the IES sensitivity to a fixed level (7 - 9 setting). The high motor current required for the IES to trip could cause severe injury or death to people caught in the moving gate.



1. Start at a gate status display.



2. To access the User Menu, press MENU twice.



3. To access the Installer Menu, simultaneously press OPEN and RESET.



4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

## Reinstating Factory Defaults

Thirteen menu configurations are available in the User Menu. Several other items in the Installer Menu let you customize the operator depending on the number of attached accessories and your customer's needs.

**CAUTION**

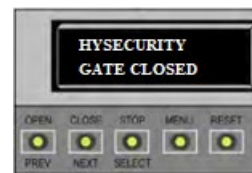
Reinstating factory default clears ALL menu settings stored in the operator and returns them to factory defaults. It is recommended that you save the menu settings before reinstating factory defaults. You can write the settings in a notebook or, if you have a laptop computer, you can use HySecurity's S.T.A.R.T. software and download the menu settings and save them to a file to upload to the operator at a later date.

**NOTE**

When you press SELECT to accept FD 1, the factory settings are reinstated immediately and the menu display returns to the initial Setup Menu. The gate operator will not run until the three menu parameters are entered: *Usage Class*, *Gate Handing*, and *Gate Weight*. The limits will also need to be relearned. Refer to **"Programming the Initial Setup Menu"** on page 61 and **"Establishing the OPEN and CLOSE Limits"** on page 63.

To reinstate factory defaults, take the following steps:

1. At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.
2. Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu. Release the buttons and the LEARN LIMITS display appears.
3. Press NEXT until the FACTORY DEFAULTS display appears. The factory default setting is 0.
4. Use the SELECT and NEXT buttons to navigate and change the number on the display to 1.



1. Start at a gate status display.



2. To access the User Menu, press MENU twice.



3. To access the Installer Menu, simultaneously press OPEN and RESET.



4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

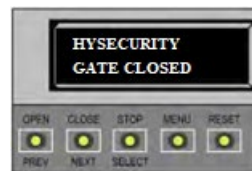
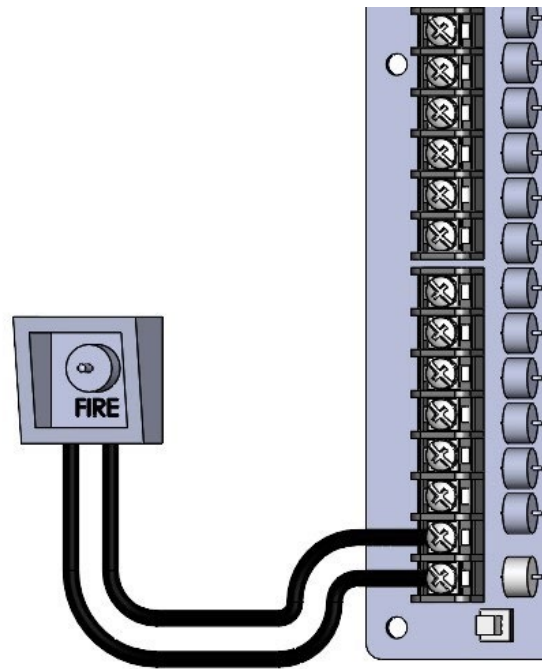


## Enabling the Fire Department Override

Many counties and cities require a Fire Department override system for gate operators. The fire department's alert system is a separate unit that must be connected to the Smart DC Controller. The FIRE DEPARTMENT OPEN option must be properly configured through the Installer Menu before the operator will recognize the alert system.

To adjust the Fire Department Override, take the following steps:

1. **Connect the contact NO from the alert system or key switch to the following SmartDC Controller terminals:**  
EMERG OPEN  
+24V
2. **Configure the Installer Menu.**  
At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.
3. **Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu.** Release the buttons and the LEARN LIMIT display appears.
4. **Press NEXT until the FIRE DEPARTMENT OPEN display appears.** The factory default setting is 0.
5. **Use the NEXT button to change the number on the display to 1 and then press SELECT.**
6. **To exit the Installer Menu, press the MENU button.** The gate status appears in the display indicating you have returned to Run Mode.



1. Start at a gate status display.



2. To access the User Menu, press MENU twice.



3. To access the Installer Menu, simultaneously press OPEN and RESET.



4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

# INSTALLER MENU FUNCTIONS

**Table 6. SmartDC Controller - Installer Menu Functions**





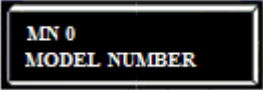




Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
1	 <p>OT 0 SET OPERATOR TYPE</p>	<p><b>0 = operator type</b></p> <p>15 = Kinetic 1 (DC 15) &amp; Solar</p> <p>16 = Kinetic 2 (DC 10F) &amp; Solar</p>	<p>Select the appropriate number for the operator. <b>Note: This menu item only appears if the SmartDC Controller is being replaced.</b></p> <p><b>CAUTION: If you are replacing an SDC board, remember to transfer the operator’s menu settings from the existing board to the replacement board. Refer to the installation instructions that accompany the replacement SDC board.</b></p>	Not applicable (N/A)
2	 <p>LL 0 LEARN LIMITS</p>	<p><b>0 = Normal operation</b></p> <p>1 = Reset limits</p>	<p>A setting of 1 places the operator into its learn limits mode which allows you to reset the gate’s open and close positions. Refer to <b>“Resetting the OPEN and CLOSE Limits” on page 99.</b></p>	(N/A)
3	 <p>UC 0 USAGE CLASS</p>	<p><b>0 = Gate disabled</b></p> <p>1 = Residential 1 to 4 units</p> <p>2 = Comm./public access</p> <p>3 = Light industrial</p> <p>4 = Industrial secure</p>	<p>Assign the operator’s Usage Class designation per UL 325 standards. See <b>“Identifying Gate Operator Category and Usage Class” on page 27.</b> The installer must designate a usage class before the operator will function. See <b>“Programming the Initial Setup Menu” on page 61.</b></p>	(N/A)
4	 <p>SH 0 GATE HANDING</p>	<p><b>0 = Gate disabled</b></p> <p>R = Right hand</p> <p>L = Left hand</p>	<p>The handing determines which way the gate opens as you view it from the secure side. The installer must designate a left or right handing before the operator will function. See <b>“Programming the Initial Setup Menu” on page 61.</b></p>	(N/A)

Table 6. SmartDC Controller - Installer Menu Functions														
Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections										
	Display													
5	 <p>MN 0 MODEL NUMBER</p>	<p><b>0 = model type unknown</b> 1 = Model &lt;x&gt; 2 = Model &lt;x&gt;</p>	<p>Select the type of gate operator model used at the site. This menu item is used when changing a circuit board.</p> <p><b>Note: This menu item only appears, if applicable, when you set the OT (operator type).</b></p>	(N/A)										
6	 <p>WT 0 GATE WEIGHT (LB)</p>	<p><b>0 = Gate disabled</b></p> <table border="0"> <tr> <td><b>DC 15</b></td> <td><b>DC 10F</b></td> </tr> <tr> <td>0-400 lbs</td> <td>0-250 lbs</td> </tr> <tr> <td>401-800 lbs</td> <td>251-500 lbs</td> </tr> <tr> <td>801-1100 lbs</td> <td>501-750 lbs</td> </tr> <tr> <td>1101-1500 lbs</td> <td>751-1000 lbs</td> </tr> </table>	<b>DC 15</b>	<b>DC 10F</b>	0-400 lbs	0-250 lbs	401-800 lbs	251-500 lbs	801-1100 lbs	501-750 lbs	1101-1500 lbs	751-1000 lbs	<p>Select the gate's weight range in pounds. The installer must designate the gate's weight before the operator will function. See <b>"Programming the Initial Setup Menu" on page 61</b>. Designating the correct gate weight allows the operator to determine the appropriate acceleration and deceleration rates.</p>	(N/A)
<b>DC 15</b>	<b>DC 10F</b>													
0-400 lbs	0-250 lbs													
401-800 lbs	251-500 lbs													
801-1100 lbs	501-750 lbs													
1101-1500 lbs	751-1000 lbs													
7	 <p>OS 1 OPEN SPEED</p>	<table border="0"> <tr> <td><b>DC 15</b></td> <td><b>DC 10F</b></td> </tr> <tr> <td>0 = 0.75ft/s</td> <td>4 = 1.75ft/s</td> </tr> <tr> <td><b>1 = 1.0ft/s</b></td> <td><b>5 = 2.0ft/s</b></td> </tr> <tr> <td>2 = 1.25ft/s</td> <td>6 = 2.25ft/s</td> </tr> </table>	<b>DC 15</b>	<b>DC 10F</b>	0 = 0.75ft/s	4 = 1.75ft/s	<b>1 = 1.0ft/s</b>	<b>5 = 2.0ft/s</b>	2 = 1.25ft/s	6 = 2.25ft/s	<p>Designate how quickly the gate opens. The options available differ depending on the Operator Type (OT). Kinetic has two operator types: OT15 ≤ 1.25ft/s and OT16 ≥ 1.75ft/s. Settings higher than 1 are reserved for Usage Class 3 and 4.</p> <p><b>Note: Kinetic DC15 [Kinetic 1] = OT 15 and Kinetic DC10F [Kinetic 2] = OT16.</b></p>	(N/A)		
<b>DC 15</b>	<b>DC 10F</b>													
0 = 0.75ft/s	4 = 1.75ft/s													
<b>1 = 1.0ft/s</b>	<b>5 = 2.0ft/s</b>													
2 = 1.25ft/s	6 = 2.25ft/s													
8	 <p>CS 1 CLOSE SPEED</p>	<table border="0"> <tr> <td><b>DC 15</b></td> <td><b>DC 10F</b></td> </tr> <tr> <td>0 = 0.75ft/s</td> <td>4 = 1.75ft/s</td> </tr> <tr> <td><b>1 = 1.0ft/s</b></td> <td><b>5 = 2.0ft/s</b></td> </tr> <tr> <td>2 = 1.25ft/s</td> <td>6 = 2.25ft/s</td> </tr> </table>	<b>DC 15</b>	<b>DC 10F</b>	0 = 0.75ft/s	4 = 1.75ft/s	<b>1 = 1.0ft/s</b>	<b>5 = 2.0ft/s</b>	2 = 1.25ft/s	6 = 2.25ft/s	<p>Designate how quickly the gate closes. The options available differ depending on the Operator Type (OT). Kinetic has two operator types: OT15 ≤ 1.25ft/s and OT16 ≥ 1.75ft/s. Settings higher than 1 are reserved for Usage Class 3 and 4.</p> <p><b>Note: Kinetic DC15 [Kinetic 1] = OT 15 and Kinetic DC10F [Kinetic 2] = OT16.</b></p>	(N/A)		
<b>DC 15</b>	<b>DC 10F</b>													
0 = 0.75ft/s	4 = 1.75ft/s													
<b>1 = 1.0ft/s</b>	<b>5 = 2.0ft/s</b>													
2 = 1.25ft/s	6 = 2.25ft/s													
9	 <p>FD 0 (OFF) FACTORY DEFAULTS</p>	<p><b>0 = user settings</b> 1 = reload factory default settings</p>	<p>Globally restores all menu settings back to new operator status. Select setting 1 to return the operator to factory defaults.</p> <p><b>Note: If factory defaults are restored, the UL usage class, handing, gate weight and any other modified menu settings will need to be configured again.</b></p>	(N/A)										



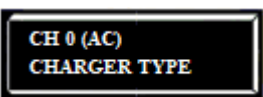

Ref. No.	Installer Menu Display	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
10	 <p>DG 0 (OFF) DUAL GATE</p>	<p><b>0 = solo operator</b>                      1 = Secondary unit                      2 = Primary unit                      3 = Sally Port A                      4 = Sally Port B</p>	<p>Configures gate operator as a Primary or as a Secondary (or a Sally Port configuration) in a dual-gate installation. When you assign one unit as Primary (or Sally Port A), you must configure the other as Secondary (or Sally Port B) through the Installer Menu. See <b>“Primary and Secondary Menu Setup” on page 136.</b></p> <p><b>Note: Use a 2-pair, twisted, shielded cable with one pair of wires used to connect A-A and B-B terminals between the two boards. The other pair will connect the Common terminals. The shield should then be grounded on one end to one of the operators.</b></p>	<p>Shielded cable to DUAL GATE input terminals. Connect Dual Gate COM (Gate 1) to Dual Gate COM (Gate 2). Pair wires: A – A, COM – COM, and B – B.</p>
11	 <p>SG 0 (OFF) SEQUENCED GATE</p>	<p><b>0 = solo operator</b>                      1 = Loop View #1                      2 = Loop View #2                      3 = Loop View #3                      4 = Loop View #4</p>	<p>Establishes communication after wiring two or more gate operators as sequential gates. This menu item only appears if the Dual Gate (DG) is set to 0 (solo operator). See note in above cell.</p> <p><b>Note: After selecting SG settings, consider accessing the User Menu in each gate operator to address the Close Timer (CT) setting.</b></p>	<p>Shielded cable to DUAL GATE input terminals on both operators. Pair wires: A – A, COM – COM, and B – B.</p>
12	 <p>CH 0 (AC) CHARGER TYPE</p>	<p><b>0 = AC powered charger</b>                      1 = solar powered charger</p>	<p>Assigns charger type.</p> <p><b>Note: If a solar-powered unit is ordered and delivered factory-ready, this menu item will not appear.</b></p>	<p>(N/A)</p>
13	 <p>BT 0 (STANDARD) BATTERY TYPE</p>	<p><b>0 = standard (8Ah)</b>                      1 = extended (50Ah)                      2 = maximum (110Ah)</p>	<p>Assign the battery type used by the operator.</p> <p><b>Note: Smaller batteries are charged with less current to avoid overheating and larger batteries are charged with more current to supply a more rapid change.</b></p>	<p>Extended (50Ah) batteries require wire extensions and shelf installation. Maximum (110Ah) batteries require separate housing and wiring.</p>




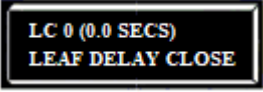

Table 6. SmartDC Controller - Installer Menu Functions				
Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
14	 FO 0 (OFF) FIRE DEPT OPEN	<b>0 = disabled</b> 1 = enabled	Enables Fire Department Open input. When set to 1, the open signal received by the operator overrides all photoelectric eyes and edge sensors and opens the gate. Pressing the RESET button (or the OPEN push-button) is required before the gate can be closed.	+24V DC EMERG OPEN
15	 SE 2 IES SENSITIVITY	0 = maximum sensitivity <b>2 = default setting</b> 9 = least sensitivity	Adjusts sensitivity of the internal inherent entrapment sensor (IES). Available settings are 0 to 9 with 9 being the least sensitive. Wallace Perimeter Security strongly recommends that you avoid setting the IES sensitivity higher than 6.  <b>Note: Before changing IES sensitivity, make sure that the gate rolls smoothly without obstruction. Fix any issues with gate hardware.</b>	See Note.
16	 SS 0 (OFF) IES STOP ONLY	<b>0 = stop, reverse for 2s</b> 1 = stop only	In a Usage Class 4 environment, the operator can be set to stop the gate and not reverse gate travel after an IES trip.  <b>Note: This menu option only appears when the Usage Class is set to 4.</b>	(N/A)
17	 LC 0 (0.0 SECS) LEAF DELAY CLOSE	<b>0 = no delay</b> 1 through 20 in ½ second increments  For example: 1 = ½ second 10 = 5 seconds 20 = 10 seconds	Only appears if the gate operator is set up as a Primary or a Secondary. Available settings are 1 through 20. Each increment adds ½ second time delay following a command to close before the operator activates. Provides up to a 10 second time delay.	DUAL GATE inputs on both operators.
18	 LO 0 (0.0 SECS) LEAF DELAY OPEN	<b>0 = no delay</b> 1 through 20 in ½ second increments  For example: 1 = ½ second 10 = 5 seconds 20 = 10 seconds	Only appears if the gate operator is set up as a Primary or a Secondary. Available settings are 1 through 20. Each increment adds ½ second time delay following a command to open before the operator activates. Provides up to a 10 second time delay.	DUAL GATE inputs on both operators.

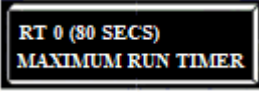

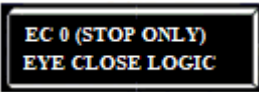





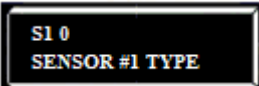

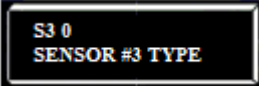
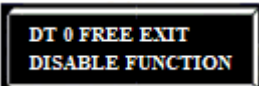
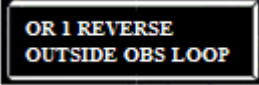



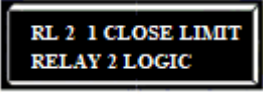
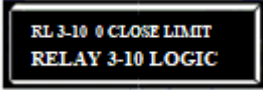

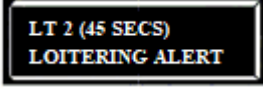


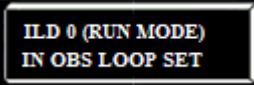
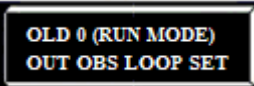

Table 6. SmartDC Controller - Installer Menu Functions				
Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
19	 RT 0 (80 SECS) MAXIMUM RUN TIMER	Not used in Kinetic operators.	--	(N/A)
20	 PO 0 (OFF) PARTIAL OPEN	<b>0 = OFF</b> 7 = 7 ft., 8 = 8 ft., through 32 = 32 ft.	Sets the distance (from the closed gate position) where the gate stops in a partial open. When a number is entered in the PO display, the open partial input becomes operational.	OPEN PARTIAL COM
21	 EC 0 (STOP ONLY) EYE CLOSE LOGIC	<b>0 = Close eye stops only</b> 1 = 2s reverse to open 2 = Full Open	The default setting is non-reversal if the close photo eye is triggered. A setting of 1 causes the gate to reverse and travel open for two seconds if triggered while closing. A setting of 2 reverses the gate to full open.	Sensor Common Sensor Input
22	 EO 0 (STOP ONLY) EYE OPEN LOGIC	<b>0 = Open eye stops only</b> 1 = 2s reverse to close	The default setting is non-reversal if the open photo eye is triggered. A setting of 1 causes the gate to reverse travel and close for two seconds if triggered while opening.	Sensor Common Sensor Input
23	 GC 1 NC CONTACT GATE EDGE OUTPUT	<b>0 = Normally Open Edge</b> <b>1 = Normally Closed</b>	This menu item only appears when UC is set to 4. Default setting is edge sensor with Normally Closed (NC) output. Optional setting of 0 requires an (NO) output.	Sensor Common Sensor Input
24	 GR 0 (FULL OPEN) GATE EDGE LOGIC	<b>0 = Edge reverses full open</b> 1 = 2s reversal only	The default setting is a full-open reversal if the gate edge is triggered while closing. The optional setting of 1 causes the gate to reverse for 2 seconds if triggered while closing.	Sensor Common Sensor Input
25	 SR 1 REVERSE 2S IES SENSOR LOGIC	<b>0 = IES reverses full open</b> <b>1 = 2 second reversal only</b>	The default setting is a two-second duration reversal if the inherent sensor is triggered. The optional setting of 0 will cause the gate to reopen fully if triggered while closing.	N/A

