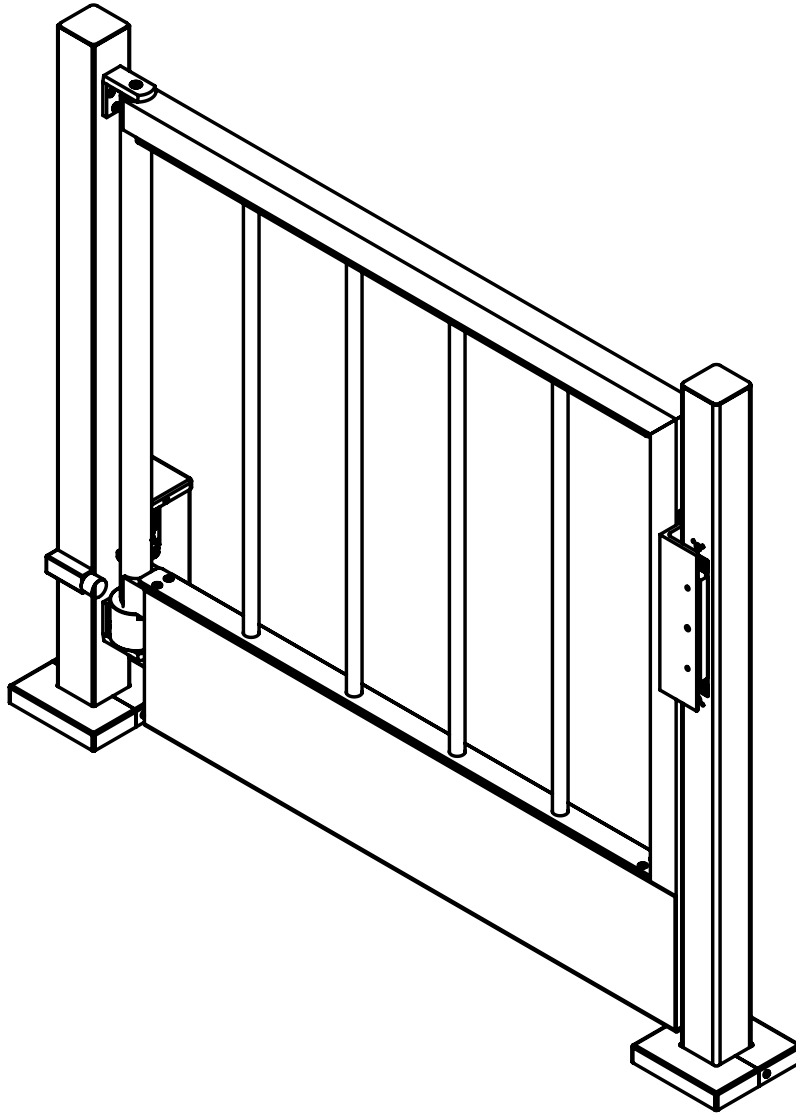


VSG & VSGX
Waist-High Security Gate



Installation & Maintenance Instructions

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Contents

Contents.....	2
ETL Certification.....	2
Safety Icons.....	3
General Safety Information.....	3
Safety Precautions.....	3
Uncrating.....	3
Installation Tools Required.....	4
Parts List.....	4
Introduction.....	5
Product Overview.....	5
Swing Direction.....	5
Options.....	5
Before You Begin.....	6
Slab Requirements.....	6
Space Requirements.....	6
Power Requirements.....	6
Environmental Requirements.....	6
Other Installation Considerations.....	7
Installation Steps.....	8
Electrical Activation & Wiring Instructions.....	9
Wiring at the Gate Location.....	9
Connecting a Switch Box.....	9
Connecting a Push Bar.....	10
Wiring at the Control Location.....	10
Testing the Gate with a Switch Box.....	10
Lock Specifications.....	10
Lead Specifications.....	10
Maglock.....	10
Troubleshooting.....	11
Maintenance.....	12
Maintenance Points.....	12
Anchor Tension.....	12
Wiring Inspection.....	12
Pivot Points.....	12
Lock Alignment.....	12
Stainless Steel Surfaces.....	13
External Component Finishes.....	13

ETL Certification



This product is fully certified by a nationally recognized testing laboratory to UL 2593 and CSA C22.2 #247. Unauthorized modification to this product in any way is prohibited.



Safety Icons

The following symbols are used throughout the manual to highlight important information and potential risks when installing, servicing or using the turnstiles covered in this manual.



This symbol is used in this manual to warn installers and operators of potential harm. Please read these instructions very carefully.



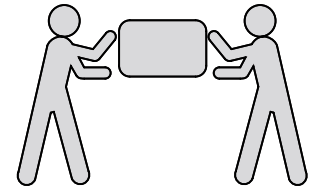
This symbol is used in this manual to designate potential conditions that may pose a risk to pedestrians, personnel, property and equipment. Please read these instructions very carefully.



This symbol is used in this manual to designate useful information for the installer and operator. Please read these instructions.



