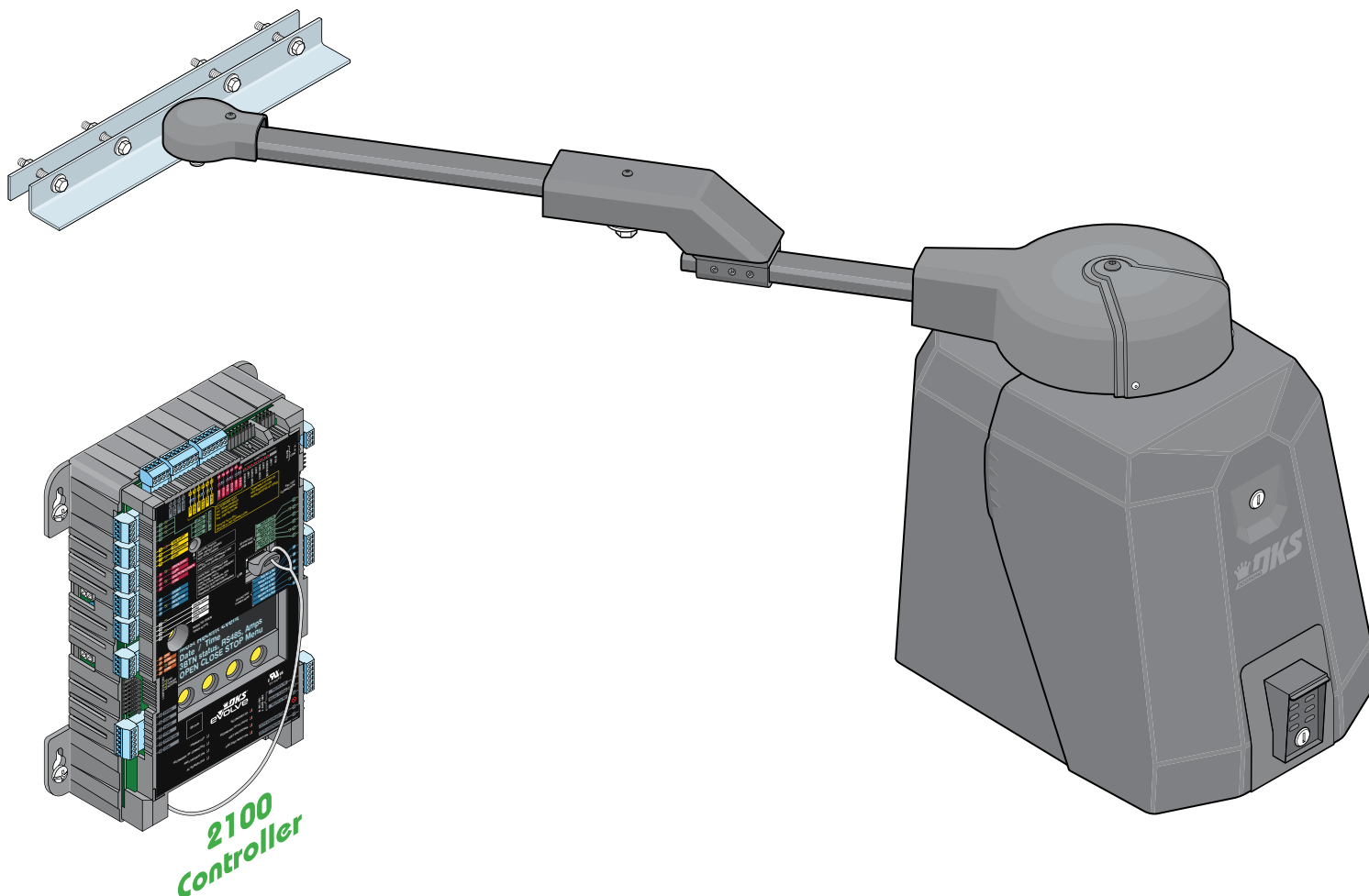


Use this manual for eVolve 2100 controller Revision A or higher.

2160-065-U-10-26

Brushless DC Style Motor



THIS PRODUCT IS TO BE INSTALLED AND SERVICED BY A TRAINED GATE/DOOR SYSTEMS TECHNICIAN ONLY.
 Visit www.doorking.com/dealer-locator to find a professional installing and servicing dealer in your area.