Table 6. SmartDC Controller - Installer Menu Functions				
Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
26	 PC 1 NC CONTACT PHOTO EYE OUTPUT	0 = Normally Open PE output <b>1 = Normally Closed (supervised)</b>	This menu item only appears when UC is set to 4. The default setting is photo eyes with Normally Close outputs. The optional setting 0 requires a Normally Open (NO) output. When set for NC, the connection is monitored and any open or short circuit fault will generate a FAULT 2 alert which requires a STOP or RESET button press to re-enable gate operation.	Photo eye connections: Sensor Common Sensor Input +24V
27	 S1 0 SENSOR #1 TYPE	<b>0 = disabled</b> 1 = (NOT USED) 2 = (EYE CLOSE) 3 = (EDGE CLOSE) 4 = (EYE OPEN) 5 = (EDGE OPEN) 6 = (EDGE BOTH) 7 = (EYE BOTH)	UL 325 - 2018 sensor input setting for external entrapment protection sensor monitoring. All three sensor types must be configured to a non-zero number before the gate operator will move the gate. Edge Both is only available in Swing Gate operator types. Eye Both is only available in Slide Gate operator types.	--
28	 S2 0 SENSOR #2 TYPE	Same as Sensor 1.	Same as Sensor 1.	--
29	 S3 0 SENSOR #3 TYPE	Same as Sensor 1.	Same as Sensor 1.	--
30	 DT 0 FREE EXIT DISABLE FUNCTION	<b>0 = Disable Free Exit</b> 1 = Disable Close Timer	Configures the BLOCK EXIT input to disable either the Free Exit Detector function or, alternately, the Close Timer function. The default setting disables the free exit detector.  <b>Note: The free exit is disabled when the gate is at its closed limit. If the closed limit is not tripped, the free exit continues to work normally.</b>	BLOCK EXIT COM
31	 OR 1 REVERSE OUTSIDE OBS LOOP	0 = Pause closing only <b>1 = Enable reversing to open</b>	The default is for full reversal when the Outside Obstruction Loop is triggered. A setting of 0 causes the gate to only pause when triggered. Gate closure begins as soon as the loop is clear again.	OUTSIDE OBS LOOP COM or HY5A/ HY5B/HY5B 2.0

Ref. No.	Installer Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
32	 IR 1 REVERSE INSIDE OBS LOOP	0 = Pause closing only <b>1 = Enable reversing to open</b>	The default is for full reversal when the Inside Obstruction Loop is triggered. A setting of 0 causes the gate to only pause when triggered. Closure begins as soon as the loop is clear again.	INSIDE OBS LOOP COM or HY5A/ HY5B/HY5B 2.0
33	 DL 1 STANDARD DETECTOR LOGIC	<b>1 = Standard</b> 2 = Quick closed 3 = Forced Time out 4 = Full anti-tailgate	Configures for faster closure. This selection determines whether the close timer begins to count after vehicles have departed the detector loops or whether the close timer will count down while the loops are occupied. The gate can only close when all loop detectors are not triggered.  Refer to <b>“Vehicle Detector Configuration and Quick Close Mode Selection” on page 126.</b>	HY5A/HY5B/ HY5B 2.0
34	 RL 1 0 DISABLED RELAY 1 LOGIC	<b>0 = Default</b> 1 to 45 available	Configures the function of the user 1 output relay, which is a large mechanical relay. It has the capacity to switch both AC and DC and can be used for high voltage and/or high current loads. Connect devices directly to the top of the relay: COM plus NO and NC contacts.  Forty-five optional logic functions exist. See <b>“Setting the User Relay Function in the Installer Menu” on page 141.</b>	User 1 Relay
35	 RL 2 1 CLOSE LIMIT RELAY 2 LOGIC	<b>0 = default</b> 1 to 45 available	Configures the function of the user 2 output relay, which is an electronic relay with the capacity for switching a DC load only. The User 2 Relay is limited to 48 Volts DC and 4 amps maximum load. Connect a device directly to the two spade terminals at the bottom of the control board, next to the label USER 2.  Forty-five optional relay functions exist. See <b>“Setting the User Relay Function in the Installer Menu” on page 141.</b>	User 2 Relay



Ref. No.	Installer Menu	Setting Options (Bold = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
36	 RL 3-10 0 CLOSE LIMIT RELAY 3-10 LOGIC	<b>0 = Disabled</b> Up to 45 available	Similar to Relay 1 logic. <b>Note:</b> The Hy8Relay™ module option can be purchased for eight additional NO relay outputs. Relay #39 set aside for Factory Use. Use addresses 1-4 when connecting to HyNet.	User 3 - 10 Relay
37	 TL 2 (45 SECS) OPEN TIME ALERT	0 = 0 seconds 1 = 15 seconds <b>2 = 45 seconds</b> 3 = 75 seconds 4 = 105 seconds 5 = 135 seconds	Adjusts the time delay before activating a user relay. Maximum time setting is 135 seconds. See <b>“Setting the User Relay Function in the Installer Menu” on page 141.</b>  <b>Note:</b> This menu appears only when a user relay is set to Function No. 8.	User relays
38	 LT 2 (45 SECS) LOITERING ALERT	0 = 0 seconds 1 = 15 seconds <b>2 = 45 seconds</b> 3 = 75 seconds 4 = 105 seconds 5 = 135 seconds	This function monitors activation of the Outside Obstruction Loop when there is no activation of the gate. When the adjustable period of time is exceeded, User Relay No. 13 triggers and reports loitering in the diagnostics log.  Adjust the time delay before activating the user relay. Maximum time setting is 135 seconds. See <b>“Setting the User Relay Function in the Installer Menu” on page 141.</b>  <b>Note:</b> This menu appears only when a user relay is set to Function No. 13.	User relays
39	 SA 0 (OFF) SDC ADDRESS	<b>0 = No network</b> 1 to 99 = Network “drop” address	Sets the system address for network communication: 0 = no network communication. 1-99 sets individual polling addresses. Use addresses 1-4 when connecting to HyNet.	RS-485
40	 ELD 0 (RUN MODE) EXIT LOOP SET	<b>0 = Run mode</b> 1 = Show frequency 2 = Show call level 0-7 3 = Set Frequency	Controls the HY5A/HY5B/HY5B 2.0 Free Exit detector. If an HY5B is used, additional settings of 4-8 are available: 4 = Show Sensitivity 5 = Set Sensitivity 6 = Show Inductance 7 = Show Loop Health 8 = Set Presence	HY5A/HY5B/HY5B 2.0

<b>Table 6. SmartDC Controller - Installer Menu Functions</b>				
Ref. No.	Installer Menu	Setting Options ( <b>Bold</b> = Factory Settings)	Menu Tasks and Explanations	Associated DC Controller Connections
	Display			
41	 ILD 0 (RUN MODE) IN OBS LOOP SET	<b>0 = Run mode</b> 1 = Show frequency 2 = Show call level 0-7 3 = Set Frequency	Controls the HY5A/HY5B/HY5B 2.0 Inside Obstruction Loop detector. If an HY5B is used, additional settings of 4-8 are available: 4 = Show Sensitivity 5 = Set Sensitivity 6 = Show Inductance 7 = Show Loop Health 8 = Set Presence	HY5A/HY5B/ HY5B 2.0
42	 OLD 0 (RUN MODE) OUT OBS LOOP SET	<b>0 = Run mode</b> 1 = Show frequency 2 = Show call level 0-7 3 = Set Frequency	Controls the HY5A/HY5B/HY5B 2.0 Outside Obstruction Loop detector. If an HY5B is used, additional settings of 4-8 are available: 4 = Show Sensitivity 5 = Set Sensitivity 6 = Show Inductance 7 = Show Loop Health 8 = Set Presence	HY5A/HY5B/ HY5B 2.0
43	 CLD 0 (RUN MODE) CENTER LOOP SET	<b>0 = Run mode</b> 1 = Show frequency 2 = Show call level 0-7 3 = Set Frequency	Controls the HY5A/HY5B/HY5B 2.0 Center Loop (Shadow) detector. If an HY5B is used, additional settings of 4-8 are available: 4 = Show Sensitivity 5 = Set Sensitivity 6 = Show Inductance 7 = Show Loop Health 8 = Set Presence  <b>Note:</b> Center loop has no gate control function in a slide gate. However, the input may be used as an arming loop when used in conjunction with Relay function #22.	HY5A/HY5B/ HY5B 2.0

# SmartDC Controller

This section of the manual contains information about the SmartDC Controller board; its inputs for peripheral connections and its monitoring capabilities. This section explains how to:

1. **Make connections on the SmartDC Controller**
2. **Perform a Preliminary Test of the Components**
3. **Connect Vehicle Detectors**
4. **Connect Accessory Devices**
  - **Entrapment Sensor Connections**
  - **Access Controls**
  - **Manual Push-Button Station**
  - **User Relays**

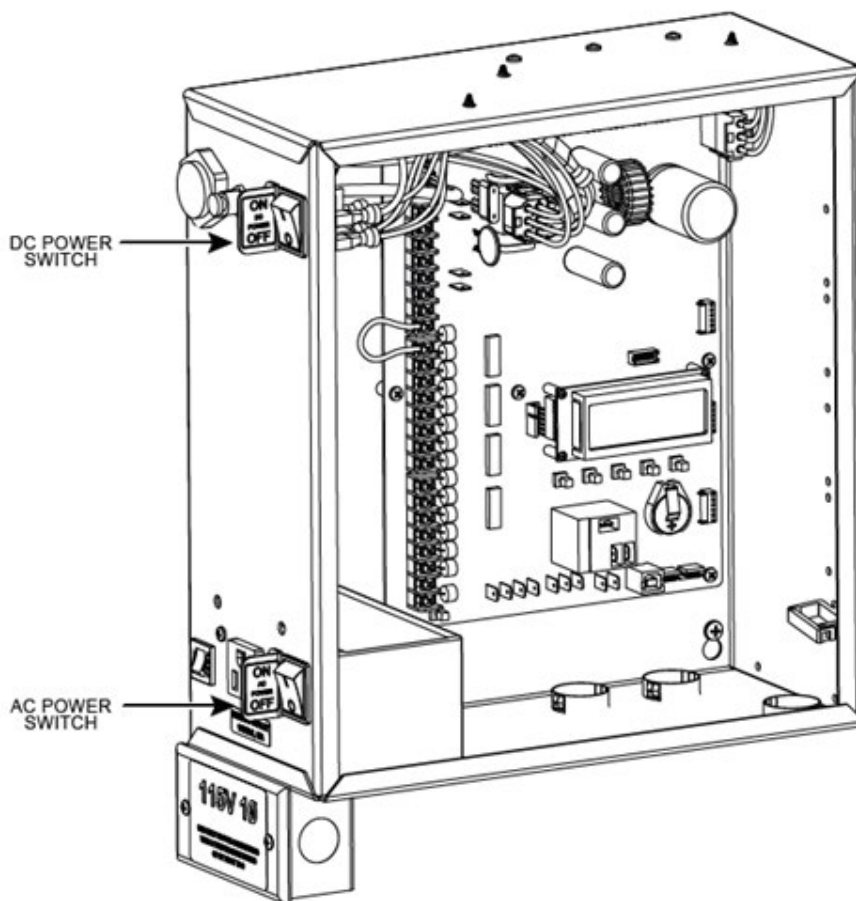


Figure 28. SmartDC Controller

## Overview of the SmartDC Controller

The SmartDC Controller uses LED's to indicate active inputs when AC power is present. For operators that use only DC power, you can push a button to show the active inputs. This button is at the bottom left corner near the EMERG OPEN input.

On a new operator no active inputs should appear until external accessories and wiring are attached. If any inputs are active before connecting external wiring, refer to ***“SmartDC Controller Troubleshooting”*** on page 151.

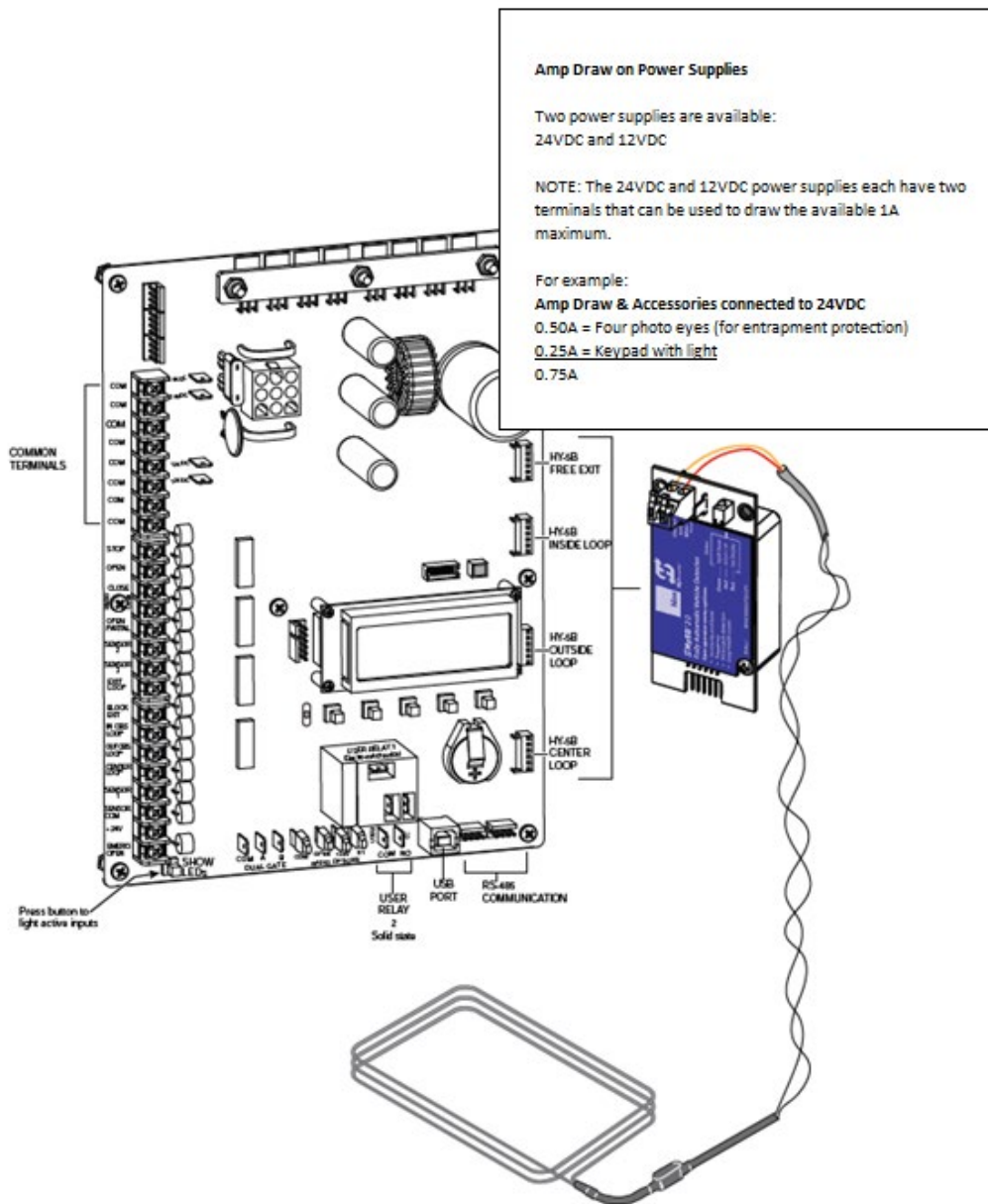


Figure 29. SmartDC Controller Board

## Preliminary Testing

All the control device inputs listed in Table 7 are shown as a single input. The second wire is connected to a Common Terminal Bus (1 - 8) on the SmartDC Controller board.

The Fire Department Open input is an exception and requires a +24VDC input as well as activation through the Installer Menu.

For convenience a +24VDC terminal is located next to the EMERG OPEN terminal. See **“Figure 29. SmartDC Controller Board” on page 116**. Note that programming in the User or Installer Menu is required for most connections.

Terminal No.	Label/Input Name	Wire Connection	Uses
1 - 8	Common Terminal	All user inputs are energized when connected to common except Emergency Open.	All inputs except Emergency Open.
9	Stop * push button	Normally Closed (N.C.) input. Jumper to Common if not being used.	Line of sight, external stop button or 3-button station.
10	Open * push button	Normally Open (N.O.) input. Not for radio or remote access controls.	Line of sight, external open button or 3-button station.
11	Close push button	N.O. input. Connection for a close push-button.	Line of sight, external close button or 3-button station.
12	Remote Open and Radio Control**	N.O. input. For radio/remote open or close device – Access the User Menu and program RO RADIO OPEN/CLOSE.	Remote access control or radio controls.
13	Partial Open	N.O. input. This input will cause the gate to open to Partial Open position programmed in the Installer Menu (7-32ft).	Supervised access controls.
14	Sensor 2	N.C. input. Connection of a Monitored External Entrapment sensor. Type of sensor used is programmable in Installer Menu (S2).	External entrapment sensors.

<b>Table 7. SmartDC Controller Board Inputs</b>			
<b>Terminal No.</b>	<b>Label/Input Name</b>	<b>Wire Connection</b>	<b>Uses</b>
15	Sensor 3	N.C. input. Connection of a Monitored External Entrapment sensor. Type of sensor used is programmable in Installer Menu (S3).	External entrapment sensors.
16	Free Exit Vehicle Detector	N.O. input. Connection for free exit vehicle detector.	Vehicle detector, box type connections for free exit loop.
17	Block Free Exit vehicle detector or Close Timer	N.O. input. Free Exit is only disabled if Close Limit Switch is tripped.	If the gate is partially opened, the Free Exit detector will trigger the gate to open fully. Input can be converted in Installer Menu to alternately disable Close Timer.
18	Inside Obstruction Vehicle Detector	N.O. input. Inside reversing loop.	Vehicle detector, box type connections inside reversing loop.
19	Outside Obstruction Vehicle Detector	N.O. input. Outside reversing loop.	Vehicle detector, box type connections outside reversing loop.
20	Center Loop (Shadow) Vehicle Detector	N.O. input. <b>Shadow function used for swing gates or Reset Loop for barrier arms only.</b> However, User Relay 20 can be used in combination with a detector to perform an "arming loop" or "annunciation loop" function because there is no associated gate control logic in a slide gate.	Vehicle detector, box type connections. Shadow function for swing gates, reset function for barrier arm gates.

<b>Table 7. SmartDC Controller Board Inputs</b>			
<b>Terminal No.</b>	<b>Label/Input Name</b>	<b>Wire Connection</b>	<b>Uses</b>
21	Sensor 1	N.C. input. Connection of a Monitored Entrapment sensor. Type of sensor is programmable in the Installer Menu (S1).	External entrapment sensor connections.
22	Sensor Common	When External Entrapment Sensor common wires are connected to this terminal, the sensors are energized when AC Power is present. The devices are then checked for presence and correct operation when the open limit is reached.	This terminal is used to perform monitored entrapment check.
23	+24V DC	Convenient 24VDC power for photo eyes or the Emergency Open input.	Convenient 24VDC power for photo eyes or Emergency Open input.
24	Emergency Open (Fire Dept. Open) ***	N.O. input.	Emergency Open must be enabled via Installer Menu. It is energized by connecting to the +24V terminal above it. EMERG OPEN overrides photo eye & edge sensor commands.
<p>*Do not connect an external control to the STOP or OPEN inputs unless the controls are located in clear view of the entire gate area.</p> <p>**Use the RADIO OPEN input or RADIO OPTIONS spade connections for all out-of-sight controls, such as a telephone entry or radio operated controls.</p> <p>***The Fire Department Open control must be keyed or guarded so that it can only be used by authorized personnel.</p>			

## Vehicle Detector Installation Options

The SmartDC Controller provides a feature-rich interface to four different vehicle detector inputs.

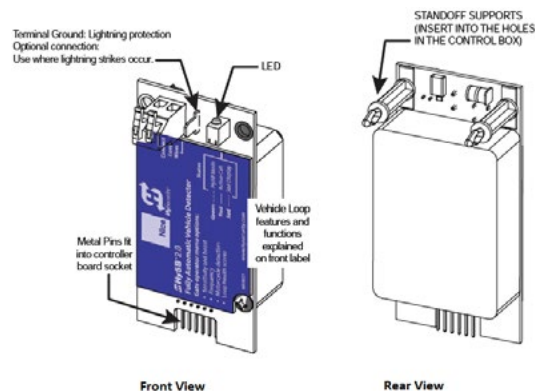
### NOTE

Standard box type 11 pin (24 Volt DC or 24 Volt AC) vehicle detectors may be connected in the traditional manner as described in Installing Standard 11-Pin Box Type Vehicle Detectors.

HySecurity's custom HY5B mini-detector module (Figure 30) plugs directly into the SmartDC Controller Board making field installation much faster plus providing a large performance benefit. The detector communicates with the SmartDC Controller microprocessor to achieve the following benefits over common box type detectors:

- **Loop frequency is automatically set and monitored by the SmartDC Controller.**
- **Very low power draw, which is important for maximum UPS capability during a power failure and for solar operations.**
- **Cross-talk between multiple loops is impossible.**
- **Best operating frequency for each loop is automatically selected.**
- **Loop frequency and call strength can be reported on the SmartDC Controller display.**
- **Loop malfunctions are reported and stored by the SmartDC Controller.**
- **Most detector or loop faults that can occur are reported and presented on the SmartDC Controller display.**

It is not mandatory to use two separate detectors for inner and outer obstruction detection, however the benefits in using an additional detector provide second vehicle tailgating detection, loitering alert, and selectable non-reversing options.