For questions, please contact Alvarado at (909) 591-8431, Monday – Friday 7:00am to 4:00pm PST. Please read this manual completely before installing or operating the purchased product.



A minimum of two people is required to complete the installation of this product.

General Safety Information

The VSG-1/VSGX-1 single-direction waist-high gate has been designed, built, and tested by Alvarado. Every unit is factory-tested for safety and reliability before shipping. However, the unit may present a risk to persons and property if it is not installed and/or operated correctly. Read and follow all instructions and safety information in this guide.

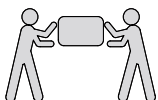
The manufacturer shall refuse to accept liability and shall withdraw warranty if this system is used incorrectly, or is used for a purpose other than that for which it is designed.

Safety Precautions

In addition to the instructions included throughout this guide, observe the following safety precautions.

- For indoor use only.
- Use only skilled individuals to install and service the turnstile.
- DO NOT operate the turnstile if it has been damaged in any manner. If damaged, have the unit repaired or adjusted by a skilled service person before use.
- DO NOT modify or alter the turnstile.
- Have skilled individuals maintain the turnstile according to a proper maintenance schedule.
- In access control applications, train all personnel that will be using the turnstile in the proper method of operation. In addition, properly train new users as they are added to the system.
- DO NOT use non-Alvarado parts to repair a damaged turnstile.
- Closely follow the handling instructions for moving or lifting the turnstile during installation.
- Power off the turnstile before connecting or disconnecting any communication or power wiring to the turnstile.
- This turnstile can be used by children aged 12 years and above, and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, if they have been given supervision or instruction concerning use of the turnstile in a safe way and understand the hazards involved. Children shall not play with or around the turnstile.
- The turnstile shall be disconnected from its power source during service and when replacing parts. The turnstile shall be disconnected from its power source before connecting or disconnecting any communication or other activation/feedback control wires. If it is not possible that the technician can check from any point to which he has access that the main power is removed, a disconnection with a locking system in the isolated position shall be provided.

Uncrating



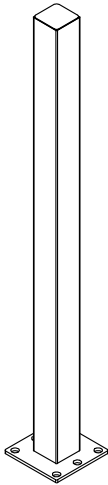
The gate has been packed for shipping to prevent damage to the unit. Two or more installers are required to unload the gate at the installation site. Carefully remove the protective packing material from the sides of the cabinets.

**Installation Tools Required**

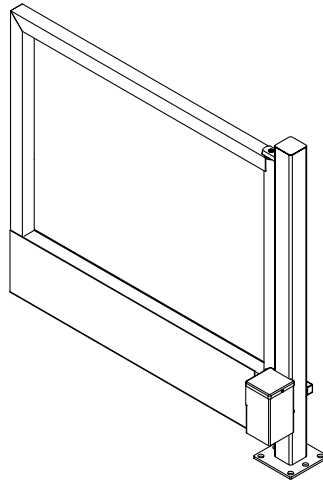
- Heavy duty drill or roto hammer
- 5/8" concrete drill bit
- Ratchet with 9/16" socket
- Torque wrench
- 7/32" hex key
- Shop vac
- Tape measure
- Torpedo level
- Chalk line
- Safety glasses
- Rubber mallet
- Wire crimper (for VSGX models)

Parts List

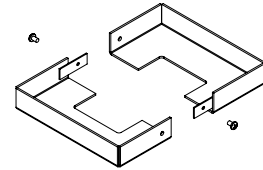
This product is shipped with all installation hardware and components. Refer to the appropriate parts list below for the type of gate you are installing. Make sure that none of these parts are missing and/or damaged before beginning installation. If parts are missing and/or damaged, please contact Alvarado.

VSG Parts List

Latch Post
(Qty. 1)



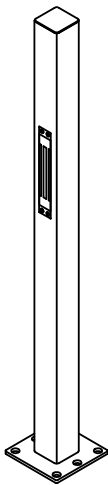
Hinge Post with Gate Arm
(Qty. 1)



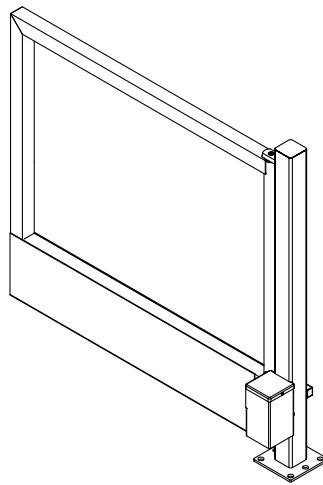
Base Cover (Qty. 2)

Concrete Anchor Package

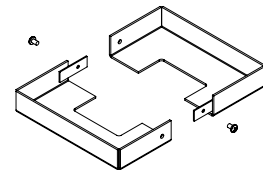
- 3/8" achors (Qty. 8)
- 3/8" 16 x 2 1/2" hex head cap screw (Qty. 8)
- 3/8" flat washers (Qty. 8)

VSGX Parts List

Latch Post with Lock Mechanism
(Qty. 1)



Hinge Post with Gate Arm
(Qty. 1)



Base Cover (Qty. 2)

Concrete Anchor Package

- 3/8" achors (Qty. 8)
- 3/8" 16 x 2 1/2" hex head cap screw (Qty. 8)
- 3/8" flat washers (Qty. 8)

Power

- 12VDC/1A power transformer



Introduction

The VSG is a manual, waist-high, self-closing gate. This manual covers the physical installation process for the VSG gate as well as maintenance guidelines. It is highly recommended that this manual be read in its entirety before beginning the installation process.