Date Installed: _____

Installer/Company Name: _____

Phone Number: _____

2100 Controller
 Serial Number
 and Revision Letter: _____

Installer: Leave this manual with property owner

Property Owner: Checklist in back of this manual to review and verify new installation with Installer

Entrapment Protection must be provided for the gate system where the risk of entrapment or obstruction exists. The operator will NOT run without one or more monitored type B1 or B2 entrapment protection devices in EACH direction of gate travel.

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eVolve 2160 Swing Gate Operator Specifications

Class of Operation	UL 325 Class I, II, III, IV
Type of Gate	Vehicular Swing Gates Only
Inherent Entrapment Protection	Inherent Reverse Sensors - Type A
External Entrapment Protection Device Inputs	Connection inputs for Non-contact Devices - Photo Beam - Type B1
(6) Six Monitored inputs - (3 Open) (3 Close)	Connection inputs for Contact Devices - Reversing Edge - Type B2

Note: To be compliant with **UL 325** and industry safety guidelines, entrapment protection devices need to be installed with this gate operator.

Model #	Motor Horsepower - Watts - Phase	Operator Input Volts / Amps Selectable	Max Gate Weight	Max Gate Length	Cycles per hour	Speed Slow Start Slow Stop
2160-380	1/2 HP DC - 500 - 1-Phase	115VAC@5A OR 230VAC@3A	1200 Lbs.	18 Ft.	Continuous	90° 12 Sec
2160-381	1 HP DC - 750 - 1-Phase	115VAC@7A OR 230VAC@4A	1800 Lbs.	22 Ft.	Continuous	90° 12 Sec

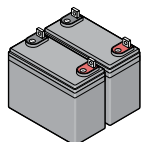
Operator MUST be Programmed BEFORE it will function.

Entrapment Protection (monitored type B1 or B2 UL devices) MUST be installed where ever the gate system is at risk of entrapment or obstruction while the gate is in motion. Operator(s) will NOT function without ONE or more UL devices installed.

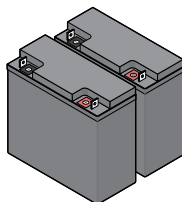
Type of wiring to be used on ALL external devices:

A) Type CL2, CL2P, CL2R, or CL2X.

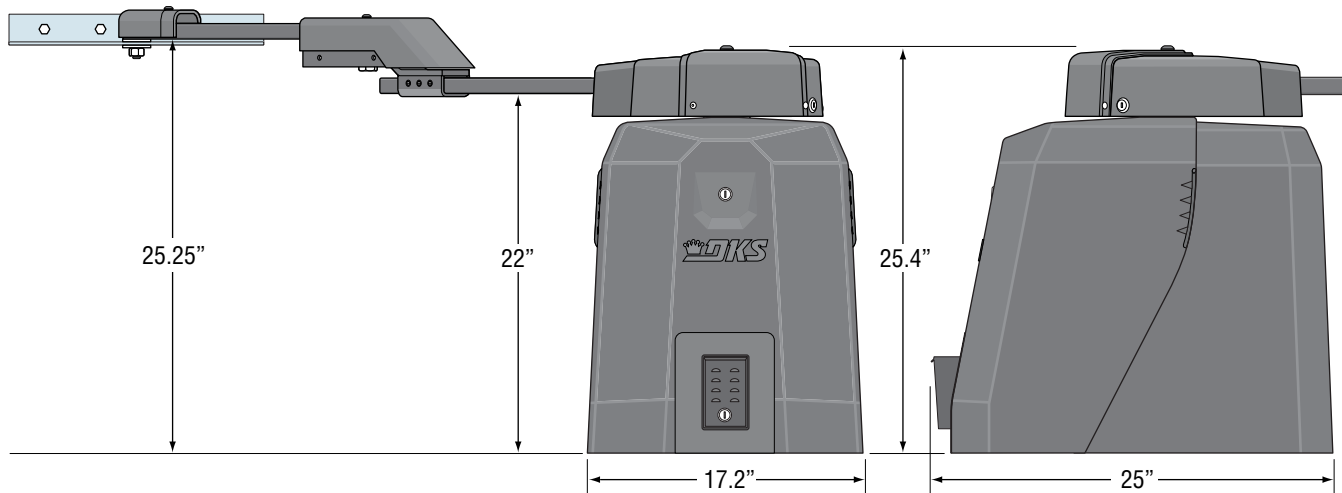
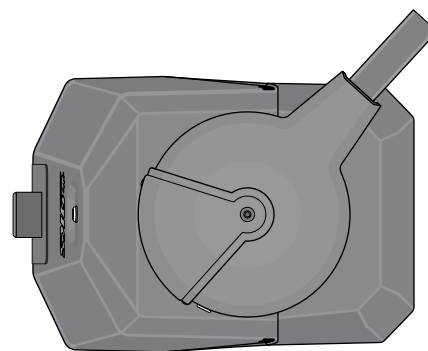
B) Other cable with equivalent or better electrical, mechanical, and flammability ratings.