**Figure 30. HY5B Vehicle Detector Module**



There are four vehicle detector inputs available on the SmartDC Controller:

- **Free Exit Loop Detector** - This opens a fully closed gate or reopens a closing gate.
- **Outside Obstruction Loop Detector (Out Obs Loop)** - Reversing loop on public side.
- **Inside Obstruction Loop Detector (In Obs Loop)** - Reversing loop on secure side.
- **Center Loop Detector** - Not used for slide gates.

**NOTE**

Use of any combination of HY5B detectors and box detectors is acceptable. On occasion, multiple obstruction detectors may be mandatory. For example, an area greater than 200 square feet (18.6 square meters) of loop cannot be connected to any one detector because the sensitivity becomes inadequate.

## Connecting HY5B Vehicle Detectors

Install the HY5B Vehicle Detector modules according to the following procedure:

1. Turn off both AC and DC power switches.
2. Insert the locking end of the two white plastic standoffs into the mounting holes on the detector.
3. Plug the detector into the appropriate socket along the right edge of the SmartDC Controller board. Be careful to align the six detector pins into the socket correctly (the screws for tightening the terminals should face toward the board), and then snap the standoffs into the holes in the control box.
4. Route the loop wires through the holes provided in the control box and connect the loop leads to the two terminals on the HY5B detector. Tighten the terminal screws securely.
5. To enable the detectors, turn on power. The detectors will immediately tune if they are connected to loops. Make sure no cars or other metal objects are over the loops.
6. Repeat Steps 1 through 5 for each HY5B detector.
7. If the detector module is unplugged after it is enabled, a communications alert (ALERT 10) will be triggered; if the fault continues an error message, ERROR 3 "Detector Failed" is displayed.

**NOTE**

If there is any detector fault, the gate operator functions as if the detector is triggered.

**8. Pressing the RESET button:**

- Clears any errors
- Tunes the detector on connected loops
- Un-installs any detectors that have been removed

**9. The SmartDC Controller automatically governs frequency selection for all HY5B detector modules. This simplifies installation and guarantees that there is no cross-talk between multiple loops. The frequency can also be manually selected; if this is required, refer to “Table 6. SmartDC Controller - Installer Menu Functions” on page 106.**

**10. Sensitivity is the only adjustment available on the detector itself. Generally, sensitivity does not need to be increased unless the loop is large or there are multiple loops connected to one detector.**

**NOTE**

A boost feature is applied for settings 0 through 3. Boost increases the sensitivity during a call and is useful for maintaining continuous detection if the signal becomes weak (such as with tractor-trailer trucks). Sensitivity settings 4 through 7 are the same as 0 through 3, but without the boost feature.

If required, adjust the sensitivity using the rotary switch which has the following eight settings:

- **0 = Low with boost (See NOTE.)**
- **1 = Normal with boost (See NOTE.)**
- **2 = Medium with boost (See NOTE.)**
- **3 = High with boost (See NOTE.)**
- **4 = Low without boost**
- **5 = Normal without boost**
- **6 = Medium without boost**
- **7 = High without boost**

**11. Vehicle detector functions are configurable through the Installer Menu as described in Table 8.**

<b>Table 8. Vehicle Detector - Configurable Functions</b>		
<b>Display</b>	<b>Meaning</b>	<b>Installer Menu Setting Options (Bold - Default)</b>
OR 1	Outside Obstruction loop detector function	0= Pause closing only <b>1= Enable reverse to open</b>
IR 1	Inside Obstruction loop detector function	0= Pause closing only <b>1= Enable reverse to open</b>
DL 1	Vehicle detector logic	<b>1 = Standard</b> (Close Timer does not begin counting until all loops have cleared.)
		2 = Quick close (Close Timer can count to zero, even while loops are active, so the gate will close as soon as the loops are clear.)
		3 = Forced time out (Close Timer is forced to zero when both the OOLD & IOLD are tripped simultaneously. Additionally, all other close inputs are memorized and the gate closes immediately when all open commands and vehicle detector inputs are clear.)
		4 = Full Anti-tailgate (In addition to the functions of 3, the gate stops during the opening cycle when both OOLD & IOLD are tripped simultaneously. When the OOLD and IOLD loops are cleared, the gate closes immediately.)
		For additional information, refer to <b><i>“Vehicle Detector Configuration and Quick Close Mode Selection”</i></b> on page 126.

## Connecting Standard 11-Pin Box Type Vehicle Detectors

### NOTE

If photo eyes are used to monitor vehicle traffic instead of loop detectors, connect the photo eyes using the same steps. See *“Installing Photoelectric Sensors for External Entrapment Protection Only”* on page 145.

If standard 11-pin box type vehicle detectors are to be used, perform the following procedure.

1. **If there is sufficient space, install the sockets in the control box; if not, then install them in a separate external housing. Figure 31 is for general reference only.**

### NOTE

If there is any detector fault, the gate operator functions as if the detector is triggered. Carefully consider your peripheral connections. Any peripheral device required for safe gate operation should be attached 24VDC in case of an AC power outage. Additionally, box detectors with relays require *five times more power* than HY5B detectors. UPS battery life will be extended if you use HY5B detectors instead.

2. **Connect 24 Volt power to the detector. Connect Pin No. 1 to a 24VAC or 24VDC terminal and Pin No. 2 to common. (You must provide your own power supply if 24VAC is required.)**
3. **Connect output Pin No. 6 to the Common Bus and output Pin No. 5 to one of the four detector terminal inputs (depending upon the detector function required) on the SmartDC Controller.**
4. **Repeat Steps 1 through 3 for each HY5B detector.**
5. **If multiple detectors are used, route the power wires and common wire from socket to socket (daisy chaining) rather than individually running each wire to the same location. See Figure 31. The only wires that are separate are the output wire to the SmartDC Controller and the detector loop input wires.**

**NOTE**

Always keep the detector loop wires well twisted at all places beyond the area of the loop. The lead in portion sealed in a saw cut does not need to be twisted so long as the wires are encapsulated in loop sealant and cannot move. Refer to *“Installing Vehicle Detectors and Loops”* on page 142.

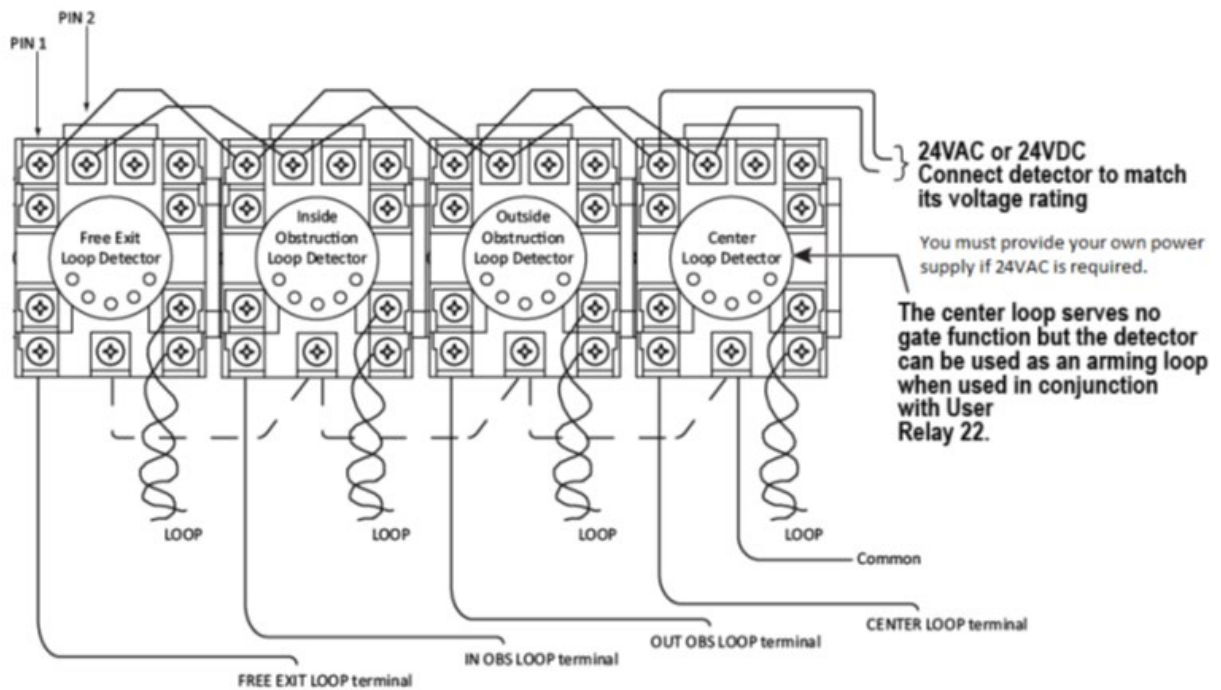


Figure 31. Standard 11-Pin Box Type Vehicle Detector

## Vehicle Detector Configuration and Quick Close Mode Selection

The Standard Quick Close modes are selectable in the Installer Menu. Refer to *“Table 6. SmartDC Controller - Installer Menu Functions” on page 106*. The four selectable modes are described as follows:

### Mode 1 (Default)

An input from either the Free Exit, Outside Obstruction Loop, Inside Obstruction Loop or the Center Loop will hold the gate open, reset the close timer, and block all close inputs. (Center Loop has no gate control function in a slide gate. However, the input may be used as an arming loop when used in conjunction with Relay function #22.)

### Mode 2:

Same function as Mode 1, except the close timer can count to zero even with the Free Exit, Outside Obstruction Loop, Inside Obstruction Loop or the Center Loop detector inputs active. If the close timer has counted to zero, the gate will close when all detector inputs are clear. (Center Loop has no gate control function in a slide gate. However, the input may be used as an arming loop when used in conjunction with Relay function #22.)

### Mode 3:

Same function as Mode 1. However, the close timer is forced to zero when both the OOLD & IOLD are tripped simultaneously. Additionally, all other close inputs are memorized and the gate closes immediately when all open commands and vehicle detector inputs are clear.

### Mode 4:

Full anti-tailgate logic includes Mode 3 functions. In addition, the gate will stop during the opening cycle when both OOLD & IOLD are tripped simultaneously. When the OOLD & IOLD loops are cleared, the gate closes immediately. The OOLD & IOLD can be individually set so that, if tripped while closing, the gate may pause only or reverse to reopen. The free exit detector input is blocked while the gate is closing.

**NOTE:** As described in *“Table 9. User-Programmable User Relays - Function Options” on page 129*, the OOLD and IOLD loops must be capable of being triggered at the same time for the Unauthorized Vehicle Entry Output relay (#11) to ever activate.

## Entrapment Sensor Connections

Devices, such as gate edge sensors and photoelectric beams, must be installed to protect against entrapment. These external entrapment protection devices are required so the gate installation is in compliance with UL 325 Safety Standards.

Figure 32 illustrates how to connect different sensors to the SmartDC Controller:

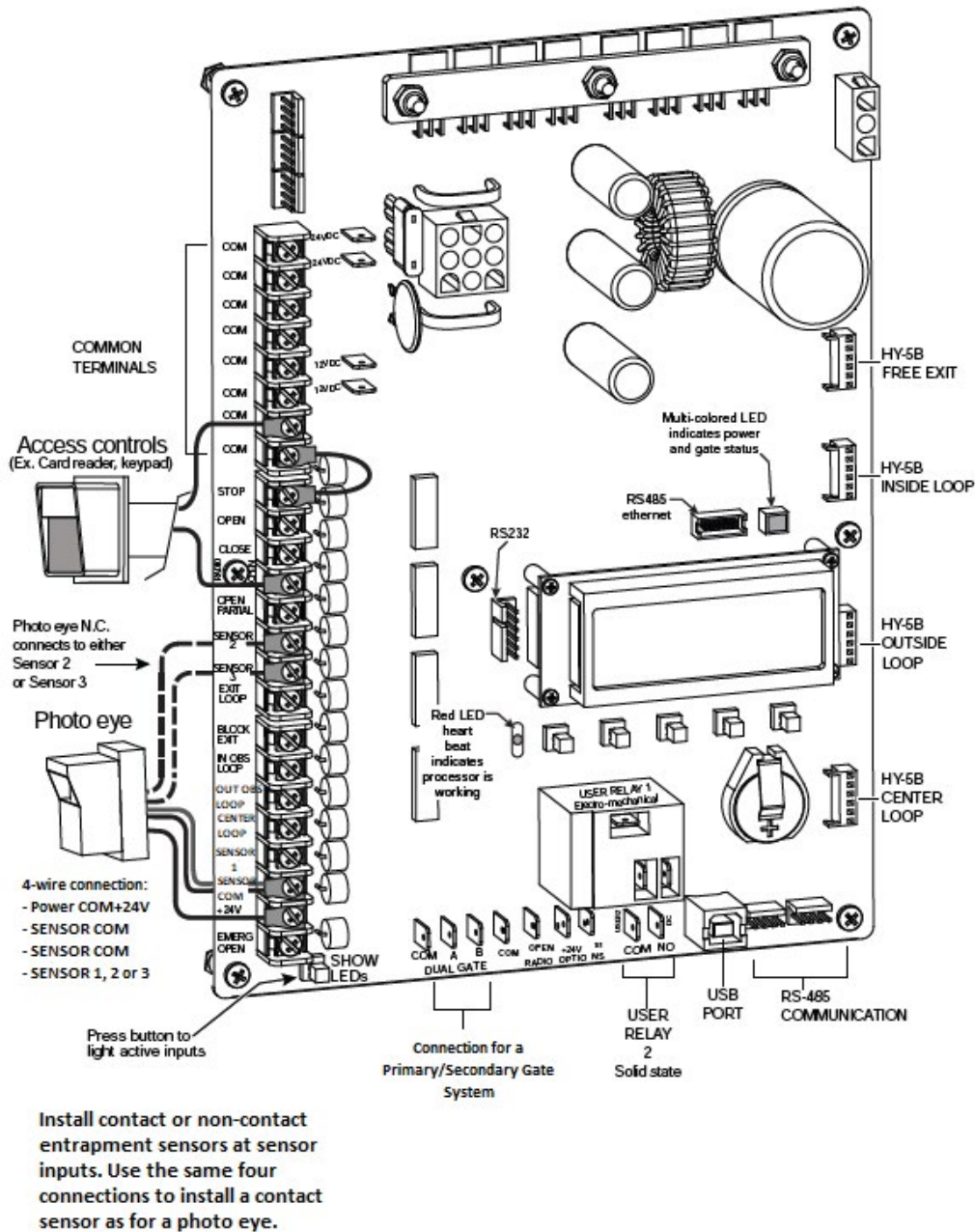


Figure 32. Entrapment Sensor Connections

## Manual Push-Button Station

A manual push-button station controls the gate system and opens, stops, and closes the gate. It is most often used by a guard in a 24-hour guard station. An example of the push-button station connections on the Kinetic DC operators shown in Figure 33.

**CAUTION**

Make sure the manual push-button station is within site of the gate, a distance (six feet, 1.8m minimum) away from the gate's moving parts, and out of reach of children.

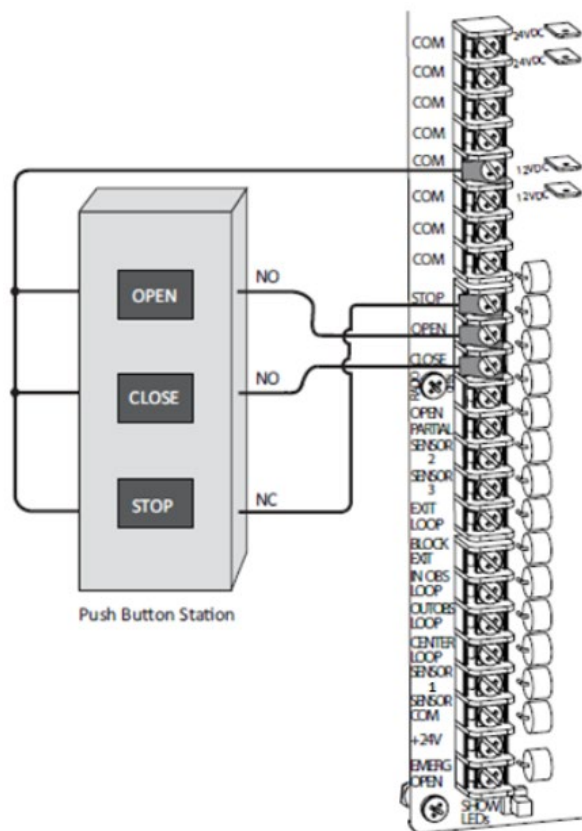


Figure 33. Manual Push-Button Station



## User Relays - Programming Procedure

The SmartDC Controller is able to interface with many types of external devices through the use of two user-programmable output relays. All of the user relay functions identified and described in Table 9 are accessible in the Installer Menu.

**NOTE**

The User Relays will operate normally to less than 18VDC. The USER 2 RELAY is rated for DC only up to 48V and does not have an N.C. (normally closed) connection.

Use the SmartDC Controller buttons to program the user relays according to the following steps:

1. Select and connect to the relay you wish to use on the SmartDC Controller board.
2. Access the Installer Menu and RL 1 or RL 2 display (depending on the relay you have connected).
3. Enter the appropriate function using the associated number (1 through 45) listed in the table.

<b>Table 9. User-Programmable User Relays - Function Options</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
1	Close limit output	Creates an interlock signal to another operator’s interlock input, or simply to indicate that the gate is secure. The relay is released when the fully-closed limit switch is tripped. The relay is energized when the fully-closed limit is released. (Any open command energizes the relay.)
2	Close limit pulse output	Used in a sequenced system to command a second machine to close. Generates a brief pulsed output that occurs when the close limit is triggered.
3	Open limit output	Indicates a full-open position. This output becomes active when an open-limit is triggered and releases when the open-limit is released.
4	Open limit pulse output	Triggers a sequenced barrier arm gate operator to open. Generates a brief pulsed-output when the open-limit is triggered. An additional pulse is also generated with any new open command even when the gate is already fully-opened.

<b>Table 9. User-Programmable User Relays - Function Options</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
5	Warn before/during operate output	Controls an external warning device. This output operates at the same time as the internal “warn before operate” buzzer.
6	Gate Lock output	Controls external solenoid locks or magnetic locks. In both directions of travel, this output is activated about 7/10ths of a second before the operator starts moving the gate and remains active while moving as well as for a few seconds after stopping.
7	Gate forced open output	Activated if the gate is forced off the closed limit switch and operator is not able to restore the gate to fully closed within four seconds. The alarm resets itself in 30 seconds.
8	Gate open too long output	Activates when the gate is open longer than a user-selected period of time. Adjustable from a 0 second to 135 second delay in 30-second increments.  <b>Note:</b> TL - OPEN TIME ALERT adjustments can be made in the Installer Menu.
9	Safety Mode Alert output	Activated when system is in Safe Mode or Entrapment Mode.
10	Entrapment Mode Alert output	Activated only when system is in Entrapment Mode.
11	Unauthorized Vehicle Entry output	Activated when a second vehicle enters from the outside without a valid input from an access control device. The OOLD and IOLD loops must be capable of being triggered at the same time for this relay to ever activate. This output releases when an access control input signals open or the gate reaches the close limit position.
12	Outside Obstruction Vehicle Detector output	Interlocks an entry device to prevent pedestrian use. This output is active whenever the Outside Obstruction Loop Detector is tripped.
13	Loitering Alert	Indicates a vehicle is loitering on the Outside Obstruction Loop. Adjustable from a 0 second to 135 second delay in 30-second time intervals.  <b>Note:</b> LT - LOITERING ALERT adjustments can be made in the Installer Menu.