Product Overview

Various models, configurations, and options exist for this gate. The following overview will provide a short description of each model.

VSG Gate

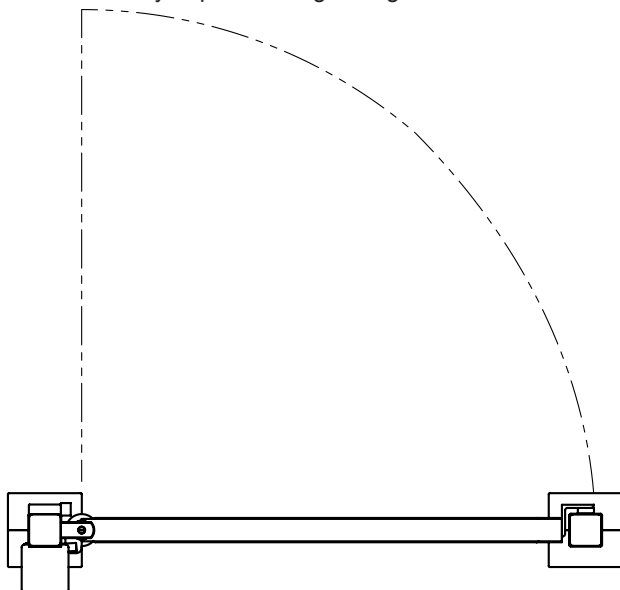
The VSG gate is a manual, waist-high, self-closing gate with a closure mechanism installed on the hinge post. The gate arm is equipped with a stop tab and swings in one direction. The hinge post assembly includes a hydraulic dampener to reduce the impact of the gate arm on the hinge post during closing.

VSGX Gate

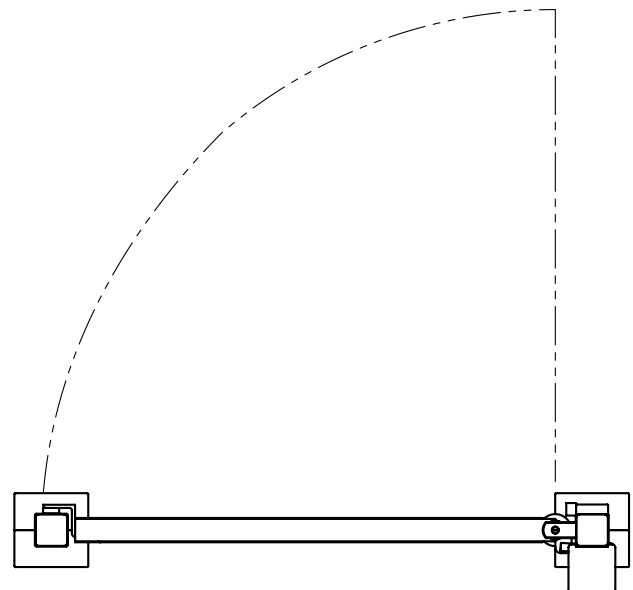
The VSGX gate is a manual, fail-safe electrical locking, waist-high, self-closing gate with a closure mechanism installed on the hinge post. The gate arm is equipped with a stop tab and swings in one direction. The hinge post assembly includes a hydraulic dampener to reduce the impact of the gate arm on the hinge post during closing. An electrically controlled magnetic lock secures the gate when the gate arm is closed.

Swing Direction

VSG gates are supplied in either a right-hand or left-hand swing direction. The swing direction is determined by which side the hinge post is on when you push through the gate.



Left-hand swing direction



Right-hand swing direction

Options

The following options may be included as part of the VSG/VSGX gate build.

Panel Infill

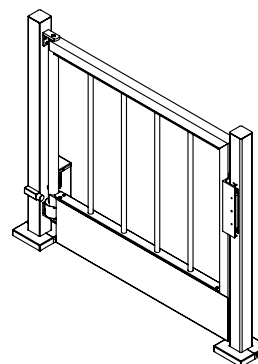
The swinging panel can be filled in with either stainless steel bars or a solid acrylic panel.

Finish

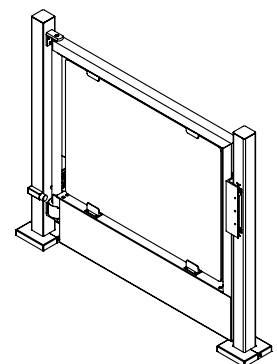
Standard VSG gates come with a #4 satin stainless steel finish. Gates can optionally be powder coated.