STANDARD BATTERY
(SLA) Sealed Lead Acid
12 Volt 7 Amp/Hr
Standard
Replacement Battery
P/N 1801-003
Two (2) required.



OPTIONAL BATTERY
(SLA) Sealed Lead Acid
12 Volt 18 Amp/Hr
Battery for Extended
Back-Up Power
P/N 1801-004
Two (2) required.



UL 325 Entrapment Protection

UL 325 Classifications



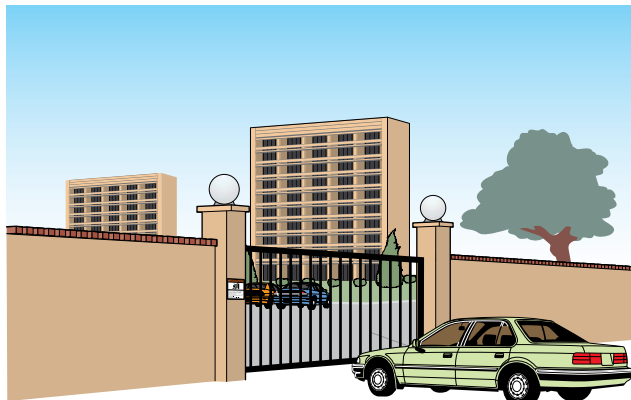
Class I - Residential Vehicular Gate Operator

A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one-to four single families.



Class III - Industrial/Limited Access Vehicular Gate Operator

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



Class II - Commercial/General Access Vehicular Gate Operator

A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other buildings accessible by or servicing the general public.



Class IV - Restricted Access Vehicular Gate Operator

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

Gate Operator Category

Entrapment Protection Types	Horizontal Slide, Vertical Lift, Vertical Pivot, Horizontal Bifold	Swing, Vertical Barrier (Arm)
	A, B1*, B2* or D	A, B1*, B2*, C or D

Type A - Inherent entrapment protection system.

Type B1 - Non-contact device (photoelectric device or the equivalent).

Type B2 - Contact device (edge device or equivalent).

Type C - Inherent force limiting, inherent adjustable clutch or inherent pressure relief device.

Type D - Actuating device requiring constant pressure to maintain opening or closing motion of the gate.

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

Vertical Barrier Note: Barrier gate operators (arm) that is not intended to move toward a rigid object closer than 16 inches (406 mm) are not required to be provided with a means of entrapment protection.

Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

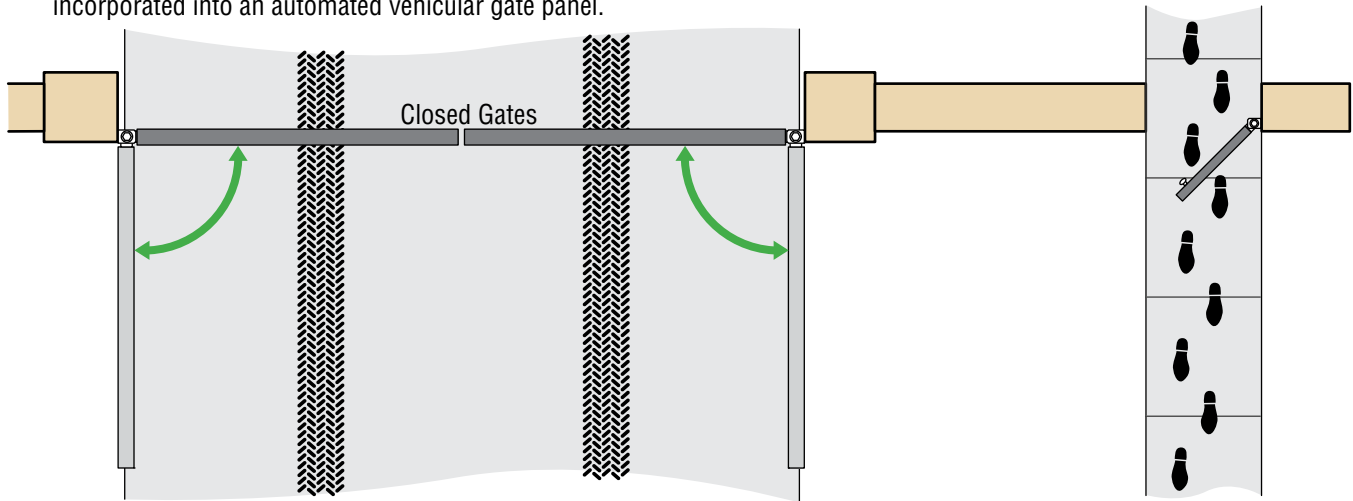
All external entrapment protection devices must be **MONITORED**, and the operator must verify the presence of every device at least once during each open and close cycle. According to the standard, "Upon monitoring, should any device not be present, or a fault condition occur that precludes the sensing of an obstruction, including an interruption of the wireless signal to the wireless device or an open or short circuit in the wiring that connects the external entrapment device to the operator and the device's supply source, the operator shall function with constant pressure...for the direction of travel being protected, or shall only be able to be moved manually...."

There shall be no modification made in the field to bypass, interfere with, or otherwise defeat the monitoring function by adding, suppressing, or changing, either on the operator or on external entrapment protection device(s) by the connection of wires; terminals; switches; jumpers; or components supplied with the operator or with the external entrapment protection device.

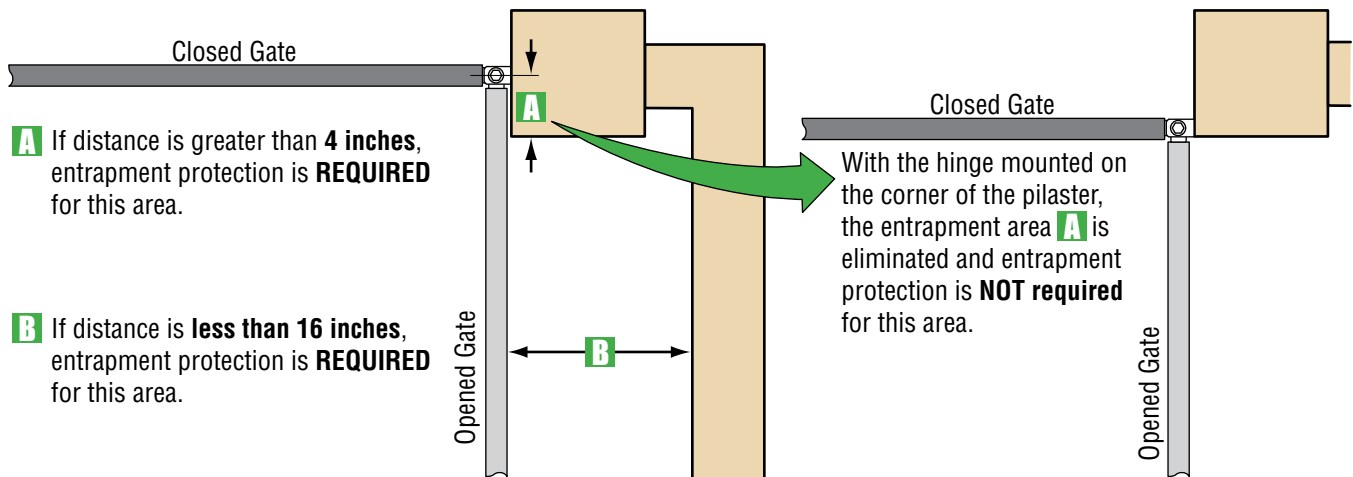
ENTRAPMENT - The condition when a person is caught or held in a position that increases the risk of injury.

Swing Gate Requirements

This operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. For pedestrian access in the vicinity of an automated vehicular gate, separate pedestrian access shall be provided or available. The pedestrian access shall be in a location such that a pedestrian shall not come in contact with a moving vehicular gate access gate during the entire path of travel of the vehicular gate. A pedestrian gate shall not be incorporated into an automated vehicular gate panel.