<b>Table 9. User-Programmable User Relays - Function Options</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
14	Gate nearing full travel output	Activated when gate is approaching full open or full closed. Relay activates three feet from where software expects limit switch to be triggered whether moving toward full open, full close, or in a reverse travel mode. This output is used to reduce the sensitivity of a proximity sensor near the ends of gate travel.
15	Gate Failure output	Activated to report occurrence of a problem. Indicates the system is in an Error Mode, Fault Mode or Entrapment Mode. If active, the gate is disabled.
16	Motor Running output	Active when the motor is running and the gate is in motion.
17	AC Power Failure output	This relay is normally energized and drops with loss of AC power.
18	DC Power Failure output	Activated when the battery power is very low, but the output ceases when the battery is dead. The relay is triggered when the battery is less than 20 volts.
19	Flasher Relay	Controls flashing lights that pulse once per second. The relay is constantly activating except when the open limit switch is triggered. Recommended to use User Relay 2 since it is an electronic switch.
20	Free Exit Loop Vehicle Detector output	Active whenever the Exit Loop is tripped.
21	Inside Obstruction Vehicle Detector output	Activated when the Inside Obstruction Vehicle Detector is tripped.
22	Center Loop Detector output	Activated when the Center Loop Detector is tripped. Since this input is not used for a sliding gate, User Relay 22 can be used in combination with a detector to perform the function of an arming loop detector because there is no associated gate control logic.
23	External Latching Gate Lock output	Not functional in the Kinetic operator.
24	Gate at Partial Open Position	Active when the partial open position is reached or exceeded.

<b>Table 9. User-Programmable User Relays - Function Options</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
25	DC Power Alert	Active when on AC power or the battery voltage is above 21V. When used with User Relay 2, this option can shed electrical loads to conserve battery energy.
26	Free Exit Loop Detector pulse	Outputs a 250ms pulse when the free exit vehicle detector is tripped.
27	Not Open (w/AC power)	Activated when gate is not on open limit and AC power is present. Deactivated when AC power fails or the gate is on open limit.
28	Flasher (w/AC power)	Output identical to relay #19 and pulses relay 500 ms/sec when the gate is not on open limit and AC power is present. Deactivated when AC power fails or the gate is on open limit.
29	Arm Entry Ticket Dispenser	Not functional in the Kinetic operator.
30	Arm Exit Ticket Dispenser	Not functional in the Kinetic operator.
31	Reset Ticket Dispenser Pulse	Not functional in the Kinetic operator.
32	Backoff Pulse	Not functional in the Kinetic operator.
33	Transient In Pulse	Not functional in the Kinetic operator.
34	Transient Out Pulse	Not functional in the Kinetic operator.
35	Tenant In Pulse	Not functional in the Kinetic operator.
36	Tenant Out Pulse	Not functional in the Kinetic operator.
37	Special In Pulse	Not functional in the Kinetic operator.
38	Special Out Pulse	Not functional in the Kinetic operator.
39	Unknown In Pulse	Not functional in the Kinetic operator.
40	Unknown Out Pulse	Not functional in the Kinetic operator.

<b>Table 9. User-Programmable User Relays - Function Options</b>		
<b>No.</b>	<b>Name</b>	<b>Description</b>
41	Test Open Pulse	Output pulses five seconds after close limit is activated. Typically used for cycle testing.
42	Break-Away Switch output	Activates when the arm break-away switch is tripped.
43	Warn Before	Combination of relays #5 and #16.
44	Partial Open Limit Pulse	Pulses for 250ms when the gate, commanded with Partial Open input, reaches Partial Open Limit, or, the gate is past Partial Open Limit and Partial Open input is activated.
45	Outside Obstruction/ Arming Loop Detector	Activated when OOLD/OALD detector input tripped and gate closed. Used for testing purposes.

# Bi-parting Gate Systems

Configuring two operators to be a Primary and Secondary pair is easy with the SmartDC Controller. There is no need to order a special model or any adapters. The area of the board marked Dual Gate employs a 3-wire RS485 serial port for communication between primary and secondary operators. See Figure 34.

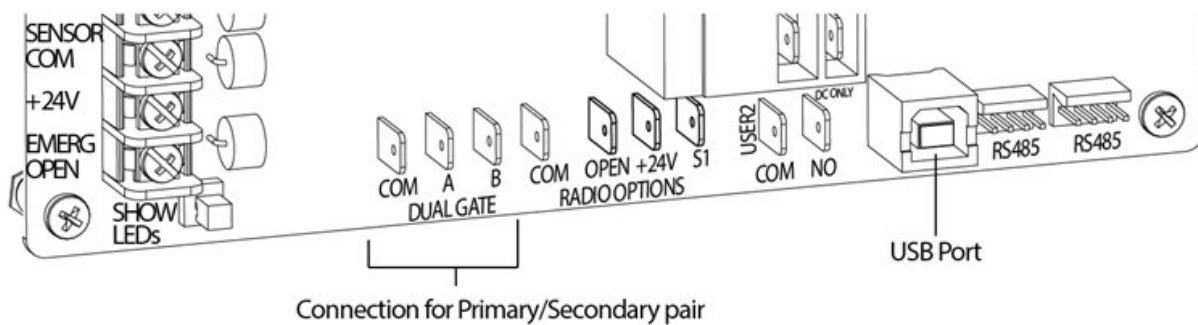


Figure 34. Dual Gate Primary/Secondary Connections

## Power Requirements

When installing a dual-operator system, the following must be adhered to:

- An electrical conduit for interconnecting wires must span between the two operators. The primary-secondary communication wires and any low voltage control wires must be installed in a conduit that is separate from the high voltage power wires. See “Figure 35. Primary and Secondary Wiring Connections” on page 135.
- Complete the installation of both operators as separate machines and verify that their basic functions are correct as solo operators before interconnecting them.
- External control inputs, vehicle detectors and entrapment protection sensors may be connected to either gate operator without regard to preference.
- Be sure both operators are running the same software version. The software version is available on the display by pressing the RESET button on the operator. The software version appears beneath the word HYSECURITY. Keep the most current software loaded. It is available at <https://hysecurity.com/>. Make it part of your maintenance routine to check for software upgrades on a regular basis.
- Both operators can be connected to the same 20A circuit breaker in the main panel. The wire size affects operator performance. Use the following chart as a guideline to size wire for the given distance from the power source to BOTH operators.

Table 10. Wire Length Chart

AC Power - Dual Operators	14-gauge wire	12-gauge wire	10-gauge wire
115V	460 ft (140 meters)	750 ft (228 meters)	1160 ft (354 meters)
230V	1465 ft (446 meters)	2350 ft (716 meters)	3750 ft (1143 meters)

## Primary and Secondary Wiring Connections

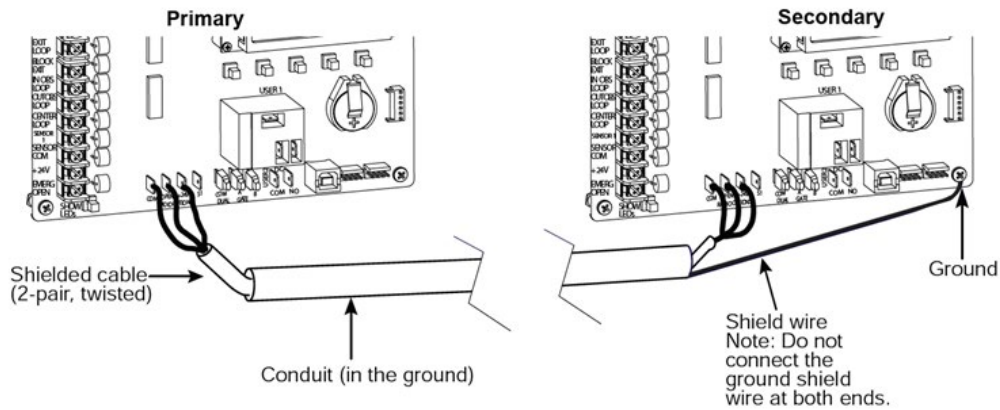


Figure 35. Primary and Secondary Wiring Connections

1. As shown in Figure 35, connect a shielded communications cable to the DUAL GATE inputs in each unit. The inputs are located near the base of the SmartDC Controller. Be sure to connect the wires in pairs to the same terminal ports (A-A, B-B, and COM to COM) on both units. See Table 11.

Table 11. Primary-Secondary Connections on SDC Boards

Primary	Secondary
A	A
COM	COM
B	B
Only ground to one unit. Do NOT attach the shield wire to both units.	Shield wire to Ground.

**NOTE**

Connect the ground shield wire to only one operator, not both.

2. Attach a ring terminal to the shield wire and connect it to the SmartDC Controller’s convenient ground screw. Refer to Figure 35.

## Primary and Secondary Menu Setup

Determine which unit will be set up as the Primary. The other unit will be set up as the Secondary. It doesn't matter which unit is which, but you must identify the Primary and Secondary operators by taking the following steps.

Start by configuring the PRIMARY unit:

1. **At a gate status display, press the MENU button twice. This accesses the User Menu and the CLOSE TIMER display appears.**
2. **Simultaneously, press the OPEN and RESET buttons to enter the Installer Menu. Release the buttons and the LEARN LIMITS display appears which is the first item in the Installer Menu.**
3. **Press NEXT until the DUAL GATE display appears. The factory default setting is 0.**
4. **Use the SELECT and NEXT buttons to navigate and change the setting to 2 PRIMARY.**
5. **To exit the Installer Menu, press the MENU button. A gate status appears in the display indicating you have returned to Run Mode.**

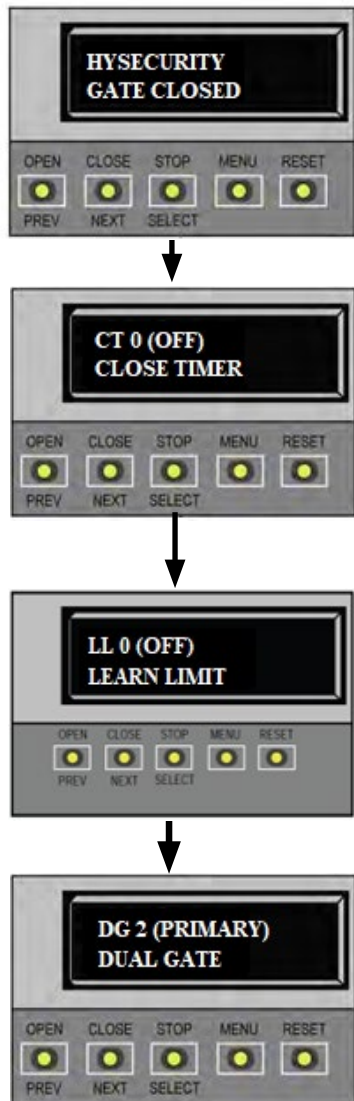
**NOTE: For proper operation, you must set the other gate operator as SECONDARY.**

6. **Move to the other Kinetic operator.**
7. **Using the buttons on the SmartDC Controller, access the DUAL GATE display through the Installer Menu.**
8. **Perform the same steps, 1 through 5, but address the operator as SECONDARY, setting 1.**

When the Kinetic operator has been designated as the primary and the other as secondary, the dual-gate operators will be in constant communication, most often, in a peer-to-peer relationship. For example,

- **Any control input that is attached to the secondary unit will be recognized by the primary once the Installer Menu is properly configured in both units.**
- **A diagnostics log is maintained in each unit, but both units run and store the errors codes and diagnostics pertinent to each other.**
- **The primary unit controls the close timer even if the timer is set in the secondary unit. If a close timer is set in both units, the primary unit overrides the secondary setting.**





1. Start at a gate status display.

2. Access the User Menu by pressing MENU twice.

3. Access the Installer Menu by simultaneously pressing OPEN and RESET. Release the buttons.

4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

#### NOTE

If the dual-gate communication stops for whatever reason, (communication wire severed or the power switch is turned off in one unit), both operators cease to function and an ERROR 4 (Primary/Secondary Communication Error) appears in the display.

# Reference

This section of the manual provides information which may be useful when installing Kinetic operators. It includes how to:

- Connect a Radio Receiver for Remote Open
- Install a Gate Locking Mechanism
- Set User Relay Functions
- Install Vehicle Detectors and Loops
- Install Photoelectric Sensors
- Install Gate Edge Sensors
- Troubleshoot Error Codes, Faults, and Hardware Issues
- Diagnose Vehicle Detector and Loop Faults
- Handle General Maintenance Procedures

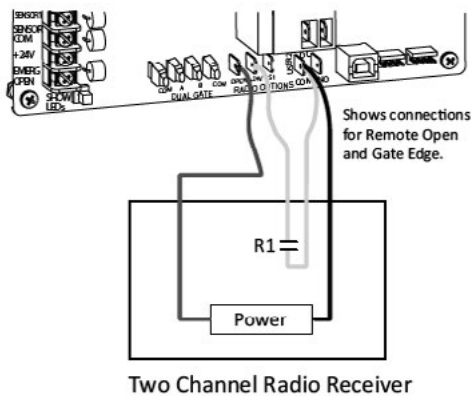
## Connecting a Radio Receiver for Remote Open

Take the following steps to mount a commercial style 24VDC radio receiver (external antenna type):

1. Install the receiver in the channel of the chassis on either side of the control box.
2. Knock out the closest hole in the bottom of the control box and route the wires to the area marked RADIO OPTIONS. Only three wire connections are needed because the common wire and one radio output wire are connected together. Figure 36 shows additional wires from a two-channel receiver.
3. Make sure to observe polarity and crimp together the black radio common wire and one of the radio output wires using a ¼ -inch spade connector.
4. Fasten the two crimped wires to the COM terminal.
5. Connect the red wire to the +24V spade and connect the other radio output contact wire to the spade marked OPEN.

**NOTE:** This terminal is the same as the input terminal labelled RADIO OPEN along the left edge of the SmartDC Controller.

6. Mount an external antenna onto the top of a fixed fence post near the operator.
7. Connect the antenna into the socket on the radio receiver.
8. Set the “DIP” switches in the receiver to match the same code used in the transmitter.



**NOTE**

If an edge sensor transmitter is also used to reverse the gate, be certain to use a two-channel commercial receiver. The edge and handheld transmitters must have their codes set to match the receiver or they will not function.

Figure 36. Additional Wires from Two-Channel Receiver

## Installing a MagLock or Solenoid Lock

To provide additional gate security, a maglock or a solenoid lock can be used and connected to the SmartDC Controller. The SmartDC Controller releases the lock prior to initiating gate movement. Before installing the lock, be sure to:

- Determine the electrical power requirements of your lock (maglock or solenoid lock). Electronic board and peripheral connections differ between high voltage and lower voltage gate operators.
- Determine the current required. A total combined current draw of 1 amp is available from the 24VDC or 12VDC power supply. If the peripherals attached to the terminals need more than 1 amp, a separate power supply is required. Refer to “Overview of the SmartDC Controller” and “Figure 29. SmartDC Controller Board” on page 116.

## Installing a Lock for 12VDC or 24VDC Systems

To install a lock for 12VDC or 24VDC systems, take the following steps:

1. Connect a wire between COM on USER 1 RELAY and a COM terminal on the electronics board. See Figure 37.
2. Make sure to observe polarity and crimp. Connect the power lead from the lock to the appropriate power spade (+24VDC or +12VDC).
3. Connect the common wire from the lock to NC on USER 1 RELAY.

**NOTE:** Connect to NO on USER 1 RELAY if installing a Solenoid lock.

4. Set the User Relay function in the Installer Menu to RL1 - 6. Refer to “Setting the User Relay Function in the Installer Menu” on page 141.

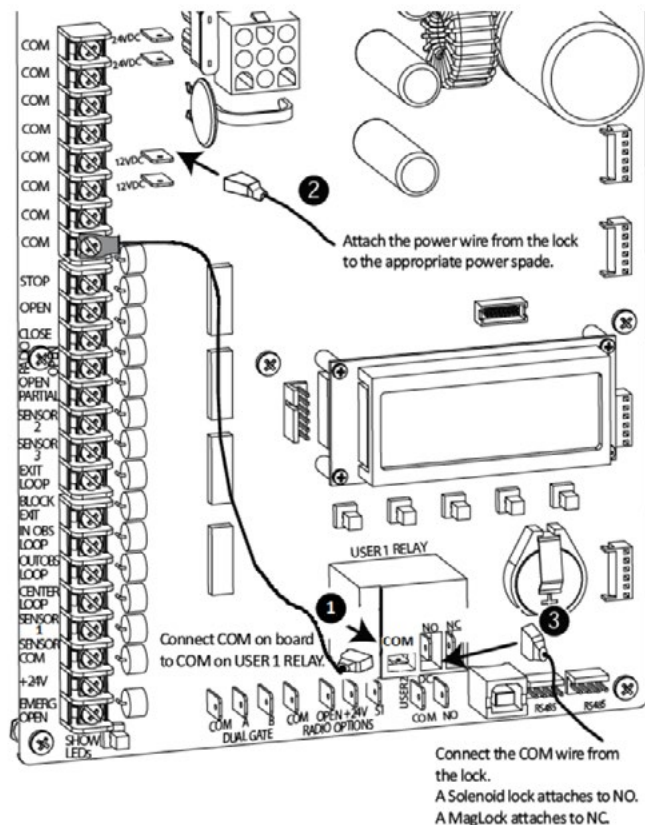


Figure 37. Lock Installation 12/24 VDC

## Installing a Lock for a High Voltage System

To install a lock on a higher voltage system (115V or 230V), take the following steps:

1. Connect one lead of the power supply to one lead of the lock's coil. See Figure 38.
2. Connect the other lead of the lock's coil to NO on USER 1 RELAY.

**NOTE:** Connect to NC on USER 1 RELAY if installing a maglock.

3. Connect the COM on USER 1 RELAY to the second lead wire in the power supply (115V or 230V).
4. Set the User Relay function in the Installer Menu to RL1 - 6. Refer to *“Setting the User Relay Function in the Installer Menu”* on page 141.

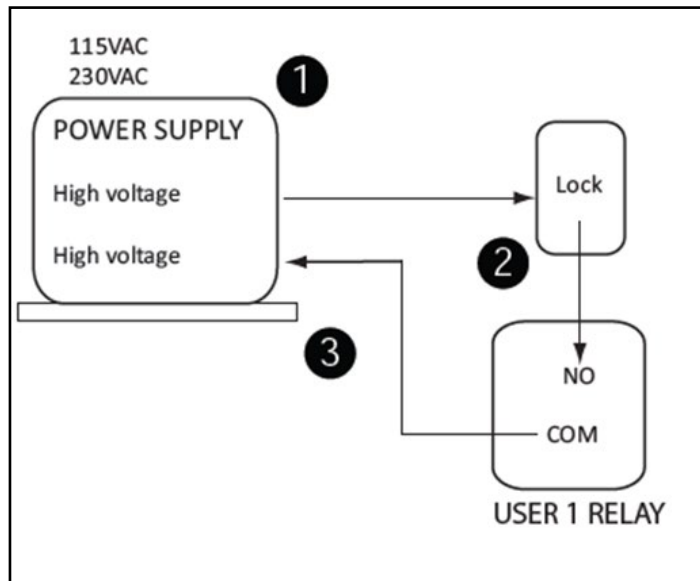


Figure 38. Lock Installation – High Voltage

## Setting the User Relay Function in the Installer Menu

For lock installation functions, enter the Installer Menu and set the User 1 Relay to Function 6 - GATE LOCK OUTPUT.

For other installation options, use the SmartDC Controller buttons to program the user relays by selecting the relay you wish to use, and entering the appropriate function using the associated number listed in *“Table 9. User-Programmable User Relays - Function Options” on page 129*. Refer to *“User Relays - Programming Procedure” on page 129* for details.



1. Start at a gate status display.



2. To access the User Menu, press MENU twice.



3. To access the Installer Menu, simultaneously press OPEN and RESET.



4. Use NEXT to navigate to the menu display. Change the setting using the SELECT and NEXT buttons.

## Installing Vehicle Detectors and Loops

A vehicle detector passes a small current flow through the “loop” which then becomes an inductive coil. When a vehicle passes over the loop, the detector senses the resultant drop in the inductance, and actuates the detector output.

### Loop Configurations:

Configurations differ depending on the application. In parking applications, a loop may be as small as 4 x 6 feet (122 x 183cm). In traffic applications employing one of our swing or slide gate operators, the smallest loop should not be less than 6 x 6 feet (183 x 183cm) in order to detect high bed vehicles.

### Rules to Follow for Security Gate Applications:

The side of the loop closest to the gate must be located at least 4 ft (122cm) from the line of travel.