Magnetic Contact Switch

When magnetic contacts are broken, output signal indicates that door is open. The switch is an SPST contact supplied with two lead-in wires for field connection.



Gate with Infill Bars



Gate with Acrylic Panel



Options (Cont)

Push Bar

A switch-activated push-bar is wired into the magnetic lock and, when depressed, unlocks the magnetic switch (VSGX only).

Card Reader Plate

A card-reader plate receiver is attached to the gate's frame. A 6" x 6" card-reader attachment plate allows a majority of card readers to be attached.

Outlets for Rail Mounting

Connection points for Alvarado stainless steel rails can be installed in VSG latch and hinge posts.

Before You Begin

Use only skilled technicians for site preparation and installation of gate(s) using Alvarado's instructions.

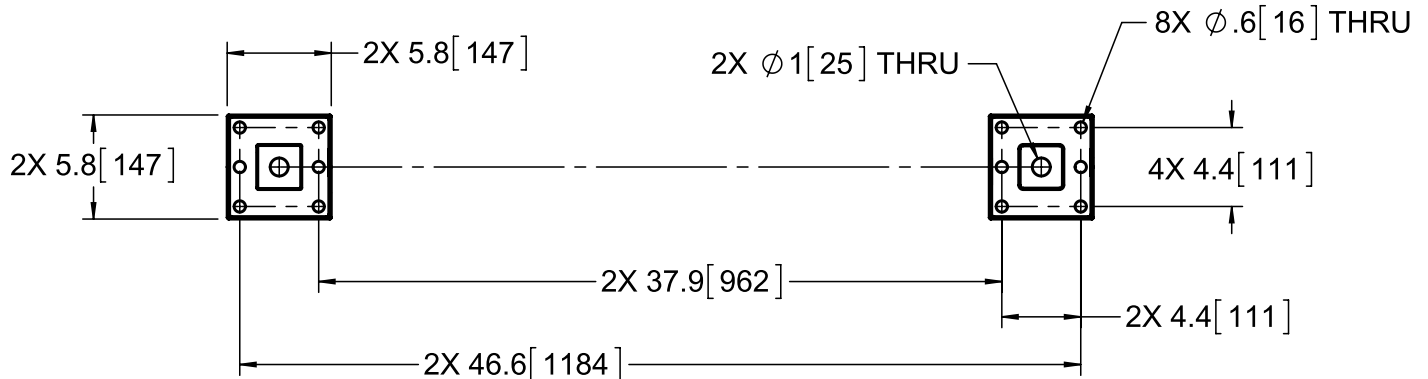
Slab Requirements

The following requirements must be considered when selecting or preparing an installation location.

- The gate must be installed on a level concrete pad at least 4" (102 mm) thick.
- Do not attempt to install the gate on asphalt
- The hinge and latch posts must be installed plumb with the floor while level and square to each other.

Space Requirements

The diagram below shows the gate footprint. Ensure there is sufficient space to install the gate at the desired location.



Power Requirements

VSGX gates require a low-voltage 12VDC power supply. A power transformer is included with each VSGX gate.

The installer is responsible for creating the necessary conduit runs to each gate installation location.

Environmental Requirements

- This product is intended for indoor use only.
- Recommended temperature range for operation: 0° to 50° C.
- Recommended humidity range for operation: 5% to 95% (non-condensing).

NOTE

Operating the unit outside the suggested range for temperature and humidity will result in degradation of performance and can damage the device.



Other Installation Considerations

If the posts are not installed at the correct distance and set plumb and square, the gate may not open or close properly and the magnetic lock may not work properly (on VSGX models).

The hinge pivot and dampener are set at the factory and should not be adjusted without consulting Alvarado Technical Support.

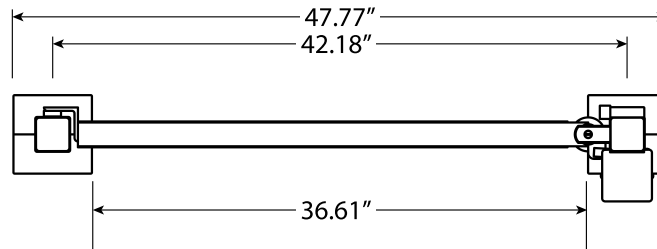
Alvarado recommends following the guidelines below during the installation process.

- After locating the post positions, check for a level floor using a mason's level, or equivalent.
- Shim the posts as needed if the site is not level.
- Install bolts loosely and only tighten completely when all components have been placed in their final positions.
- The post surface where the gate hinges attach is critical and must be plumb.



Installation Steps

1. Determine the location where the gate will be installed, taking into consideration the minimum width opening required. Refer to the "Space Requirements" section on page 8.
2. Mark the locations (perpendicular to the gate centerline) for the hinge post and latch post centerlines.