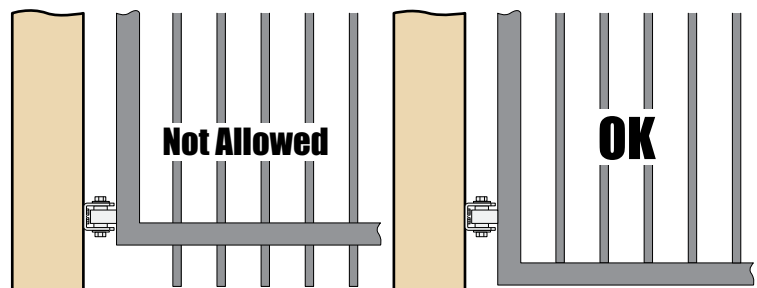
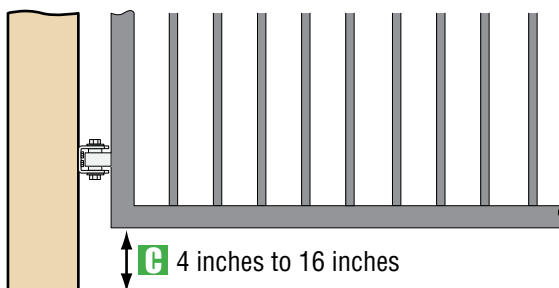
Entrapment Protection must be provided for the gate system where the risk of entrapment or obstruction exists. The operator will NOT run without one or more monitored type B1 or B2 entrapment protection devices in EACH ENTRAPMENT AREA.



A If distance is greater than **4 inches**, entrapment protection is **REQUIRED** for this area.

B If distance is **less than 16 inches**, entrapment protection is **REQUIRED** for this area.

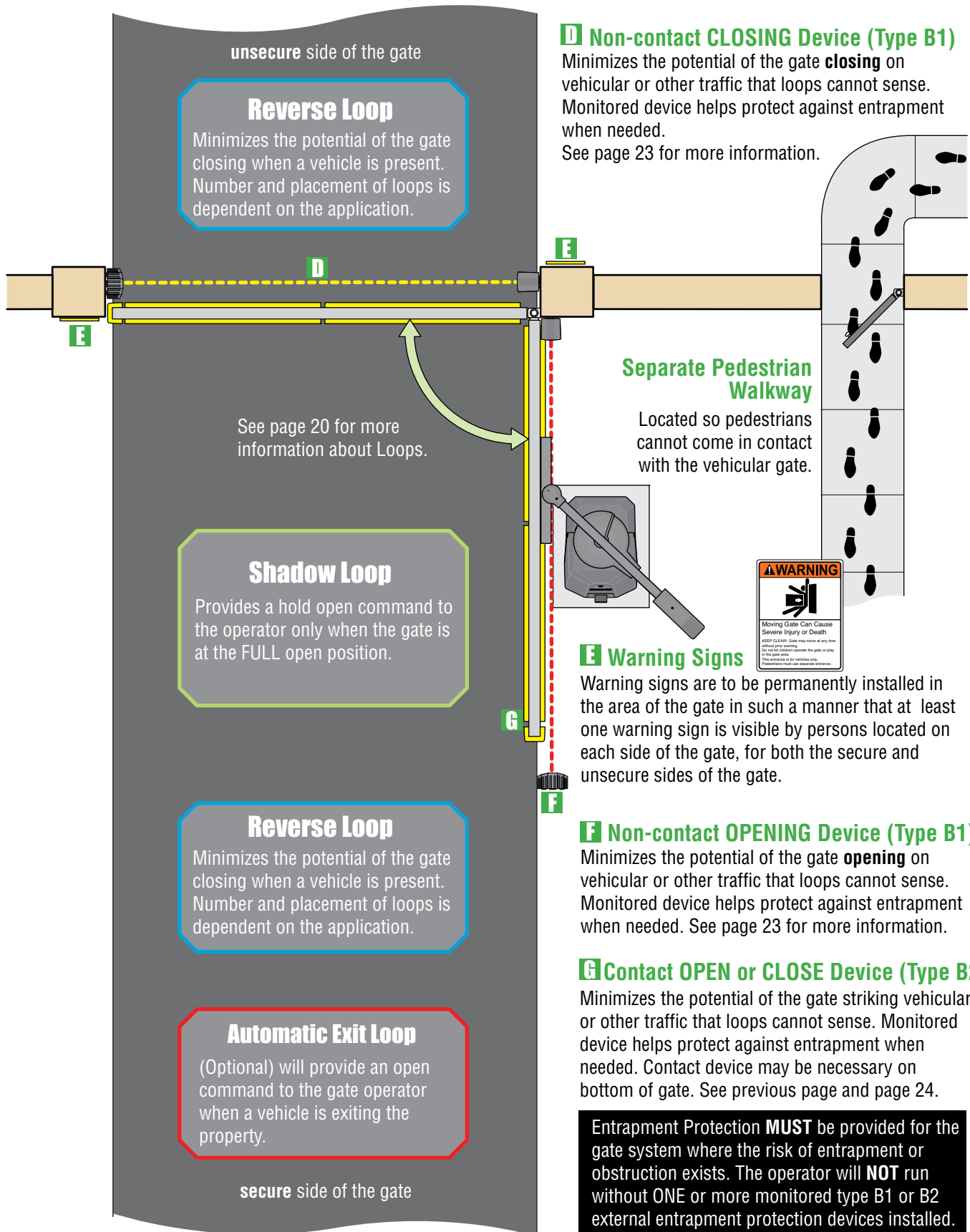
C If bottom of gate is **4" to 16"** above the ground at **ANY** part of the gate's traveling path, entrapment protection is **REQUIRED** for this area.