1. The shortest side of the loop should be between 6 and 8 feet (1.8 and 2.4m) in length. The longest side of the loop should be between 6 and 20 feet (1.8 x 6.1m) in length. For applications that need to span a wide area, use several smaller loops. Do not connect more than 200 square feet (18.6 sq. m) of loop area to a single detector.
2. In applications with multiple loops, keep each loop at least 6 feet (1.8m) apart. This avoids “cross talk”. It is possible to have loops closer together by selecting different frequencies. An advantage of using HySecurity model HY5B detectors is that problematic “cross talk” is not possible.
3. For greater sensitivity and less chance of false calls caused by the motion of the gate, it is better to use multiple smaller loops, connected in a series circuit, to one detector instead of a single large loop.
4. To avoid interference, keep loops at least 2 inches (5cm) above any reinforcing steel. Do not route loop wires with, or in close proximity to, any other conductors, including other loop leads, unless shielded lead-in cable is used. Never route high voltage circuits in PVC conduit near a loop.
5. Loop and lead-in wire should be one continuous piece. Avoid splices, if possible. If a splice is necessary for any reason, “pot” the splice in epoxy or use heat shrink to ensure that the quality of the splice covering is the same as the original wire jacket.
6. Use only 14-, 16-, or 18-gauge stranded wire with a direct burial jacket. Cross-linked polyethylene insulation types, such as XLPE or XHHW, will last much longer and are less prone to damage during installation than conventional insulation types. Preformed loops can be used before road surfacing or under pavers.
7. Twist loose tails of lead-in wires tightly, approximately ten times per foot. See Figure 39.
8. Follow this guide for the correct number of turns in the loop:

12 to 20 sq. ft. = 5 turns	20 to 60 sq. ft. = 4 turns	60 to 240 sq. ft. = 3 turns
3.7 to 6.1 sq. m = 5 turns	6.1 to 18.3 sq. m = 4 turns	18.3 to 73.1 sq. m = 3 turns

Twist lead-in at least 10 turns per foot



Like This



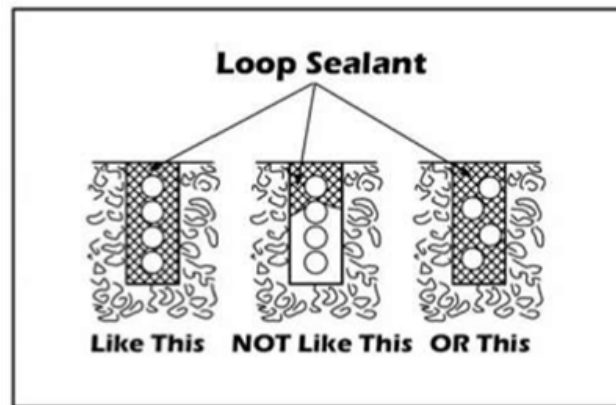
Not Like This



Twist Like This

Figure 39. Wire Twist Lead-ins

9. This guide is written from a design perspective, but installation workmanship practices are equally important to ensure proper operation and long loop life. The best way to ensure a quality installation is to employ a professional installer experienced with detector loops. A few important practices are:
- The slot in the surface of the road should be cut  $\frac{1}{4}$ -inch wide x  $1\frac{1}{2}$ -inch deep (6.3 x 38.1mm).
  - The corners of the cut must be at an angle or core drilled to relieve stress on the wires.
  - After the wire is installed, the slot must be completely backfilled with a non-hardening sealer. If the loop wires are able to move in the slot after the sealer has set, the detector may give false calls.



**Figure 40. Loop Sealant Application**

### Detector Logic

HySecurity recommends that vehicle detectors be used for free open and obstruction sensing logic only. Because of their slower speeds, closing logic is a poor choice for security gate systems. Since there are several ways that the gate may be left standing open and because there is a loss of safety, our circuit has not been designed to accommodate “detect to close” logic.

### Loop Diagnostics

The following tests cannot guarantee a functioning loop, but failure of either test means that the loop is definitely suspect, even though it may still be functioning at the time.

1. Test the resistance of the loop and lead-in wire. It should not exceed 4 ohms.
2. Test the resistance between the loop and earth ground with a 500V Megohmmeter. It should be 100 Megohms or more. Loops may function at less than 100 Megohms but will not be reliable (e.g., when the ground is wet from rainfall). Low resistance indicates broken or moisture-saturated insulation. This is common if inappropriate wire insulation has been used.

A schematic for a slide gate loop layout is shown in Figure 41.

This layout illustrates a bi directional controlled access entry (card reader, radio control, etc.) and a free exit gate. The gate's closure time is determined by the number of seconds entered in the CLOSE TIMER display found in the User Menu. The timing to close starts when all loops are clear. The time is adjustable from 1 to 99 seconds.

For a single-directional system, the FREE EXIT loop is replaced with an OBSTRUCTION loop.

**DIMENSIONS**

- A = 6ft to 20ft (2m to 6m)
- B = 6ft to 8ft (1.83m to 2.44m)
- C - Maintain 4ft (1.22m)
- D = Maintain 5ft (1.52m) between loop and edge of roadway. No vehicle can pass through such a small area and escape detection.
- E = Distance for convenience of use.

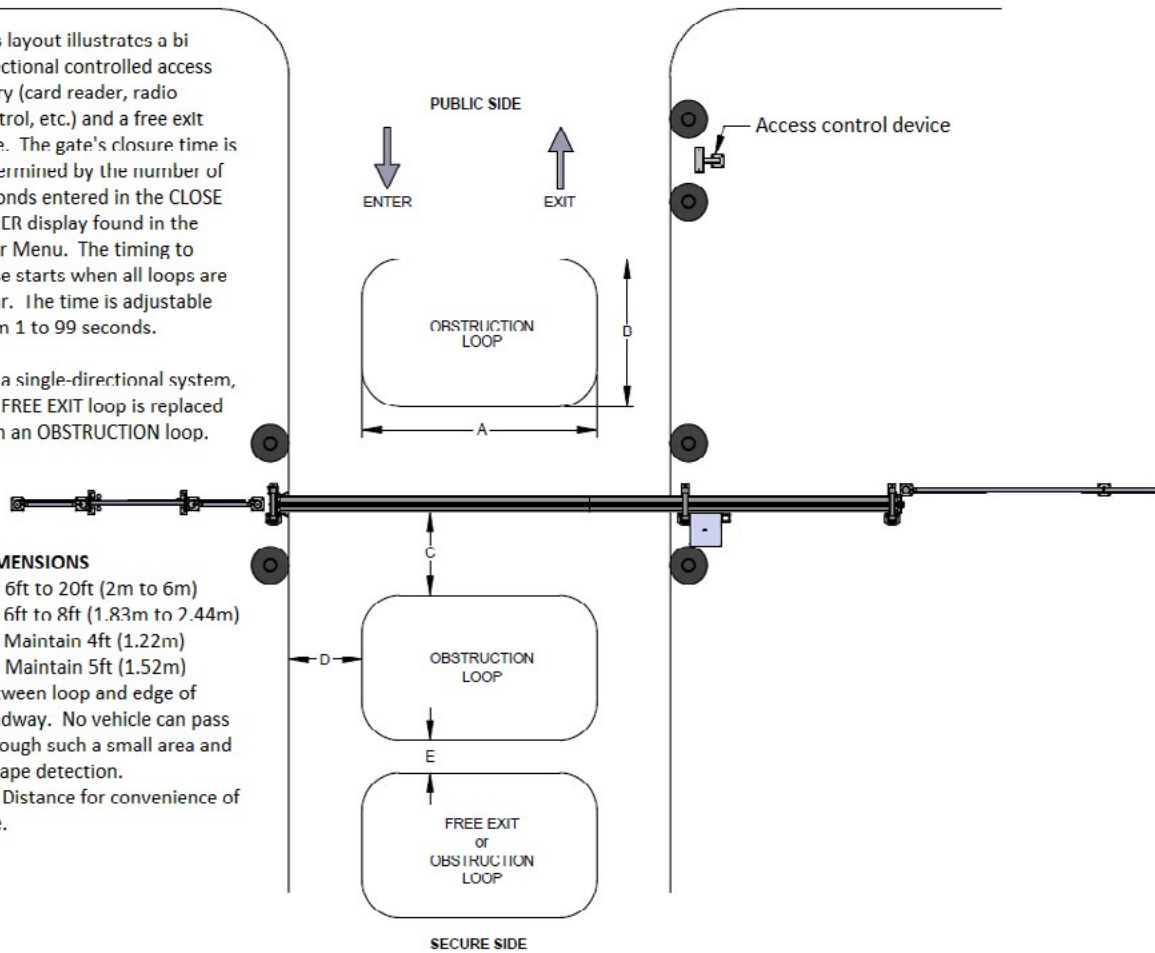
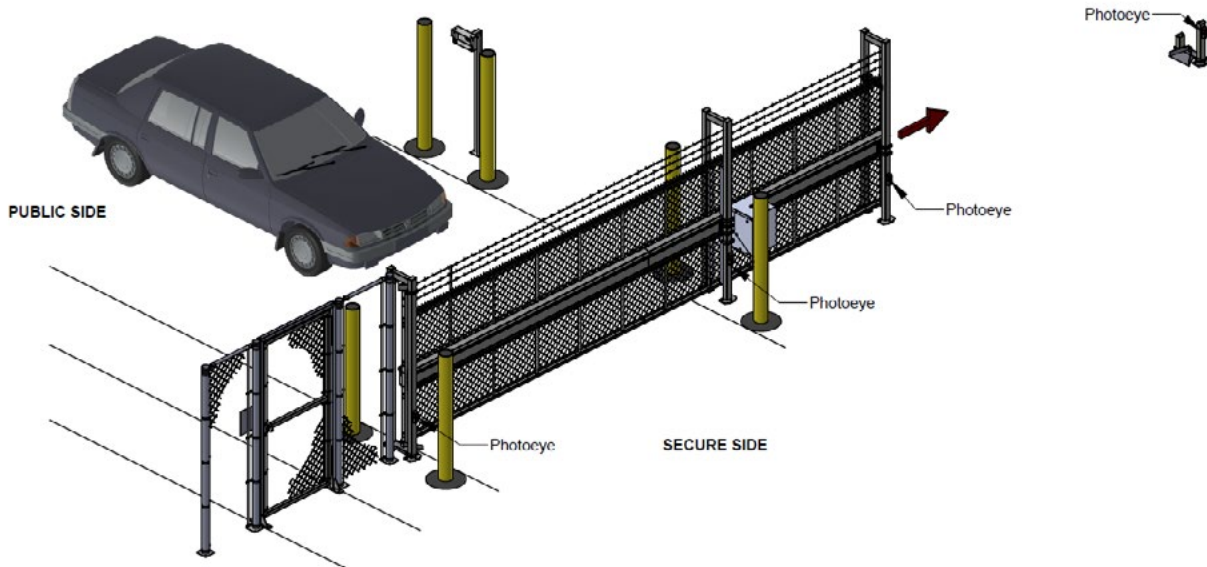


Figure 41. Installing Vehicle Detectors and Loop Layout



## Installing Photoelectric Sensors for External Entrapment Protection Only



**Figure 42. Photoeye Placement as External Entrapment Protection Devices**

Refer to Figure 42 to help plan the most appropriate placement for the photo eyes being installed as external entrapment protection devices. If no other external entrapment protection devices (like edge sensors) are installed, then at least two photoelectric sensors are required to guard the gate in each direction of travel. If the photo eyes are tripped, the operator will temporarily stop the gate.

Consult a photoelectric sensor manual for wiring details. Make all electrical connections to SmartDC Controller as shown in Figure 43 on the next page.

### Operation Notes

- A photo eye trip does not reverse gate.
- The SmartDC Controller software is factory set to stop upon photo eye trip.
- Software is configurable to stop and reverse two seconds upon photo eye trip.

If the photo eye is cleared within five seconds, the gate will proceed in the direction of travel.

The SmartDC Controller has three sensor inputs (Sensor 1, Sensor 2, Sensor 3) which can be used for any type of photoelectric inputs. See **“Figure 43. Connections for Entrapment Protection Only” on page 146**. Underwriters Laboratories requires that any non-contact sensor used as an external entrapment protection device, must be tested to, and recognized by, the UL 325 Standard.

There are two common types of photoelectric sensors, thru-beam and retro-reflective, and each has its advantages.

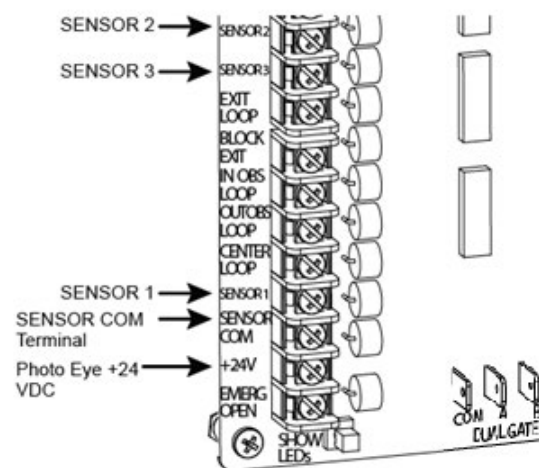
- A thru-beam sensor is generally more powerful and able to function reliably with dirty optics and in poor weather.
- A retro-reflective sensor does not require the installation and extra wiring of a separate emitter and receiver as is required in a thru-beam system, but retro-reflective eyes are generally more problematic in poor weather. Avoid using retro-reflective devices across outdoor distances greater than 24 feet (7.3m) because of performance and reliability issues.

Mount thru-beam type photo eyes approximately 15" to 30" (.38m to .76m) above the ground and as close to the gate as possible. A minimum of two photo eyes are required, one photo eye to guard the open direction and the other for the close direction of travel, unless gate edges for entrapment protection are installed. Mount the emitters and the receivers just beyond the travel of the gate in both the full open and full closed positions of travel. The installation locations described above are intended for pedestrian detection. If photo eyes are to be used for vehicular detection, install a low elevation photo eye for cars and another photo eye at a height of about 55" (140cm) to detect semi-trucks.

If the photo eye has an internal switch for setting Light Operate vs. Dark Operate, select Light Operate. If the photo eye has a relay output and has both NO and NC terminals, some experimentation may be required to determine the proper connection. This is because, in the Light Operate mode, the output relay is normally energized and releases when the beam is blocked. Some manufacturers label an output as NO, when it is actually an NC contact. If the photo eye has a solid-state output you must choose a sinking type connection.

Three wires to the receiver and two wires to the emitter are all that is required.

- Depending on how the photo eyes are to be wired, +24VDC or +12VDC, power is provided via spades located just to the right of the COM terminal strip near the left side of the board. Wire all eyes to 24V or all to 12V; do not mix voltages.
- The receiver common wire is connected to the SENSOR COM terminal at the bottom left of the SmartDC Controller. The emitter common wire is connected to the COM terminal at the top left of the controller.
- The photo eye NC output wires connect to the SmartDC Controller at the appropriate Sensor Input (1, 2, or 3).



**Figure 43. Connections for Entrapment Protection Only**

**NOTE**

If photo eyes are to be used for vehicle detection and logically function the same as a vehicle detector, connect the common wires to the COM terminals on the left side of the board and wire the NO output contact to the appropriate vehicle detector input: EXIT LOOP, IN OBS LOOP, and OUT OBS LOOP.

## Photo Eye Mounting and Alignment

### Alignment:

Most photo eyes require careful optical alignment in order to aim the emitter beam to the center of the receiver or reflector. In order to avoid false triggering, it is important to carefully align the system, especially with retro reflective photo eyes. The best way to assure true centering of the beam is with some trial testing where the emitter is shifted to move the beam left and right and up and down until the range of the invisible cone of the infrared beam is known. Photo eyes usually provide alignment aid LED's for this setup, but they can be hard to see. HySecurity has provided a unique feature that turns power on to the photo eyes and causes the buzzer to chirp when the photo eyes enter and exit alignment. See **“Table 5. SmartDC Controller - User Menu Functions” on page 94** to enable this feature. Set the menu item PE - PHOTO EYE ALIGN from a 0 to a 1. The buzzer chirps once when the emitter and photo eye receiver are not aligned. When the emitter and receiver are aligned, the buzzer chirps twice. If they go out of alignment again, the buzzer will chirp once. This “alignment mode” will automatically reset to 0 the next time the Close Limit Switch is triggered or the RESET key is pressed.

### Notes about retro-reflective systems:

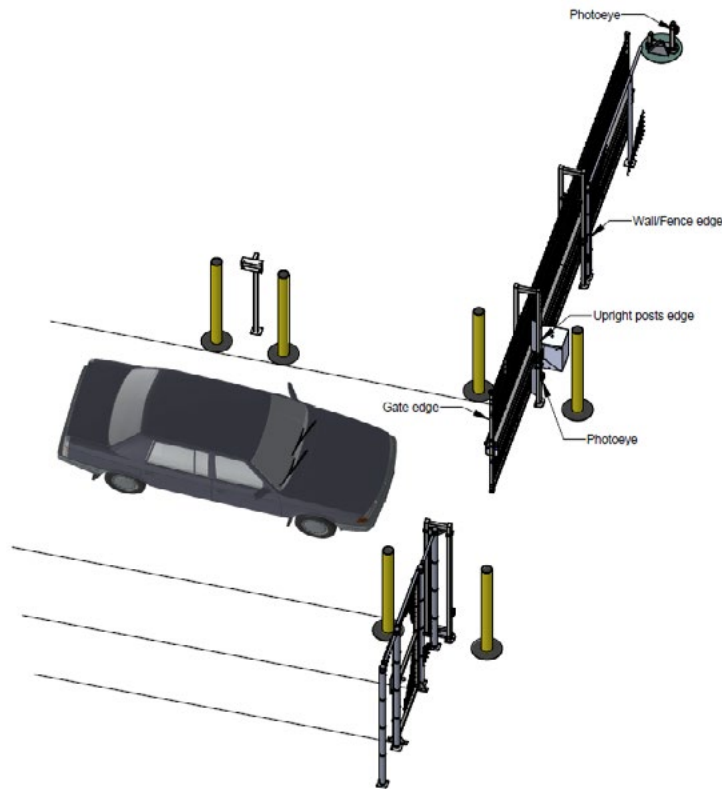
Correct installation and alignment of a retro-reflective photo eye and its reflector is important for trouble-free performance. Any system operating at a range greater than 16 feet (4.88m) is more prone to false triggering due to dirty optics, condensation, or poor weather. If care is taken in the initial mounting and alignment of the 3-inch (7.62cm) reflector, the chance of problems is greatly reduced. Use only through-beam photo eyes for a distance greater than 24 feet (7.32m) because the function of a retro-reflective photo eye will be too unreliable.

Taking steps to protect the photo eye and the reflector from being exposed to fog and being absolutely certain the photo eye is perfectly aligned will greatly reduce any false triggering of the system. The ideal mounting of a retro-reflective photo eye is inside an enclosure.

The ideal reflector mounting suspends it inside a 12-inch (30.48cm) long piece of 3-inch PVC conduit. Cut the opening of the PVC conduit at a 45-degree angle to act as a drip shield. Hold the reflector against the backside of the PVC conduit by attaching a 3-inch male connector. Do not cement the connector. This would prevent the reflector from being reached for future cleaning. To create a mounting base, attach a 3-inch aluminum flange (electric meter hub) to the connector. This whole package can be mounted to any flat surface.

Locate the reflector in the center of the invisible beam of infrared light to achieve the most sensitive alignment. The beam center is determined by the following test: while holding the reflector in your hand, slowly raise it until the beam is no longer returned and the photo eye trips. Mark this maximum height. Now lower your hand and determine the lower limit of the infrared beam by watching for the trip point. Mark this position as well. Repeat the same procedure for left and right at the center elevation of the beam, as determined by the previous test. Once the four limits have been determined, either mount the reflector in the center of the area outlined or realign the eye for the position of the reflector. If the photo eye is realigned, be sure to perform the centering test again to verify that the reflector is truly in the center.

## Installing Gate Edge Sensors



**Figure 44. Gate Edge Sensor Installation**

Refer to Figure 44 to help plan the most appropriate placement of the edge sensors being installed. For sliding gates, one or more contact sensors (edge sensors) must be located at the leading edge, trailing edge and post-mounted both inside and outside of the sliding gate. Three-sided detectors are ideal for slide gates. If the clearance of the gate is 6 inches (15cm) or more above the road, then an edge sensor must be mounted on the bottom edge. Underwriters Laboratories requires that any contact sensor used as an external entrapment protection device, must be laboratory tested to, and recognized by, the UL 325 Standard.