3. Center the hinge post at the intersection of the gate and hinge post centerline.
4. Center the latch post at the intersection of the gate and latch post centerlines.
5. With the gate arm in its neutral (home) position, ensure the entire unit (including hinge post, gate arm, and latch post) are parallel to the gate centerline. Both posts must be plumb and level to each other and square to the gate. Verify proper alignment of the locking mechanism.
6. Mark the center locations of the four anchor holes for both the latch post and the hinge post. Move the posts to the side and drill a 5/8"-diameter hole at the center of each marked location. Drill each hole 3" deep.

NOTE

For terrazzo, ceramic tile, or brick veneer installations, add the thickness of the finished floor material to the anchor hole depth.

7. Vacuum out the holes thoroughly. Debris in the holes will prevent the anchors from tightening properly.
8. Insert an anchor with the thread-side down into each hole. The anchors must be flush with the top of the concrete pad.



For electrical gates, go to the "Electrical Activation & Wiring Instructions" section on page 9.

9. Place the hinge post back over the anchor holes. Anchor the hinge post with 4 each 3/8" - 16 x 2 1/2" HHCS bolts and flat washers. Do not tighten the bolts completely.
10. Place the latch post back over the anchor holes. Anchor the hinge post with 4 each 3/8" - 16 x 2 1/2" HHCS bolts and flat washers. Do not tighten the bolts completely.
11. Confirm the gate arm is properly aligned with the latch post when the gate arm is in the closed position by ensuring that the gate arm, hinge post, and latch post are installed plumb with the floor while being level and square to each other.

WARNING

It is extremely important that the hinge post, gate arm, and latch post be level. Use a level to verify that the hinge post, gate arm, and latch post are level horizontally with the floor and vertically level with each other.

12. Adjust and shim the post as required to properly align the gate. It is important that the posts be plumb and level with the floor for the gate arm to self-close and center properly. The gate arm and latch post must be at a 90° angle.
13. Tighten all of the anchoring bolts to 20 ft.-lbs.
14. Install the two halves of the split base cover around the hinge post base plate using the supplied 8 - 32 x 1/4" screws. Secure it by tapping down with a rubber mallet over the hinge post base.
15. Install the two halves of the split base cover around the latch post base plate using the supplied 8 - 32 x 1/4" screws. Secure it by tapping down with a rubber mallet over the latch post base.
16. Final installation check:
 - Verify all anchor bolts are tightened to 20 ft.-lbs.
 - Verify the gate arm and latch post are at a 90° angle.
 - Verify both posts are plumb and level to each other and square to the gate arm.



Electrical Activation & Wiring Instructions

Electrical gates must be connected to a low-voltage power source to operate. The following instructions detail the steps to setup on electrical connection for the fail-safe locking gates.

Wiring at the Gate Location

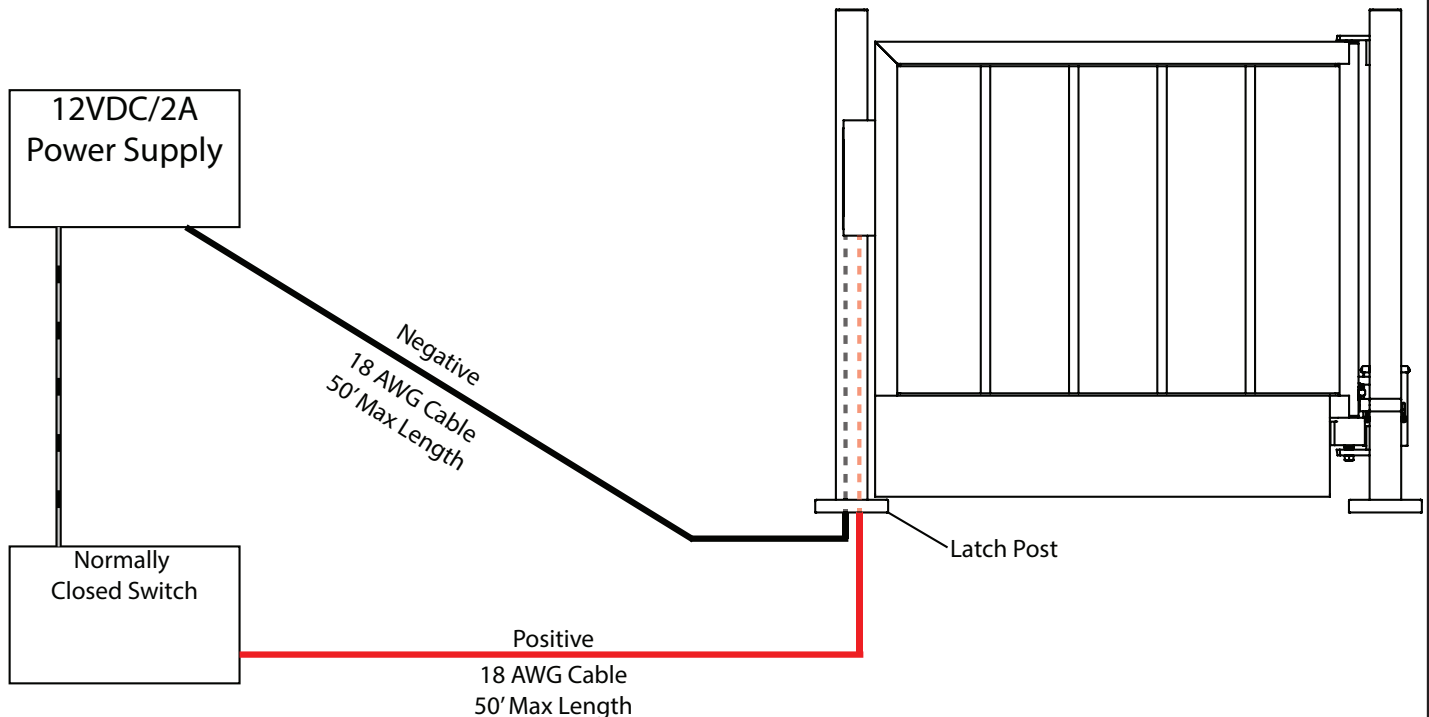
1. Plug the power supply into a wall outlet and verify it is delivering the expected 2A at 12VDC.
2. Unplug the power supply.
3. Connect the wires from the power supply to the wires from the magnetic lock. The magnetic lock wires will be hanging down from inside the latch post. The diagram below shows which wires should be connected to each other. If you need to extend the cable length, use 18 AWG cable. Total cable length should not exceed 50 feet or be wrapped in coils.