Gates shall have smooth bottom edges, with vertical bottom edged protrusions **NOT** exceeding **0.50 inches**.

Swing Gate Requirements Continued

Illustration not to scale.



ASTM F2200 Standard for Gate Construction

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

Important Safety Instructions

English	French
IMPORTANT SAFETY INSTRUCTIONS WARNING – To reduce the risk of severe injury or death: 1. READ AND FOLLOW ALL INSTRUCTIONS. 2. Never let children operate or play with gate controls. Keep the remote control away from children. 3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE. 4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death. 5. Use the manual release only when the gate is not moving. 6. KEEP GATES PROPERLY MAINTAINED. Read the user's manual. Have a qualified service person make repairs to gate hardware. 7. The entrance is for vehicles only. Pedestrians must use separate entrance. 8. SAVE THESE INSTRUCTIONS.	AVERTISSEMENT DE CONSIGNES DE SÉCURITÉ IMPORTANTES – Pour réduire le risque de blessures graves ou mortelles : 1. LIRE ET SUIVRE TOUTES LES INSTRUCTIONS. 2. Ne jamais laisser les enfants faire fonctionner la porte ou jouer avec les commandes de la barrière. Garder la télécommande hors de la portée des enfants. 3. Toujours garder les personnes et les objets loin de la barrière. PERSONNE NE DEVRAIT FRANCHIR LA BARRIÈRE EN MOUVEMENT. 4. Vérifier l'ouvre-barrière une fois par mois. La barrière DOIT inverser son mouvement au contact d'un objet rigide, lorsque celui-ci active les capteurs sans contact. Après avoir réglé la force ou la limite du déplacement, vérifier de nouveau l'ouvre-barrière. Si l'ouvre-barrière est mal réglé ou n'est pas vérifié de manière appropriée, le risque de ou de blessures graves ou mortelles est accru. 5. Utiliser le dispositif de dégagement manuel uniquement si la barrière est immobilisée. 6. ASSURER L'ENTRETIEN ADÉQUAT DE LA BARRIÈRE. Lire le guide d'utilisation. Demander à un professionnel qualifié de réparer la quincaillerie de la barrière . 7. L'entrée est réservée aux véhicules . Les piétons doivent avoir une entrée distincte. 8. CONSERVER CES INSTRUCTIONS.

Instructions regarding intended UL 325 installation:

English	French
a) Install the gate operator only when: 1) The operator is appropriate for the construction of the gate and the usage Class of the gate, 2) All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 1.83 m (6 ft) above the ground to prevent a 57.2 mm (2-1/4 inch) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position, 3) All areas of the moving vertical pivot gate panel from the bottom of the gate to the top of the gate or a minimum of 1.83 m (72 in) above grade, whichever is less, that pass by a fixed stationary object, and in the area of the adjacent fence that the gate covers during the travel of the gate, shall be designed, guarded or screened to prevent a 57 mm (2-1/4 in) diameter sphere from passing through such areas. 4) All exposed pinch points are eliminated or guarded, and 5) Guarding is supplied for exposed rollers. 6) The operator instructions shall list the maximum number of open and close entrapment protection devices capable of being connected to the operator.	a) Installer l'ouvre-barrière uniquement si : 1) L'ouvre-barrière convient à la construction et la classe d'utilisation de la barrière. 2) Toutes les ouvertures de la barrière coulissante horizontale sont protégées ou grillagées du bas de la barrière jusqu'à au moins 1,83 m (6 pi) du sol si bien qu'une sphère de 57,2 mm (2 1/4 po) de diamètre ne peut passer par aucune ouverture dans la barrière ou dans la portion de la clôture adjacente que la barrière couvre en position ouverte. 3) Toutes les zones du panneau d'une barrière à pivot verticale du bas jusqu'au haut de la barrière ou jusqu'à au moins 1,83 m (72 po) au-dessus du sol (la hauteur la plus basse prévalant) qui passe par un objet immobile et dans la portion de la clôture adjacente que la barrière couvre pendant sa course sont conçues, protégées ou grillagées si bien qu'une sphère de 57 mm (2 1/4 po) de diamètre ne peut passer par de telles zones. 4) Tous les points de pincement sont éliminés ou protégés . 5) Des protections sont fournies pour les galets exposés. 6) Les instructions de l'ouvre-barrière doivent indiquer le nombre maximal de dispositifs de protection contre le coincement à l'ouverture ou à la fermeture.

Instructions regarding intended installation cont:

English	French
b) The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate. c) The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas. d) The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not over-tighten the operator clutch or pressure relief valve to compensate for an improperly installed, improperly functioning, or damaged gate. e) For a gate operator utilizing Type D entrapment protection: 1) The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving, 2) The placard shall be placed adjacent to the controls, 3) An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed, and 4) No other activation device shall be connected. f) Permanently mounted controls intended for user activation must be located at least 1.83 m (6 ft) away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police, EMS) may be placed at any location in the line-of-sight of the gate. g) The Stop and/or Reset button must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start. h) A minimum of two (2) WARNING SIGNS shall be installed, in the area of the gate. Each placard is to be visible by persons located on the side of the gate on which the placard is installed. i) For a gate operator utilizing Type B1, non-contact entrapment protection: 1) See instructions on the placement of non-contact sensors for each Type of application, 2) Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle, trips the sensor while the gate is still moving, and 3) One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier. j) For a gate operator utilizing Type B2, contact entrapment protection: 1) One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge, and postmounted both inside and outside of a vehicular horizontal slide gate.	b) L'ouvre-barrière doit être installé uniquement sur des barrières utilisées pour les véhicules. Les piétons doivent avoir une entrée distincte. Celle-ci doit être conçue pour inciter les piétons à l'utiliser. L'accès doit se trouver dans un endroit où les piétons n'entreront pas en contact avec une barrière pour véhicules en mouvement pendant le déplacement de la barrière. c) Pour réduire le risque de coincement lors de l'ouverture et de la fermeture, la barrière doit être installée dans un endroit où elle est suffisamment éloignée des structures avoisinantes. Les barrières basculantes ne doivent pas s'ouvrir dans des endroits accessibles au public. d) S'assurer que la barrière est bien installée et fonctionne librement dans les deux directions avant d'entreprendre l'installation de l'ouvre-barrière. Ne pas trop serrer l'embrayage de l'ouvre-barrière ou la soupape de décharge de l'ouvre-barrière pour compenser une barrière mal installée, qui ne fonctionne pas correctement ou qui est endommagée. e) Pour un ouvre-barrière utilisant une protection contre le coincement de type D: 1) les commandes de l'ouvre-barrière doivent être placées de sorte que l'utilisateur voit l'ensemble de la zone de la barrière lorsque cette dernière est en mouvement. 2) La plaque exigée doit être placée à côté des commandes. 3) Ne pas utiliser de dispositif de fermeture automatique (comme une minuterie, une boucle de détection ou un dispositif similaire). 4) Ne brancher aucun autre dispositif d'activation. f) Les commandes permanentes destinées à l'activation par l'utilisateur doivent être situées à au moins 1,83 m (6 pi) des pièces mobiles de la barrière et à un endroit que l'utilisateur ne peut atteindre pour actionner les commandes par-dessus ou sous la barrière, ou à côté ou au travers de la barrière. Exception: Les commandes d'accès d'urgence accessibles au personnel autorisé seulement (p. ex. pompiers, policiers, ambulanciers) peuvent être placées n'importe où, du moment qu'elles sont en vue de la barrière. g) Le bouton d'arrêt, ou de réinitialisation doit être situé en vue de la barrière. L'activation de la commande de réinitialisation ne doit pas entraîner l'activation de l'ouvre-barrière. h) Au moins deux (2) PANNEAUX D'AVERTISSEMENT doivent être installés dans la zone de la barrière. Toutes les plaques d'avertissement doivent être visibles des personnes situées à côté de la barrière sur laquelle les plaques sont installées. i) Pour un ouvre-barrières utilisant un capteur sans contact pour la protection contre le coincement de type B1: 1) Voir les instructions sur l'emplacement des capteurs sans contact pour chaque type d'application. 2) Des précautions doivent être prises pour réduire les risques de déclenchement inutile, comme lorsqu'un véhicule déclenche le capteur pendant que la barrière est encore en mouvement. 3) Au moins un capteur sans contact ou plus doit être situé où il existe un risque de coincement ou d'obstruction, comme dans l'espace que peuvent atteindre le bras et la barrière lorsqu'ils sont en mouvement. j) Pour un ouvre-barrière utilisant un capteurs de contact pour la protection contre le coincement de type B2: 1) Au moins un capteur de contact doit être situé où il existe un risque de coincement ou d'obstruction, comme sur le bord d'attaque, sur le bord de fuite et sur les poteaux montés sur l'intérieur et l'extérieur d'une barrière coulissante horizontale pour véhicules.