Drill holes through the edge's mounting channel and through the surface that each gate edge is to be mounted. Securely fasten every edge sensor. Protect the area wherever a potential pinch point exists for any type of entrapment. Ensure all exposed pinch points are eliminated or guarded.

Edge sensors that are not attached to the moving gate, such as post mounted sensors, must be wired in parallel and directly connected to the gate operator:

- If the gate is sliding open to a wall with less than 16" (41cm) of clearance, mount an edge sensor to the wall that aligns with the gate when it is in the open position. Always route the leads from the edge sensors to the gate operator so that they are protected from physical damage.
- An optional receiver connection method is to connect one edge sensor lead to a COM terminal at the top, left side of the SmartDC Controller, and the other lead to the EDGE terminal, at the bottom left side of the controller.

Edge sensors may be used with an edge transmitter and a receiver in order to transmit to the gate operator. The use of retractable cord reels or curl cords is not recommended because of durability problems with these devices in outdoor environments.

- Mount gate edge sensors to the leading edge and bottom edge of the gate so that entrapment protection is provided in both directions of travel.
- Mount one or two edge transmitters onto the gate panel near the upper corner of the leading edge of the gate. All edge sensors will function correctly if only one transmitter is used, but wiring multiple edges to a single transmitter may be impractical or displeasing visually.
- Connect the edges to the terminals in the edge transmitter and set the “dip” switches of the transmitter to match the setting in the receiver to be used. Refer to **“Figure 45. EMX-IRB-MON Photo Eye Wiring” on page 150.**
- Mount a gate edge receiver (external antenna type) in the channel of the chassis on either side of the operator.
- Mount an external antenna onto the top of a fixed post of the fence near the operator.
- Connect the antenna into the socket on the radio receiver.
- Set the “DIP” switches in the receiver to match the same code used in the transmitter.

Test the operation of the reversing edge to make sure that it functions correctly. Advise the gate user that they must retest this vital function weekly. If there is also to be a radio receiver for a hand-held transmitter to operate the gate, be certain to use a two-channel commercial receiver. The edge and hand-held transmitters must have their codes set to match the receiver or they will not function.

## Accessory Connections

After programming the sensor inputs in the installer menu or during initial startup, the appropriate type and number of sensors will need to be connected. Figure 45 shows the wiring and dip switch settings of an EMX-IRB-MON photo eye (typical thru-beam wiring). A retroreflective photo eye will be similar and only have wiring similar to the receiver of the thru-beam photo eye.

### NOTE

For UL 325 compliance, all external entrapment protection sensors **must have N.C. sensor outputs** for monitoring and powering purposes.

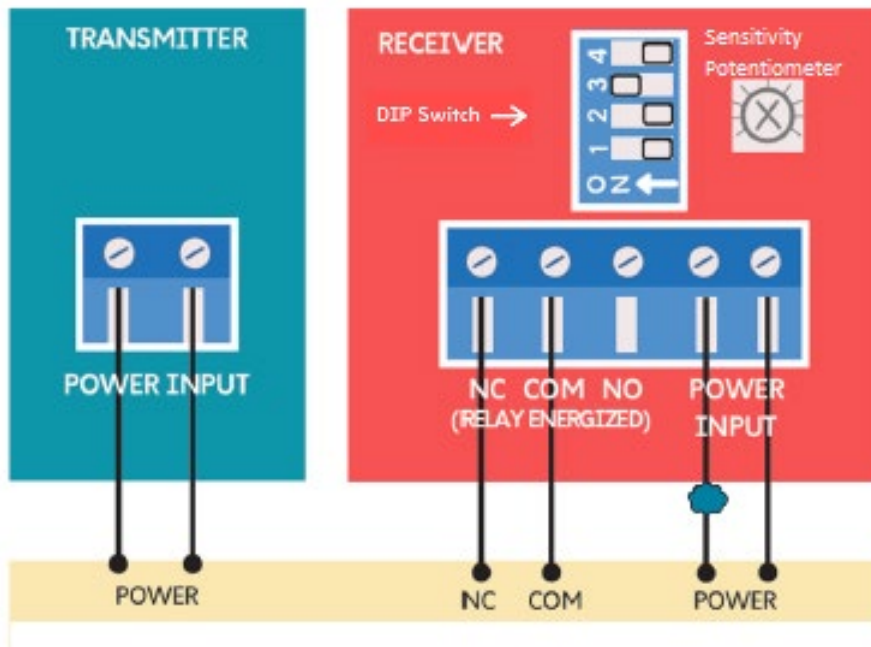
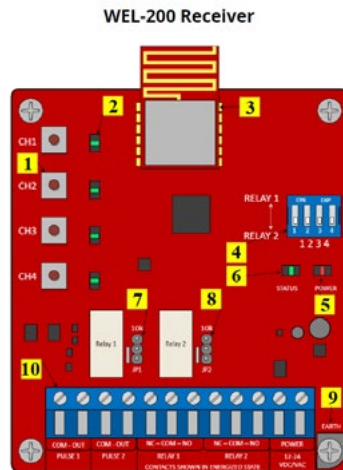


Figure 45. EMX-IRB-MON Photo Eye Wiring

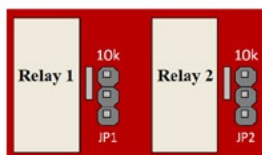
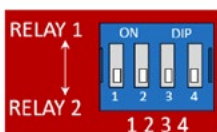
An Edge Sensor can be either hardwired through an adapter module (HY2NC) or a wireless transmitter/receiver combo (WEL-200 or iGAZE RE). Figure 46 below shows the wiring and dip switch settings of a WEL-200.



**Normally Closed Monitoring: Connect Power Wires Last**

- For channels assigned to Relay 1, connect the sensor common to terminal 6, and the operator input (sensor 1, 2 or 3) to terminal 5.
- For channels assigned to Relay 2, connect the sensor common to terminal 9, and the operator input (sensor 1, 2 or 3) to terminal 8.
- For NC, move the jumper on the receiver to the **top** two pins.
- Connect 24 VDC to terminal 11 and sensor COM to terminal 12.

On the DIP switch, indicate which channels will output through Relay 1 and Relay 2 terminals. The DIP switch in the image shows all four channels outputting through Relay 2 terminals.



NC position

**Receiver Connections:**

1. Channel assignment buttons
2. Channel LEDs
3. Radio
4. DIP switch
5. Power LED
6. System Status LED
7. Relay 1 - 10K Jumper
8. Relay 2 - 10K Jumper
9. Earth ground
10. Terminal block

Figure 46. WEL-200 or iGAZE RE

## SmartDC Controller Troubleshooting

This section is available to help you troubleshoot any problems that may occur with the Kinetic operator. It provides information about the SmartDC Controller display codes.

The SmartDC Controller system includes many self-diagnostics. Specific messages appear on the LCD and the Audio Alert buzzer sounds distinctive chirps. Any alerts, faults or errors are also logged into memory and date/time stamped. For diagnostic purposes these messages can be retrieved with optional S.T.A.R.T. software available from Wallace Perimeter Security. Refer to ***“Smart Touch Analyze and Retrieve Tool (S.T.A.R.T.)” on page 171.***

The following Table 12 provides solutions to the error codes, faults, and alerts that may appear on the SmartDC Controller display.

## TROUBLESHOOTING

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
1	<b>SAFE MODE</b>	Safe Mode Alert	Occurs when either the edge sensor or Inherent Entrapment Sensor (IES) has been tripped. In Safe Mode, the automatic close timer is disabled, but any command will reset and/or start the gate in motion. Safe Mode clears when full travel is reached or the RESET button is pressed. Gate binding, wind, a faulty edge sensor, or worn motor brushes can cause a false alert.	<ol style="list-style-type: none"> <li>1. Remove the obstruction.</li> <li>2. Adjust the IES sensitivity.</li> <li>3. Correct the gate hardware.</li> <li>4. Correct faulty edge sensor.</li> <li>5. Check for worn motor brushes and replace, if necessary.</li> </ol>
2	<b>ENTRAPMENT MODE</b>	Entrapment Mode Alert	<p>Occurs when the IES is tripped when the gate is already in Safe Mode. The operator will not function until it is reset, which can occur by:</p> <ul style="list-style-type: none"> <li>- Pressing the RESET button below the display which causes the operator to return to Run Mode.</li> </ul> <p>Gate binding or wind can cause a false alert. Also occurs when FIRE DEPT OPEN input is enabled and activated.</p>	<ol style="list-style-type: none"> <li>1. Remove the obstruction.</li> <li>2. Adjust the IES sensitivity.</li> <li>3. Correct the gate hardware.</li> </ol>



**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
3	<b>NO AC POWER</b>	No AC Input Power Advisory only.	AC power is shut off at the source (breaker) or is not connected. The AC power switch on the operator (lower rocker switch) is turned off, or the circuit breaker on the operator has tripped.	<ol style="list-style-type: none"> <li>1. Turn AC power switch on or connect power to the operator.</li> <li>2. Reset the operator circuit breaker or connect power to AC switch.</li> <li>3. Reset circuit breaker at electrical panel.</li> <li>4. Have a licensed electrician check the wiring.</li> </ol>
4	<b>LOW 24VDC</b>	Low 24VDC UPS Batteries Advisory only.	Occurs when the battery voltage has dropped to less than 22V. At this level, the batteries are 80% depleted. Normal function until 21V.	<ol style="list-style-type: none"> <li>1. No AC Power. See item 3 above.</li> <li>2. Wiring / Connector problem – check all connections. Clean or repair as required.</li> <li>3. Check battery condition.</li> <li>4. SmartDC Controller charger failure – check charger voltage and replace SmartDC Controller.</li> <li>5. Transformer failure – replace Transformer.</li> </ol>
5	<b>DEAD BATTERY</b>	Extremely low UPS batteries – no automatic operation – batteries below 21V.	Occurs when the battery voltage has dropped to less than 21V. At this level, the batteries are 90% depleted. The gate will automatically open or close depending upon the setting chosen. Refer to AP (#) AC LOSS - UPS FAIL OPEN in <b>“USER MENU FUNCTIONS” on page 94</b> . No additional automatic function is possible, but limited push-button control is available to 18V.	<ol style="list-style-type: none"> <li>1. No AC Power. See item 3 above.</li> <li>2. Wiring / Connector problem – check all connections. Clean or repair as required.</li> <li>3. Check battery condition.</li> <li>4. SmartDC Controller charger failure – check charger voltage and replace SmartDC Controller.</li> <li>5. Transformer failure – replace Transformer.</li> </ol>

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
6	<b>HYSECURITY BAD POWER</b>	Critically low 24V supply power. This message can occur only on initial start up if power is critically low.	DC power is below 14V – no control functions will be allowed at all.	<ol style="list-style-type: none"> <li>1. No AC Power. See item 3 above.</li> <li>2. Wiring / Connector problem – check all connections. Clean or repair as required.</li> <li>3. Check battery condition. Check power board power switch for 115V or 230V and match to incoming power.</li> </ol>
7	<b>No display. LED blinking.</b>	SmartDC Controller is receiving power, but battery voltage is very low.	<p>Several possible causes:</p> <ul style="list-style-type: none"> <li>- The AC power has been shut off from the operator for too long and the batteries are drained.</li> <li>- Wiring problem.</li> <li>- Batteries no longer hold a charge.</li> <li>- Bad SmartDC Controller.</li> <li>- Bad transformer.</li> </ul>	<ol style="list-style-type: none"> <li>1. No AC power. See item 3 above.</li> <li>2. Wiring / Connector problem – check all connections. Clean or repair as needed.</li> <li>3. Check battery condition.</li> <li>4. SmartDC Controller charger failure – check charger voltage and replace SmartDC Controller.</li> <li>5. Transformer failure – replace transformer.</li> </ol>
8	<b>HYSECURITY LOADER</b>	The SmartDC Controller cannot locate the system software or software is being loaded into the SmartDC Controller.	There is no software loaded on the SmartDC Controller or software is currently being loaded.	Load the latest software version (H5.XX) using S.T.A.R.T. with a download cable (preferably USB) or wait for software to finish loading.
9	<b>ALERT 1 FORCE OPEN</b>	Gate forced open.	The gate has been forced open from a full closed limit and is being prevented from re-closing. Must be enabled in User Menu.	Will self-clear after an open or close input.

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
10	<b>ALERT 2 DRIFT CLOSED</b>	Gate drifted closed.	The gate has been forced off its open limit and is being prevented from re-opening. Must be enabled in User Menu.	Will self-clear after an open or close input.
11	<b>ALERT 3 EXCESS DRIFT</b>	Gate drift in transit - Advisory only.	The alert appears if the gate drifts three times in a five-minute period.	Check the track to make sure it is level.
12	<b>ALERT 4 MOTOR OVERLOAD</b>	Thermal overload alert. When the alert is triggered, the gate can only “fully open” until the alert is cleared.	Motor drive heat sink exceeds 210°F (98.89°C). The alert will temporarily disable the operator, but will automatically reset itself when it cools down.	Check gate hardware, weight/length of gate. Alert automatically clears when the temperature drops below threshold.
13	<b>ALERT 5 BOTH LIM ACTIVE</b>	Not used in Kinetic operators.	N/A	N/A
14	<b>ALERT 6 LIM NOT RELEASED</b>	Not used in Kinetic operators.	N/A	N/A
15	<b>ALERT 7 FREQ SHIFT FAULT</b>	The HY5B has detected a frequency change outside the normal range.	Likely causes are poor integrity of loops or metallic objects within range. This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD) - (User Relay 22).	The loop lead in wires and roadway should be checked for problems or replaced.
16	<b>ALERT 8 LOOP SHORTED</b>	The HY5B has detected a loop shorted to ground.	Caused by inadequate insulation of loop wires.	The loop lead in wires and roadway should be checked for problems or replaced.

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
17	<b>ALERT 9 LOOP OPEN</b>	The HY5B has detected a lack of continuity in the loop wire.	Caused by broken loop wire or wire has come unplugged from detector.	The loop and lead in wires should be checked for problems or replaced.
18	<b>ALERT 10 12C BUS ERROR</b>	The SmartDC Controller has detected a communication error with a HY5B vehicle detector.	Caused by removal of HY5B or lack of integrity of the socket connection. This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD) - (User Relay 22).	Remove and re-install the HY5B and press RESET. Replace the HY5B, if necessary.
19	<b>ALERT 11 DETECTOR FAULT</b>	The SmartDC Controller has detected a problem within a HY5B vehicle detector.	Caused by a fault within the HY5B. This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD) - (User Relay 22).	Remove and re-install the HY5B and press RESET. Replace the HY5B, if necessary.
20	<b>ALERT 12 ON TOO LONG</b>	The SmartDC Controller has an active loop input (HY5B or box detector output) for more than 5 minutes.	Caused when the SmartDC Controller sees an active loop for more than 5 minutes. The "active" loop can be actual or false. This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD) - (User Relay 22).	Check traffic patterns at the site. The loop and lead-in wires should be checked for problems or replaced.

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
21	<b>ALERT 13 STIFF GATE</b>	The SmartDC Controller has detected a gate that, over time, has taken more power to move than it used to.	Caused by degrading gate hardware or debris in track. This alert appears in the history log. It does not have any effect with regard to opening or closing the gate	Check and correct gate hardware as required.
22	<b>ALERT 14 STUCK GATE</b>	The SmartDC Controller has detected that it cannot move the gate at all.	Caused by broken gate hardware or ice/snow buildup. No gate motion was detected when commanded to move.	Check and correct gate hardware as required.
23	<b>ALERT 15 NO TARGET</b>	The target magnet on the chain is missing or has not been detected.	Target magnet fell off or target sensor wires are damaged. Target position has not been learned after setting limits.	<ol style="list-style-type: none"> <li>1. Make sure target is properly fastened to the chain.</li> <li>2. Check the target sensor to make sure it is reading the magnet. Change the sensor if it or its wires are damaged.</li> </ol>
24	<b>ALERT 16 COM BUS ERROR</b>	The SmartDC Controller has detected an internal communications error.	Several possible causes: <ul style="list-style-type: none"> <li>- Excessive electrical noise.</li> <li>- Lack of earth grounding.</li> <li>- Internal problem on SmartDC Controller.</li> </ul>	<ol style="list-style-type: none"> <li>1. Determine and remedy the source of electrical noise.</li> <li>2. Install a ground rod. Refer to <b><i>"Installing the Earth Ground"</i> on page 68.</b></li> <li>3. Replace the SmartDC Controller.</li> </ol>
25	<b>ALERT 17 BAD COIN BATTERY</b>	The small battery on the SmartDC Controller is loose or needs replacing.	The coin battery is loose or dead.	<ol style="list-style-type: none"> <li>1. Verify that the battery is properly seated.</li> <li>2. Replace coin battery.</li> <li>3. Restore power.</li> <li>4. Press RESET button.</li> </ol>
26	<b>ALERT 18 CHANGE BATTERY</b>	The SmartDC Controller has detected that the 24VDC UPS batteries need to be replaced.	Batteries are not taking a charge properly.	The buzzer will chirp every minute until the UPS batteries are replaced.

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
27	<b>ALERT 19 FALSE SLOWDOWN</b>	Not used in Kinetic operators.	N/A	N/A
28	<b>ALERT 20 LI BLOCK OPEN</b>	Not used in Kinetic operators.	N/A	N/A
29	<b>FAULT 1 MOTOR RUN TIME</b>	Should not occur in Kinetic operators.	Maximum run timer fault.	Call Technical Support.
30	<b>ALERT 21 DRIVE TRIP</b>	Not used in Kinetic operators.	N/A	N/A
31	<b>ALERT 22 INTLOCK FAILURE</b>	Interlock/Sequential Gate communication lost.	Appears when the RS-485 communication connection is lost for more than 5s between interlocked (dual gate) or sequenced gate operators.	<ol style="list-style-type: none"> <li>1. Check cable connections and wiring. Make sure both operators are working properly and have the same current and up-to-date software versions. The alert auto clears when communication between the two operators is restored.</li> <li>2. If the operator on site is a solo gate operator and the display code ALERT 22 appears, access the Installer Menu. Verify the Installer Menu items: DG (Dual Gate) and SG (Sequential Gate) are both set to zero.</li> </ol>
32	<b>ALERT 24 EXTERNAL RELAY FAULT</b>	Communication lost with Hy8Relay module.	Appears when R3-R10 is programmed to a non-zero number in the installer menu, but there is no Hy8Relay module communicating with the board.	If no module is used, reset R3-R10 to 0. If a module is used, ensure that all wiring is correct and the correct module is being used. The STC and SDC communicate at different rates with the module.