4. On the gate-side of the conduit, install crimp connector receptacles on the conduit wire leads. These will receive the connectors provided on the lock leads coming from the bottom of the latch post.
5. On the gate-side of the conduit, connect the positive red-colored wire coming from the bottom of the latch post to the positive conduit lead wire. Connect the negative black-colored wire coming from the bottom of the latch post to the negative conduit lead wire.

Connecting a Switch Box

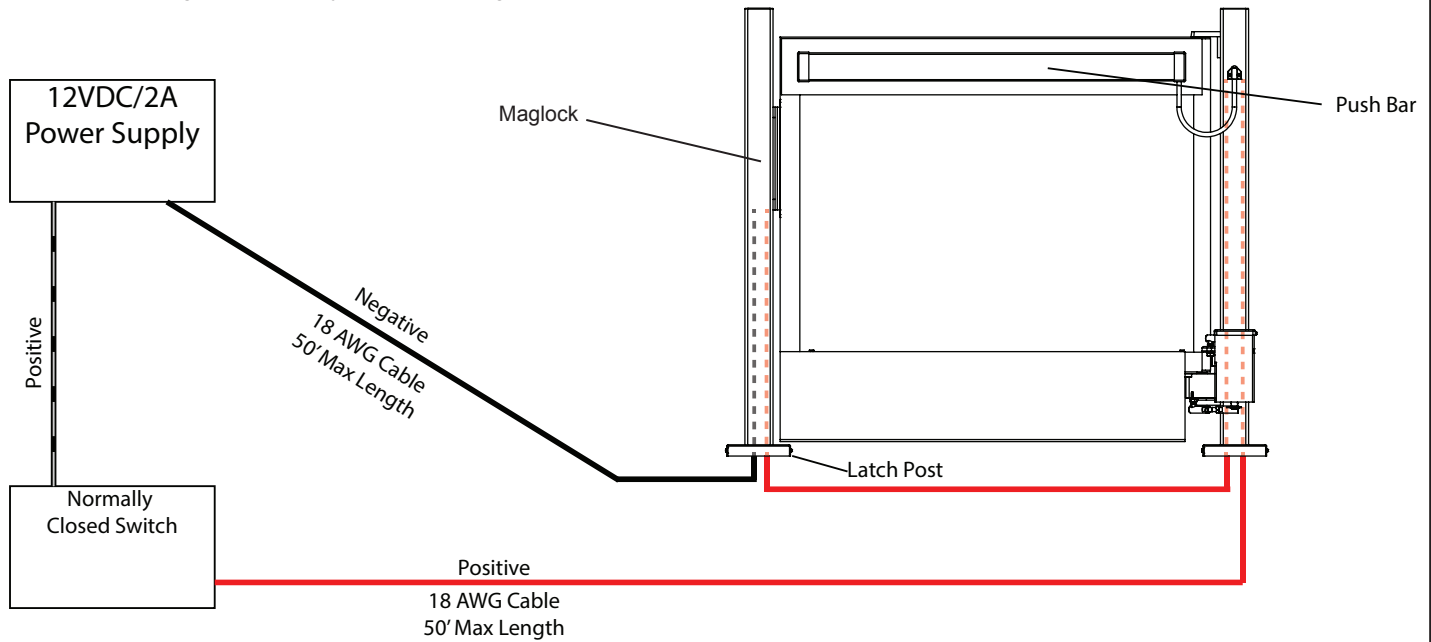
Refer to the diagram below if you will be controlling the gate with a momentarily normally closed switch.





Connecting a Push Bar

Refer to the diagram below if you will be using the optional push bar.