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
33	<b>ALERT 25 HYPNET LOW BATTERY</b>	Coin Cell Battery in HyNet is Low.	Appears when a HyNet is connected and reports that the internal battery of the HyNet is low.	Replace the battery in the HyNet.
34	<b>ALERT 28 BATTERY DISCONNECTED</b>	Battery disconnected from board.	Dead or disconnected batteries detected by SDC board. Operator may still be functional if on AC power but will not have battery backup. <b>Was Error 9 in pre-h5.57 software versions.</b>	Replace or reconnect batteries to the controller.
35	<b>FAULT 2 PHOTO EYE</b>	The photo eye is missing or not working.	This fault can only occur if the special supervised photo eye function is enabled in the Installer Menu. See <i>“Installing Photoelectric Sensors for External Entrapment Protection Only”</i> on page 145 for details.	Correct malfunctioning photo eye.
36	<b>FAULT 3 VOLTAGE SAG</b>	Not used in Kinetic operators.	N/A	N/A
37	<b>FAULT 4 GATE NO LOAD</b>	The SmartDC Controller has detected there is no load on the operator. The gate is non-operational while this fault is triggered.	Possible causes: - Motor wires disconnected. - DC switch off.	1. Check DC motor wires; check motor brushes. 2. Turn DC power switch on. 3. Press RESET to clear fault.
38	<b>FAULT 5 LIMIT FAILED</b>	Not used in Kinetic operators.	N/A	N/A

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
39	<b>FAULT 14 STUCK GATE</b>	The SmartDC Controller has tried 3 times to overcome a stuck gate. The gate is non-operational while this fault is triggered.	Caused by broken gate hardware or ice/snow buildup.	<ol style="list-style-type: none"> <li>1. Check and correct gate hardware as required.</li> <li>2. Press RESET to clear fault.</li> </ol>
40	<b>ERROR 1 DIRECTION ERROR</b>	The SmartDC Controller has detected that operator ran in the wrong direction.	Motor wiring.	<ol style="list-style-type: none"> <li>1. Check motor wiring and correct, as needed.</li> <li>2. Press RESET to clear fault.</li> </ol>
41	<b>ERROR 3 HY5B FAILED</b>	The SmartDC Controller has detected a communication error with a HY5B vehicle detector.	Caused by removal of HY5B or lack of integrity of the socket connection. This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD)- (User Relay 22).	<ol style="list-style-type: none"> <li>1. Press RESET.</li> <li>2. Remove and re-install the HY5B.</li> <li>3. Replace the HY5B if needed.</li> </ol>



**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
42	<b>ERROR 4 PRIMARY- SECONDARY COM</b>	The SmartDC Controller has detected a communications error in the communication link between primary and secondary in a dual gate installation.	<p>Several possible causes:</p> <ul style="list-style-type: none"> <li>- Primary/Secondary communication cable has not been installed correctly. See <b>“Primary and Secondary Wiring Connections” on page 135.</b></li> <li>- Primary/Secondary not configured properly through the Installer Menu.</li> <li>- Operator not properly earth grounded.</li> <li>- Primary/Secondary communication cable installed in same conduit as high-voltage AC power.</li> <li>- One operator does not have power applied to it.</li> <li>- One operator may have a different software version.</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct communication cable.</li> <li>2. Verify that each operator is configured properly through the Installer Menu. One operator must be set as Primary and the other operator must be set as Secondary using the Installer Menu.</li> <li>3. Install ground rod per NEC/NFPA standard.</li> <li>4. Install separate conduit for communication cables.</li> <li>5. Ensure AC power is present at both operators and both power switches are in the ON position.</li> <li>6. Check the software version currently loaded in the operator by pressing RESET. Make sure both operators are running the same software version.</li> </ol>
43	<b>ERROR 5 No display.</b>	The display provides no indication of this error, but it can appear in the S.T.A.R.T. log and means that the SmartDC Controller has detected a serious internal error.	Internal software/hardware error. Report any instance of this error to Wallace Perimeter Security Technical Support.	<ol style="list-style-type: none"> <li>1. Turn both switches off to reset software.</li> <li>2. Update to latest software version using S.T.A.R.T.</li> <li>3. Replace SmartDC Controller.</li> </ol>
44	<b>ERROR 6 STC-VFD COMM ERR</b>	Not used in Kinetic operators.	N/A	N/A
45	<b>ERROR 7 MENU CHECKSUM</b>	Software issue exists that may require factory reset.	Corrupt software or data.	Call Wallace Perimeter Security Technical Support for assistance.

**Table 12. SmartDC Controller - Troubleshooting**

Ref. No.	Display	Description	Possible Causes	Solutions
	Condition	Alert, Error or Fault		
46	<b>ERROR 8 RPM SENSOR</b>	RPM sensor disconnected.	Motor Encoder or wires are damaged or unplugged.	Check wiring from the motor to the SmartDC Controller board.
47	<b>ERROR 9 BATTERY DISCONNECT</b>	The SmartDC Controller detected there is no battery connected.	The batteries are disconnected, or a wiring fault exists. Kinetic operators ship with a wire disconnected to prevent battery drain. <b>Replaced by Alert 28 in h5.57 software version for AC powered operators.</b>	<ol style="list-style-type: none"> <li>1. Ensure the red wire in the upper left corner of the control box is connected to the switch.</li> <li>2. Correct any losses with battery wiring.</li> <li>3. Check the 35-amp fuse on the circuit board.</li> </ol>
48	<b>ERROR 10 SLOWDOWN SWITCH</b>	Not used in Kinetic operators.	N/A	N/A

## Vehicle Detector and Loop Fault Diagnostics

If HY5B vehicle detector modules are used, the SmartDC Controller has the ability to store and report detector and loop fault information for performance diagnostics.

If the SmartDC Controller senses a loop or detector problem:

- The LCD display flashes the name of the affected detector or error and the appropriate alert code.
- The buzzer chirps continuously at regular intervals until the issue is resolved.

Alert or Error #	LCD Description	Advisory	Resolution
ALERT 7	FREQ SHIFT FAULT	HY5B vehicle detector – Abnormal frequency change alert.	The alert indicates an unstable loop frequency. Check the loop and lead-in wires for problems. Replace them, if necessary.
ALERT 8	LOOP SHORTED	HY5B vehicle detector – Loop is shorted.	The alert indicates that the loop and lead-in wires are shorting out. Check the wires for problems. Replace them, if necessary.
ALERT 9	LOOP OPEN	HY5B vehicle detector - Disconnected loop alert.	The alert indicates the loop wires are loose or disconnected. Check the wires for problems. Replace them, if necessary.
ALERT 10	I <sup>2</sup> C BUSS ERROR	HY5B vehicle detector - Communications alert.	The alert indicates the detector is not communicating properly with the SmartDC Controller. The alert occurs if the detector is unplugged or the connection is unstable. If communication is not re-established within 30 seconds, the controller will reset and the message changes to ERROR 3.
ALERT 11	DETECTOR FAULT	HY5B vehicle detector - Malfunction alert.	The display indicates the HY5B detector malfunction. Check detector for problems. Replace it, if necessary.
ALERT 12	ON TOO LONG	Detector input triggered too long – More than five minutes.	The display indicates the HY5B detector malfunction. The alert also works for any input connected to the terminal strip for standard box detectors. Check that a vehicle is not parked on the loop. Also, determine if the loop is stable. An unstable loop can hold the detector in a triggered state.

**Table 13. HY5B Vehicle Loop Detector Faults and Errors**

Alert or Error #	LCD Description	Advisory	Resolution
ERROR 3	DETECTOR FAILED	HY5B vehicle detector - Communication failed. The SmartDC Controller will behave as if the detector is triggered, usually holding the gate fully open.	The alert indicates the detector is not communicating properly with the SmartDC Controller. The alert occurs if the detector is unplugged or the detector has failed. To replace the detector, press the RESET button to clear the error and re-seat the detector or install a new one.

Even if the loop problem self-heals, historical data about detector/loop performance and a log of Alerts, Faults and Errors can be retrieved from the SmartDC Controller by downloading from the RS232 communications port or the USB port. HySecurity's free S.T.A.R.T. software, a laptop computer, and a special download cable or USB cable are required to retrieve and read this data.

**Loop Health:**

The HY5B monitors loop health which is comprised of loop noise, loop step changes and loop reference changes. Loop health readings accumulate throughout a 24-hour period and the accrued readings are posted to the Event Log each day at midnight. After midnight, the loop health baseline resets to its highest value of 777.

**Example of an HY5B Event Log posting:**

Event log:  
 02/09 EVENT – CLD Loop Health: noise 5, step 6, ref 7.

**Loop Presence:**

Loop presence is dependent on “disturbance effect” of the entire vehicle. Presence determines how long to hold the “memory” of a stationary vehicle on a loop before it is forgotten and ignored. Set the presence of the loop:

LONG (default) lasts about 20 hours dependent on call strength and sensitivity setting. The HY5B tunes out the “disturbance effect” when a vehicle is stationary on a portion of the loop, but keeps the undisturbed (unaffected) portion of the loop operational.

INFINITE never drops the call. The INFINITE setting requires a certain amount of signal strength. A “threshold” is maintained and it will hold the call forever. The loop connected to an HY5B with this setting may become nonfunctioning.

**Table 14. Setting Loop Presence**

Sub-menu Item	Display	Example Site Scenario
PR 0	(LONG)	With sensitivity set to A (AUTO) and a large sedan stationary on loop, LONG presence may hold call for many hours before vehicle's presence is tuned out. Then, stationary vehicle is ignored and unaffected portion of loop becomes operational. In contrast, with sensitivity set to M (MOTORCYCLE), default threshold only lasts about 1 hour before presence of motorcycle on loop is tuned out.
PR 1	(INFINITE)	On a site where standing or parked vehicular traffic (on large area loops) is on a daily or consistent basis, INFINITE presence setting is a viable option. When loop may have vehicles parked on it for more than several hours and it must hold the call, set presence to INFINITE.

**NOTE**

HY5B has ability to continue counting vehicles passing over loop even though a stationary vehicle may be on a portion of loop. Controller and HY5B detector also exchange pertinent information, so if a power failure were to occur, controller can determine if a vehicle is on loop when power returns.

**Frequency:**

Knowing the exact frequency of a loop can be useful as a diagnostic tool, and verifying the stability of the loop frequency is valuable information. To view the actual loop frequency of a specific vehicle detector, go to the setting for that detector in the Installer Menu, switch the selection from 0 to 1, and press the Select button. The display will show the loop frequency. The frequency is usually between 20,000 to 80,000 Hertz.

**Changing the Loop Frequency:**

HY5B detectors can never crosstalk. If for any reason, you want to manually change the loop frequency, change the Installer Menu option for the desired loop from 0 to 3, and then press the Select button. Each detector has a choice of four frequencies. Press the Select button when the desired frequency setting is found, and the controller will perform a reset and tune to the new frequency setting.

**Call Strength Level:**

Knowing the call strength of a detector is valuable because it provides information about how well the loop is actually “seeing” a specific vehicle. For example, it may be useful to check to see if the loop is easily detecting the middle of a high bed semi-truck. The strength of a detector call can be displayed in real time, on a scale of 0 to 7. As indicated in the table below, when the Installer Menu setting for a given detector is

set to 2, and the Menu button is pressed, the LCD display will read Level 0 - 7 Call Level. If the call strength on the display appears as a level 4 or less, consider increasing the sensitivity level by adjusting the rotary switch on the HY5B detector.

<b>Table 15. HY5B Vehicle Detector Call Level Display</b>		
<b>Installer Menu</b>	<b>LCD Description</b>	<b>Setting Options (Bold = Factory Settings)</b>
ELD 0	EXIT LOOP SET	<b>0 = Run Mode</b> 1 = Show frequency 2 = Show call level 0-7 3 = Set Frequency 4 = Show Sensitivity 5 = Set Sensitivity 6 = Show Inductance 7 = Show Loop Health 8 = Set Presence
ILD 0	IN OBS LOOP SET	
OLD 0	OUT OBS LOOP SET	
CLD 0	CENTER LOOP SET (Can be used as an arming loop with User Relay 22.)	

## Kinetic Schematics

On the following page, Figure 47 illustrates the schematic for the Kinetic DC 15W [Kinetic 1] and Kinetic DC 10FW [Kinetic 2]. Figure 48 shows the solar version.

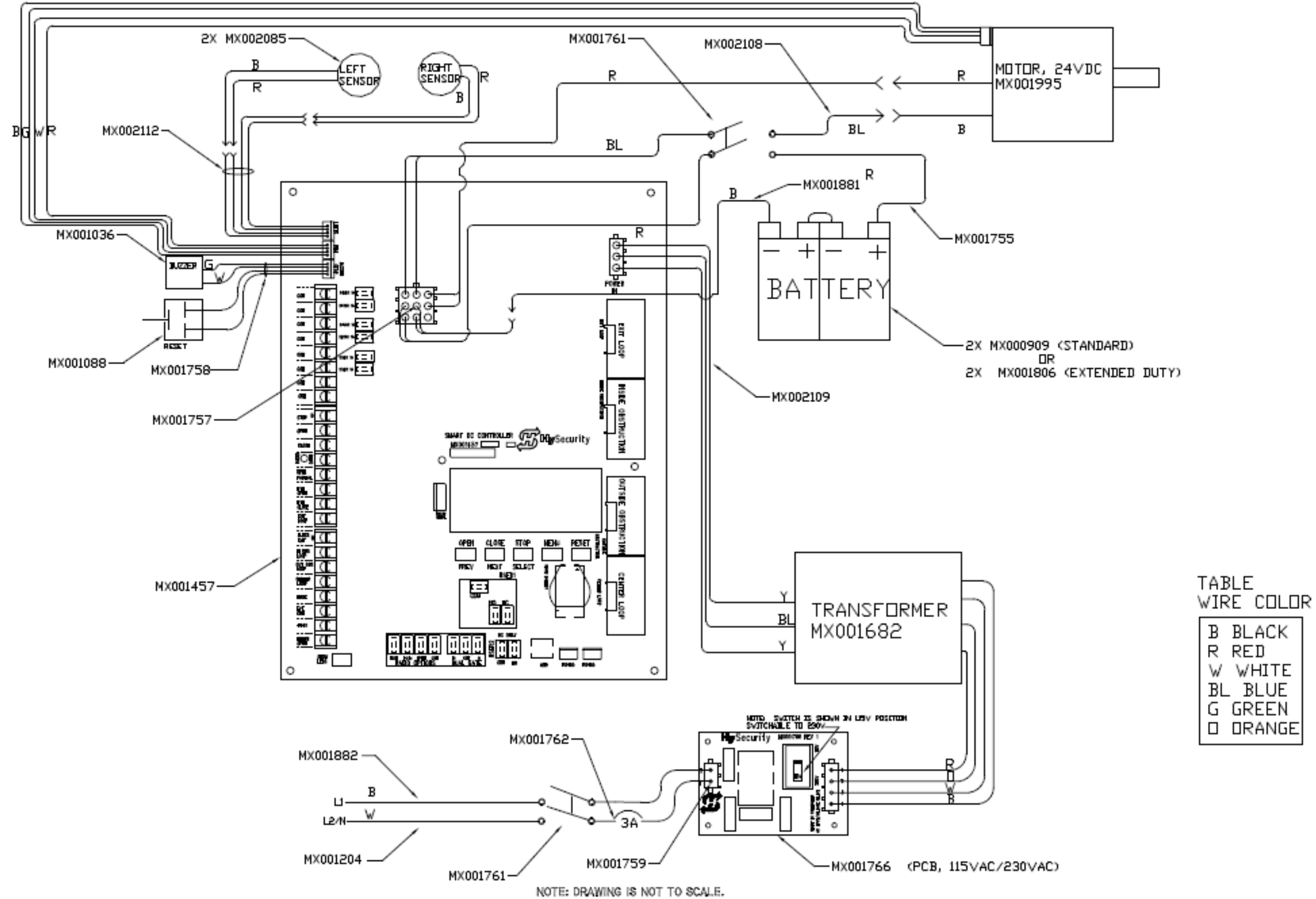


Figure 47. Schematic for Kinetic DC 15 [Kinetic 1] and Kinetic DC 10F [Kinetic 2] Operator(s)





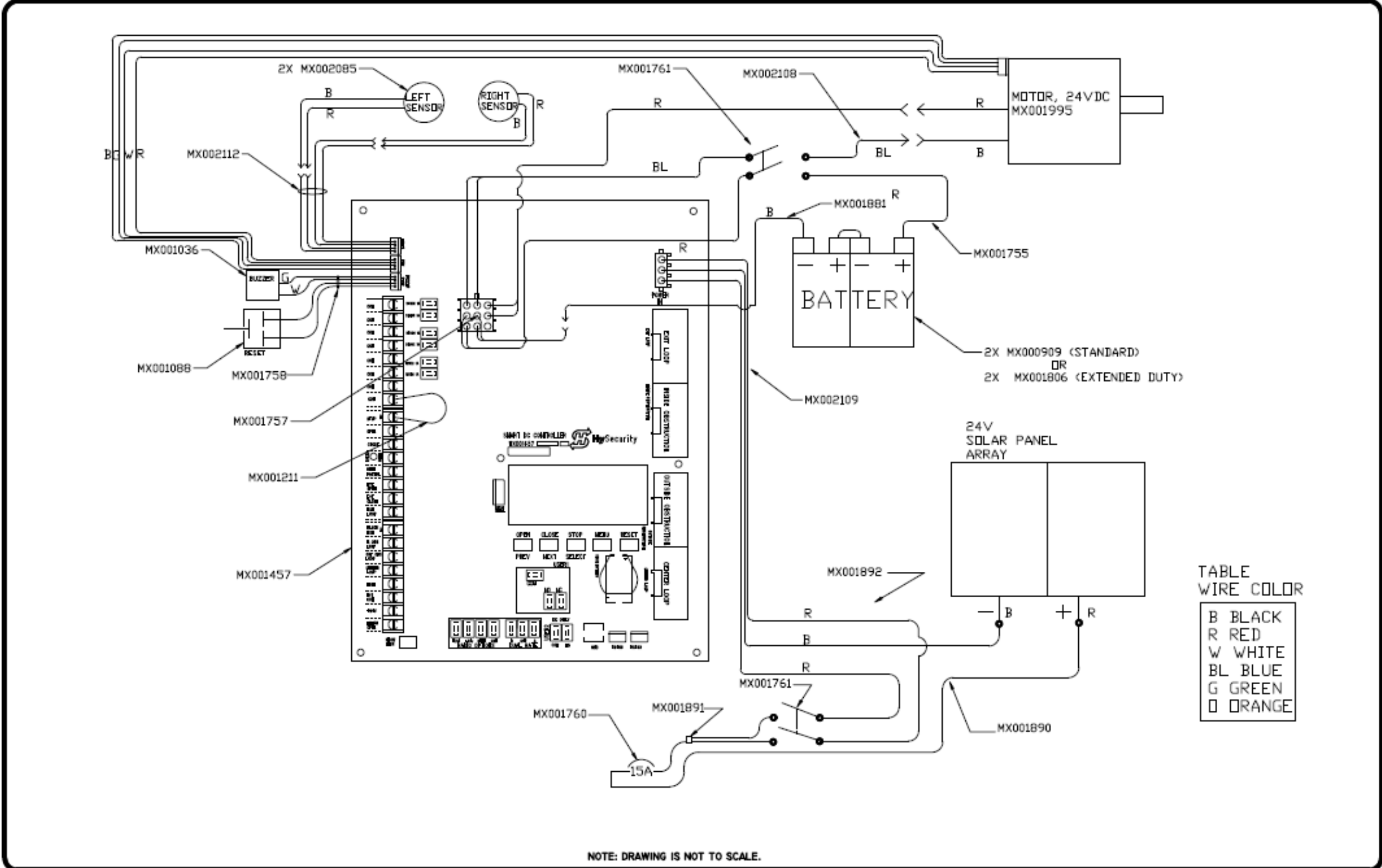


TABLE  
WIRE COLOR

B	BLACK
R	RED
W	WHITE
BL	BLUE
G	GREEN
O	ORANGE

Figure 48. Schematic for Kinetic DCS 15 [Kinetic 1S] and Kinetic DCS 10F [Kinetic 2S] Solar Operator(s)



# General Maintenance

## Smart Touch Analyze and Retrieve Tool (S.T.A.R.T.)

HySecurity provides Smart Touch Analyze and Retrieve Tool (S.T.A.R.T.) software to help Wallace Perimeter Security gate operator users and installers conduct the following field service activities:

- **Configure installer and user menu settings**
- **View the operator history (event) log**
- **Display monitored inputs for operator diagnostics**
- **Load SmartDC Controller (SDC) operator code**

With S.T.A.R.T. software loaded on your laptop computer, you have an invaluable management tool for all styles of Kinetic operators. Either the USB port or the RS-232 serial port, found on the SmartDC Controller (see Figure 49), allows you to download system diagnostics and upload system configurations using the S.T.A.R.T. software. The free S.T.A.R.T. software is conveniently located on the <https://hysecurity.com/> website. Instructions for downloading S.T.A.R.T. are found on the website, as well.

- **Standard USB 2.0 A-B communications cable. If you are using the Wallace Perimeter Security RS-232 to USB adapter, be sure to install the USB driver in your laptop.**
- **Laptop computer with Windows PC operating system (XP, Vista or Windows 7/8/8.1/10).**
- **Minimum 128MB of RAM.**
- **Minimum 5MB of hard drive disk space.**
- **VGA graphics card (minimum resolution of 800 x 600).**

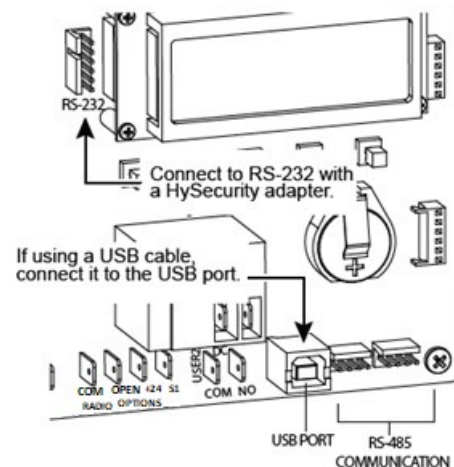
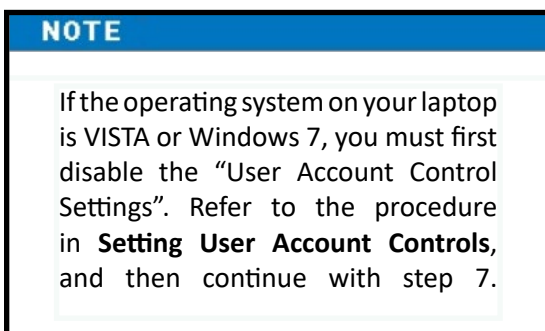


Figure 49. SmartDC Controller RS-232 and USB Connection

### ***Installing the S.T.A.R.T. Software***

1. Bring up your web browser and type in <https://hysecurity.com/> in the command line.
2. Click Support on the Nice | HySecurity home page.
3. Enter your user name and password. If you do not have a user name, register as an online member.
4. Click to Download: S.T.A.R.T. software for Smart Touch and SmartDC.
5. Read the End User License Agreement and, if you agree to the terms, click on 'I accept' (bottom of the page).
6. Click RUN. A setup window appears.



7. Follow the step-by-step instructions to complete the installation.
8. When the download is complete, log out of the Nice | HySecurity website. Shortcuts for the S.T.A.R.T. and SmartDC Controller History Logs appear on your laptop's desktop.

### ***Setting User Account Controls***

Because of the security settings inherent in VISTA and Windows 7, you need to disable the "user account controls" in the operating system before uploading S.T.A.R.T. software onto your laptop. Take the following steps:

#### ***In Windows 7:***

Go to Start Menu -> Control Panel -> User Accounts -> User Account -> Change User Account Control Settings, slide the slide bar to the lowest value (toward Never Notify), with description showing Never notify me -> Press Ok -> Reboot Computer.

#### ***In Vista:***

Go to the Start Menu type "msconfig" and press Enter -> In System Configuration select the tools tab -> Scroll down till you find "Disable UAC" and single click it -> Press the Launch button -> Press the Apply button -> Press OK -> Reboot Computer.

## Electrical Controls

**CAUTION**

Before servicing, turn OFF all power switches.

No routine maintenance is needed for the electrical system or controls. If the environment is very sandy or dusty, or has many insects, be certain to seal all holes in the electrical enclosure. Blow the dust out of the electric panel with compressed air. Use **“Table 12. SmartDC Controller - Troubleshooting” on page 152** to assess and fix error, alert and fault codes. If it is necessary to call a distributor for assistance, be sure to have your model and serial number ready. Other helpful information includes the name of the job, approximate date of installation and the service record of the operator, especially any work that has been done recently.

## Mechanical Maintenance

**CAUTION**

Before checking the internal mechanisms of the operator, turn OFF all power switches.

The Kinetic mechanical maintenance is not in-depth or difficult, but should be performed on a routine basis. The operator chassis is zinc plated, but some environments may speed corrosion of this plating. Schedule regular maintenance and look for the following:

- **Verify the drive belt has the proper tension. Check for drive belt wear. Fraying edges or missing teeth indicate that the drive belt needs to be replaced. Refer to “Drive Belt Tension and Alignment” on page 174.**
- **Check for signs of rust. If any areas of rust are found, reduce the spread of corrosion by treating the areas with a rust inhibitor.**
- **Check the motor. DC motors contain carbon brushes which wear over time and must be replaced. Failure to replace the brushes will result in damage to the DC motor. Brushes should be inspected every year in high usage applications or every 100,000 cycles and replaced as needed.**
- **Replace worn-out batteries. Refer to “DC Battery Replacement” on page 176 and “Clock Battery Replacement” on page 178.**

## Software Maintenance

The software on the SDC board is constantly being enhanced with new adaptive features that create an easier install and improve the on board diagnostic tools. Be sure to check the Nice | HySecurity website for the latest version of software before heading out for field maintenance.

Use S.T.A.R.T. software to download the latest software version to a PC laptop and upload it to the Kinetic gate operator in the field.

**NOTE**

If the site includes a bi-parting gate system, make sure the software version used in the Primary and Secondary operators is identical.

## Drive Belt Tension and Alignment

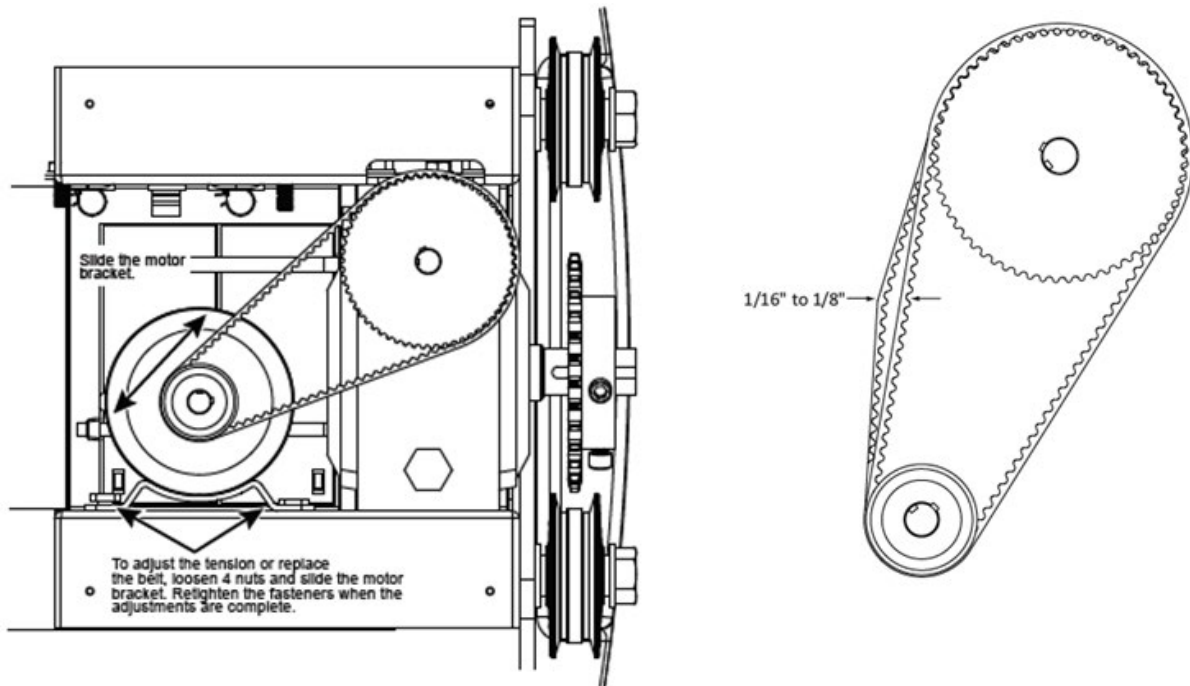


Figure 50. Drive Belt Tension and Alignment

Proper drive belt tension is important for prolonging the life of the drive belt and maintaining the superior performance of the operator. To check the drive belt tension, take the following steps:

1. Remove the Kinetic cover and protection plate.
2. Turn off the DC and AC power switches.
3. Check to make sure the pulley is aligned horizontally.
4. With your finger, apply light outward pressure to the drive belt. If it is properly tensioned, it should only move about 1/16-inch to 1/8-inch (1.6 to 3.2mm). See *“Figure 50. Drive Belt Tension and Alignment”* on page 174.
5. To replace or re-tension the drive belt, loosen the two motor bracket bolts and move the bracket accordingly.
6. Retighten the motor bracket nuts.
7. Replace the protection plate and Kinetic cover.
8. Turn the AC and DC power switches on. This cycles power which allows the operator to search for the target magnet and “relearn” its limits.
9. If you don’t cycle the power, the operator will not “relearn” its limits to operate properly.

**NOTE**

Be aware that the gate will cycle open and close (close or open) as it relearns its limits. See *“Resetting the OPEN and CLOSE Limits”* on page 99.

## DC Battery Replacement

Wallace Perimeter Security provides a one-year warranty from the date of shipment for all the batteries supplied with the Kinetic operator.

Indicators of a low battery include:

- **LOW BATTERY or DEAD BATTERY** appears on the SmartDC Controller display which may or may not be indicative of normal discharge.
- **Alert 18 CHANGE BATTERY** appears on the SmartDC Controller display. The operator emits an audible chirp every minute to indicate a problem exists.
- **AP (#) AC LOSS** appears on the SmartDC Controller display. Gate operation is affected by AC power loss depending on customer preferences and the configuration set by the installer in the AP (#) AC LOSS User Menu.

### NOTE

For detailed information about the AP AC LOSS configuration, refer to *“Setting AC Power Loss Gate Function” on page 92.*

Symptoms of a low battery may include:

- **Gate remains locked in the open position.**
- **Gate remains locked in the closed position.**
- **Gate opens five seconds after AC power loss and locks open.**

### CAUTION

Before replacing the batteries, turn off all power switches. Use only AGM batteries as Replacements 8Ah - MX002008, 50Ah - MX002013). The batteries supplied in the Kinetic operator are state-of-the-art AGM batteries. Do NOT use flooded cell batteries as damage may occur to the unit. Wear protective clothing while working with batteries.



To replace the batteries, take the following steps:

1. Take off the Kinetic cover and turn off the DC and AC power switches.
2. To access the 8Ah batteries and disconnect battery wires, cut the two black wire ties and slide the 8Ah batteries through the access window. See Figure 51. Another option is to remove the four screws that hold the control box to the chassis. Refer to Figure 53.
3. Disconnect the black, blue, and red wires as you slide the batteries through the access window.

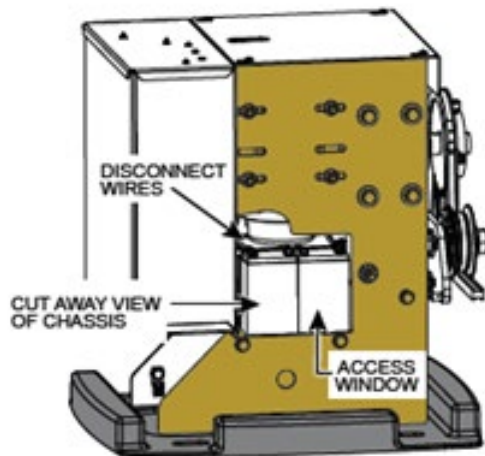


Figure 51. Battery Removal via Access Window

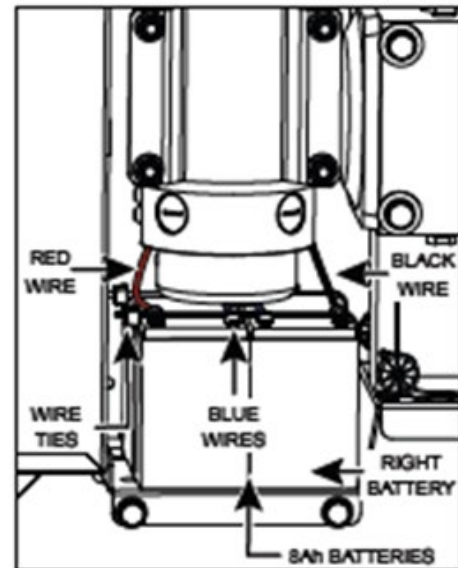


Figure 52. New DC Battery Replacement

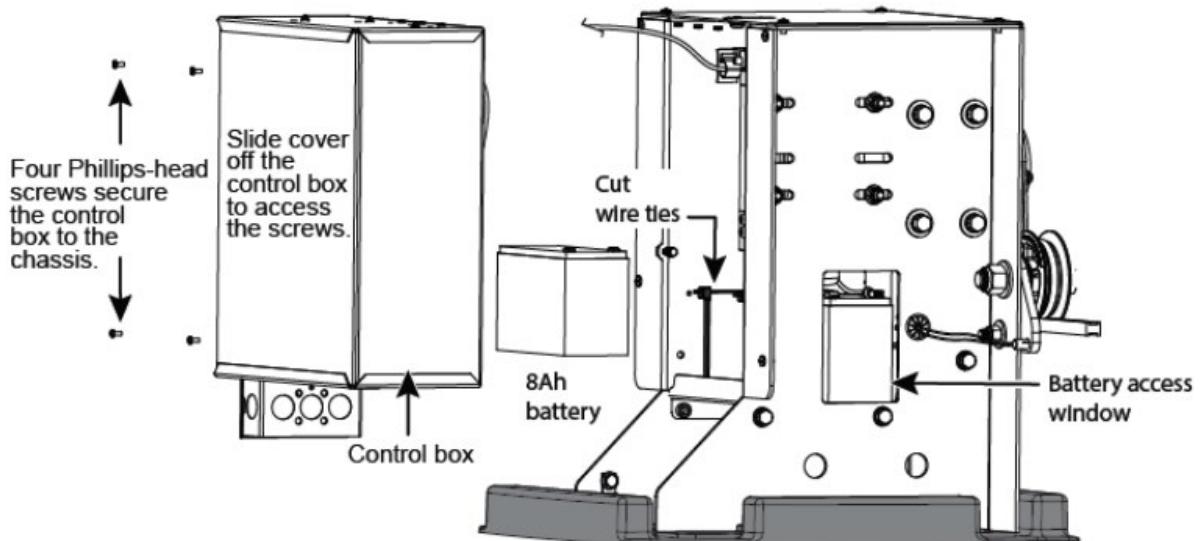


Figure 53. DC Battery Replacement Cover Removal

To install the two new batteries, reverse the removal procedure:

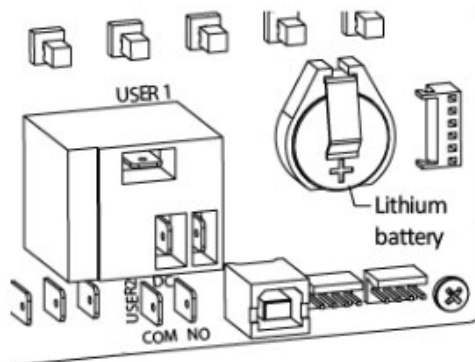
1. **Connect the red wire to red terminal on the left battery and slide the battery onto the tray.**
2. **Attach the blue wire to the black terminal.**
3. **Insert the second 8Ah battery and connect the blue wire to the red terminal.**
4. **As you slide the battery onto the tray, connect the black wire to the black terminal on the right battery. See “Figure 52. New DC Battery Replacement” on page 177.**

**NOTE**

If you have difficulty removing the batteries through the access hole, an optional method for battery replacement is to remove the control box. Four Phillips-head screws secure the control box to the chassis. Remove the screws and remove the control box to access the batteries. Be careful that you do not inadvertently disconnect the control box wire bundles. An assistant for this alternative method of battery removal/replacement is highly recommended. See Figure 53.

## Clock Battery Replacement

A lithium coin battery supports the clock so the date and time is retained even when the main power is turned off. (See Figure 54.) Replace the battery about every five years (or as needed) with a DL 2025, DL 2032, or CR 2025, or CR 2032 battery.



**Figure 54. Clock Battery Replacement**



## SLIDE GATE (KINETIC) 2 YEAR LIMITED PRODUCT WARRANTY

For a period of 2 Years from date of delivery, Wallace Perimeter Security (“WPS”) warrants the product delivered to Buyer as follows: (1) the hardware shall be free from defects in material and workmanship and will conform to the applicable WPS specification and the terms of this proposal, and (2) the software and firmware will conform to the applicable WPS specifications and the terms of use.

This warranty shall be construed and interpreted in accordance with the provincial law of Manitoba and the common law of the government of Canada.

If a defect occurs during the warranty period, Buyer shall return the product to a WPS facility for repair or replacement. WPS shall determine in its sole discretion whether to repair or replace any defective product covered by this warranty. Buyer shall prepay the cost of shipping the product to WPS or to the designated facility and bear the risk of loss while the product is in transit. WPS shall pay the shipping charges to return the product to the Buyer and bear the risk of loss during transit, unless WPS determines that the defect is not covered by this warranty, in which event WPS shall immediately notify the Buyer and request instruction regarding disposition. Buyer’s sole and exclusive remedy for defects in products covered by this warranty is limited to the correction of the defect by repair or replacement.

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications of the product or improper site preparation or maintenance. This warranty shall also not apply to products that have been subjected to testing for other than specified electrical characteristics or have been subjected to mishandling, misuse, neglect, improper testing, repair, alteration, damage, assembly or processing that alters physical or electrical properties.

**IN NO EVENT SHALL WPS BE LIABLE BY VIRTUE OF ANY WPS WARRANTY OR OTHERWISE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE RESULTING FROM THE USE OR LOSS OF USE OF THE PRODUCT OR OTHERWISE. THIS WARRANTY SHALL BE APPLICABLE ONLY IF THE PRODUCT SHALL STILL BE THE PROPERTY OF THE ORIGINAL BUYER OR USER (OR IF THE ULTIMATE BUYER OR USER IS A NATIONAL GOVERNMENT ORGANIZATION). NO OTHER WARRANTY, EITHER EXPRESSED OR IMPLIED AND INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE HAS BEEN OR WILL BE MADE BY OR ON BEHALF OF WPS OR BY OPERATION OF LAW WITH RESPECT TO THE PRODUCT OR ITS INSTALLATION, USE, OPERATION, REPLACEMENT OR REPAIR. THIS WARRANTY WILL BE CONSIDERED NULL AND VOID IF THE MAINTENANCE PROCEDURES AS OUTLINED IN THE OWNER’S MANUAL HAVE NOT BEEN ADHERED TO AND DOCUMENTED.**

\*Warranty valid based upon proof of documented preventive maintenance.\*



## Kinetic DC Specifications

Model	Kinetic DC 15W [Kinetic 1]	Kinetic DC 10FW [Kinetic 2]	Kinetic Solar: DCS 15W [Kinetic 1S] DCS 10FW [Kinetic 2S]
<b>Max. Gate Length</b>	30 ft (9.14 m)	30 ft (9.14 m)	30 ft (9.14 m)
<b>Max. Gate Weight</b>	1,500 lbs (680kg)	1000lbs (454kg)	DCS 15W = 1,500lbs (680kg) DCS 10FW = 1,000lbs (454kg)
<b>Gate Speed</b>	1ft/s	2ft/s	1ft/s and 2ft/s, respectively
<b>UPS Operation on Batteries only</b>	Up to 4,000 ft of gate travel (1,219 m)	Up to 4,000 ft of gate travel (1,219 m)	Up to 1,500 ft (457m) of gate travel per day (8Ah batteries fully charged)
<b>Duty Cycle</b>	Continuous	Continuous	Continuous
<b>Power: Single phase (switch selectable)</b>	115 volts, 3 amps, 50/60 Hertz 230 volts, 1.5 amps, 50/60 Hertz	115 volts, 3 amps, 50/60 Hertz 230 volts, 1.5 amps, 50/60 Hertz	Solar-powered (24VDC, two 20 WATT panels) 70 cycles/day in a full sun for 3 hours
<b>Horsepower</b>	½ hp	½ hp	½ hp
<b>Accessory Power</b>	1 amp each at 12VDC and 24VDC	1 amp each at 12VDC and 24VDC	1 amp each at 12VDC and 24VDC
<b>Communication</b>	USB, RS232, RS485	USB, RS232, RS485	USB, RS232, RS485
<b>Temperature Rating</b>	-13°F to 158°F (-25°C to 70°C)	-13°F to 158°F (-25°C to 70°C)	-13°F to 158°F (-25°C to 70°C)
<b>Certification</b>	500,000 cycles	500,000 cycles	500,000 cycles
<b>DC Batteries</b>	Two 8Ah (50Ah optional)	Two 8Ah (50Ah optional)	Two 8Ah (50Ah optional)
<b>Est. Shipping Weight</b>	160 lbs (73 kg)	160 lbs (73 kg)	150 lbs (68 kg)
<b>UL Listing</b>	Class I, II, III, IV	Class III, IV	DCS 15W = Class I, II, III, IV DCS 10FW = Class III, IV
<b>Warranty</b>	5 years commercial use (7 years for single-family residence)	5 years commercial use	5 years commercial use (7 years for single-family residence)

To enable fully automatic operation, all SLIDE gate operators require a minimum of TWO monitored external entrapment protection sensors (one for each direction) to protect entrapment zones in both the open and close direction of travel. Visit <https://support.hysecurity.com/hc/en-us/categories/360003177593-Safety> for more information on UL 325 standards and gate safety.



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