Wiring at the Control Location

1. On the power supply/switch-side of the conduit, install crimp connector receptacles on the conduit wire leads.
2. On the power supply/switch-side of the conduit, connect the positive black wire with white stripes coming from the power supply to the positive conduit lead wire. Connect the negative black-colored wire coming from the power supply to the negative conduit lead wire.

Testing the Gate with a Switch Box

1. Plug the power supply into a 110 VAC power source. Verify the gate locks when power is applied.
2. Unplug the power supply. Verify the gate unlocks when power is removed.
3. Plug the power supply back in to lock the gate again. While the gate is locked, activate the switch and verify the gate stays unlocked as long as the switch is engaged. Verify the gate locks after the switch is disengaged.
4. Unlock the gate and open it. Verify the arm swings back into a closed position automatically. Verify the gate arm locks as soon as it closes.
5. If equipped, press the push bar. Verify it unlocks the gate while pressed. Release the push bar and verify the gate arm returns to a closed position and locks automatically.

Lock Specifications

Voltage:	+12 VDC
Current:	1 A at 12 VDC
Operating Temperature:	-40° to 140° F
Shear Holding Force:	~300 lbs. (~273 kg)

The lock only operates in fail-safe mode, meaning that the lock will disengage when power is lost.

Lead Specifications

Red/Colored:	+12 VDC Input
Black:	Ground



Troubleshooting

Check the following before proceeding to the other troubleshooting steps in this section:

- Ensure the gate is level and check for proper gate tension.
- Ensure the gate has enough clearance to operate normally.
- Check the wiring for loose or bad connections (VSGX models only).
- Perform routine maintenance as described in the [Maintenance](#) section below.

Symptom(s)	Possible Cause(s)	Solution(s)
Gate does not unlock.	The VSGX gate is not receiving an activation signal from the gate activation switch.	Ensure the gate activation switch is properly connected to the gate activation leads. Test the wires by doing a connectivity test. Also, ensure that nothing is interfering with the wires to the activation switch.
	The VSGX gate's lock is sticking or binding in the locked position.	Check the gate arm and latch post for level installation. Readjust or reposition the posts for correct operation. For instructions, refer to "Installation Steps" on page 8. Ensure the gate has enough clearance to operate normally.
	The VSGX gate's lock surfaces are obstructed or damaged.	Check the lock surfaces on the arm and the latch post for debris. Remove the debris if present and maintain the area to prevent future mishaps. Also, check the lock surfaces for damage and replace components as needed.
	The VSGX gate's activation switch is broken.	Test and replace the gate activation switch if necessary.
Gate does not unlock.	The VSGX gate is not powered on.	Measure the power supply for the proper power output. The power supply must be putting out 12 VDC for the gate to operate properly in the US. If outside the US, ensure the proper power output for your country.
	The VSGX gate is constantly receiving an activation signal from the gate activation switch.	Ensure the gate's activation switch is properly connected to the gate activation leads. Test the wires by doing a connectivity test. Also, ensure nothing is interfering with the wires to the activation switch. Ensure the activation switch is fully functional. The switch must be a momentarily normally closed switch to work with the VSGX gate.
	The VSGX gate's lock surfaces are obstructed or damaged.	Check the lock surfaces on the arm and the latch post for debris. Remove the debris if present and maintain the area to prevent future mishaps. Also, check the lock surfaces for damage and replace components as needed.
	The VSGX gate's lock mechanism is defective.	Test the lock mechanism. Ensure the mechanism is connected to the correct voltage for correct operation. Ensure the connection to the activation switch is clear and functioning. Replace the lock if necessary.
	The VSGX gate's activation switch is broken.	Test and replace the gate activation switch if necessary.
The gate does not self-close and fails to return to the center (home) position.	The VSG/VSGX gate is not properly lubricated.	Clean and lubricate the top bracket hinge point and lower pivot spring hinge point. Refer to Maintenance .
	The VSG/VSGX gate is not level.	Check the gate arm and latch post for level installation. Readjust or reposition the posts for correct operation. Refer to "Installation Steps" on page 8.
	The gate arm bearing is loose, obstructed, or damaged.	Check the top bracket hinge and lower pivot spring hinge point for debris. Remove any debris, if present.



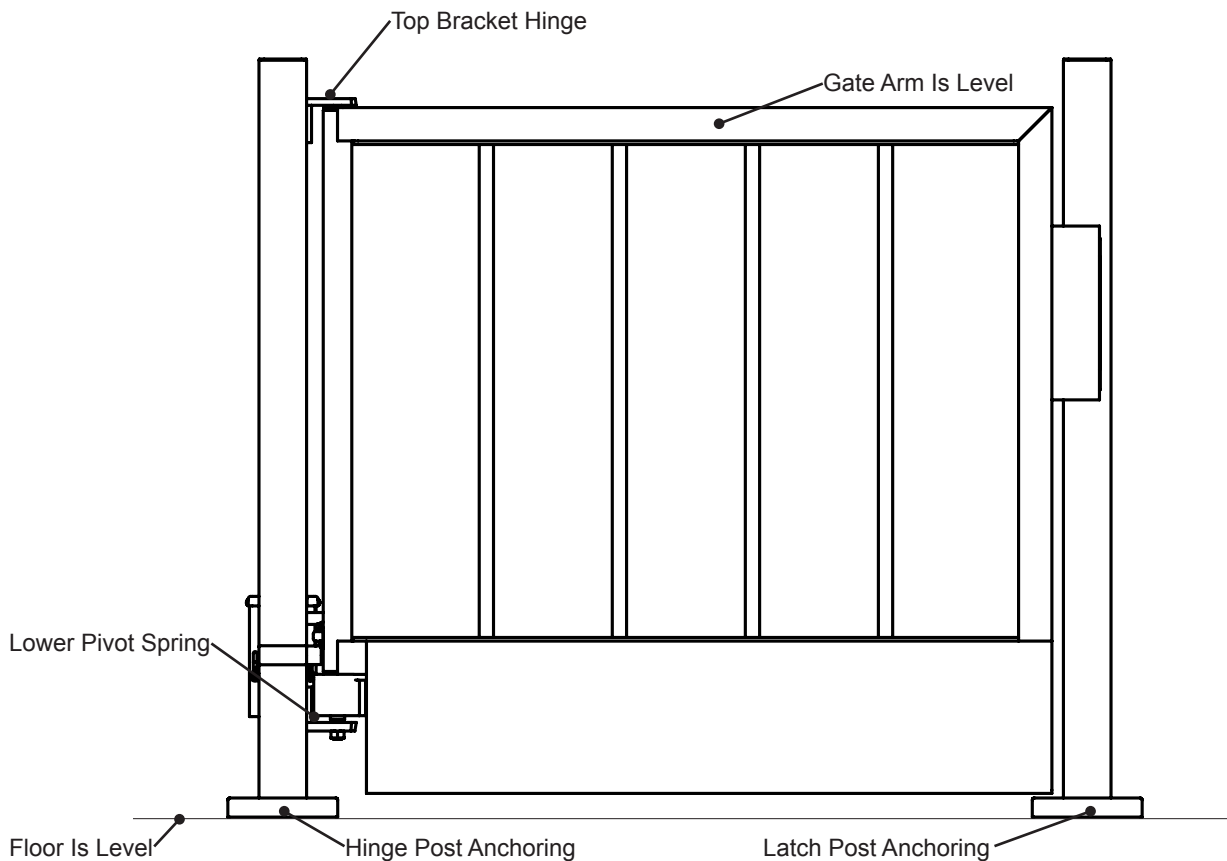
Maintenance

General maintenance best practices:

- Inspect all gates one or two weeks after they are installed to ensure they are operating properly. Inspect the gates again about sixty days after they are installed.
- The frequency of regular maintenance is determined by gate usage and environment. However, Alvarado recommends regular maintenance be performed at least once per year. Perform maintenance more frequently if the gates are used frequently or are installed in humid or dusty environments.

Maintenance Points

Check the maintenance points identified in the image below to ensure proper gate operation.



Anchor Tension

Remove the base covers and check gate levelness and anchor tension when performing maintenance. Ensure the anchors are tightened to 20 ft.-lbs. Clean any accumulated dirt or dust.

Wiring Inspection

For VSGX units, inspect all wires and contacts for signs of wear, abrasion, or exposed metal parts that could lead to a short. Replace as needed.

Pivot Points

Check the top bracket hinge and lower pivot spring hinge point for debris and remove if found.

Lock Alignment

For VSGX units, verify the electric lock mechanism is aligned properly. When properly aligned, the gate arm should lock automatically when it returns to its home position while the gate is powered.



Maintenance (Cont.)

VSG and VSGX gate surfaces are made from stainless steel with a #4 satin finish by default. These surfaces are resistant to corrosion, but they need to be checked and cleaned regularly to preserve their protective qualities. Surface deposits and scratches can damage the finish and cause the steel underneath to rust. To prevent this, clean gate surfaces and other components regularly.

Stainless Steel Surfaces

Use a soft cloth with any commercially available stainless steel polish or cleaner for regular surface cleaning. If a heavy scratch or mark is apparent on a satin-finish surface, use a metal blend and finish pad (3M or equivalent). A quality automotive wax may be used to buff the gate after cleaning. Avoid using abrasive cleaning materials.

External Component Finishes

The dull chrome finish of the lower pivot spring unit and top bracket hinge and the nickel surface of the electric lock (in VSGX gates) need to be kept clean and dry to prevent corrosion. Clean these surfaces and use a commercially available spray product, wax, or grease to prevent rust. Commonly used products include Automotive Paste Wax, Rustlick 631, CRC SP-350/400, BOESHIELD T-9, and Rust-X.

Revision	Date	Author	Description
3-0	2/16/2022	D. Bohannon C. Maynez	Document revised to Alvarado format.