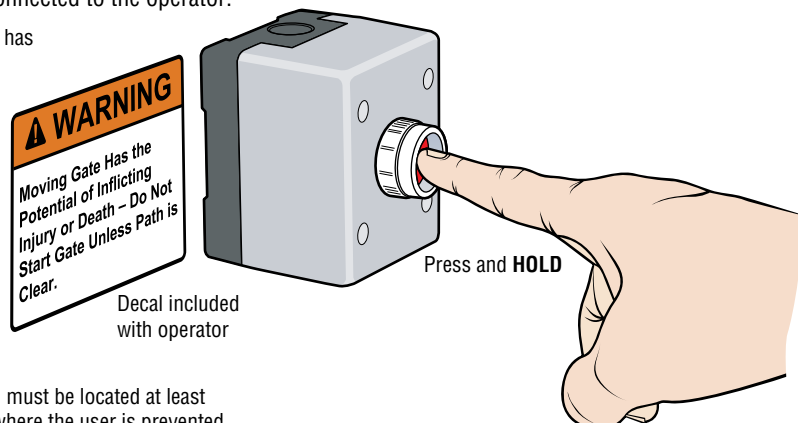
Instructions regarding intended installation cont:

English	French
2) One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate. 3) One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate. 4) A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage. 5) A wireless device such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless device shall function under the intended end-use conditions. 6) One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 101.6 mm (4 in) but less than 406 mm (16 inches) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge. 7) For a vertical barrier (arm) operator utilizing Type B2 contact entrapment protection, one or more contact sensors shall be located at the bottom edge of a vertical barrier (arm). 8) One or more contact sensors shall be located where the risk of entrapment or obstruction exists on a bifold gate, such as: i) At the inner and outer leading edge, ii) Between the outer column panel and the inner bifold panel of an opening bifold gate, iii) Between the outer/column panel and any obstruction within 406mm (16 in) of the gate panel when it is in the fully open position, iv) At hinge points depending on the construction of the gate, v) On the bottom edge(s), if the bottom edge(s) of a bifold gate is/are greater than 152 mm (4 in) but less than 406 mm (16 in) above the ground at any point in its arc of travel.	2) Au moins un capteur de contact doit être situé sur le bord inférieur d'une barrière levante verticale pour véhicules. 3) Au moins un capteur de contact doit être situé au point de pincement d'une barrière à pivot vertical pour véhicules. 4) Un capteur de contact doit être installé et câblé de sorte à éviter que la communication entre le capteur et l'ouvre-barrière soit gênée par des dommages mécaniques. 5) Un dispositif sans fil, comme un appareil qui transmet des signaux de radiofréquence (RF) à l'ouvre-barrière pour prévenir le coincement, doit être situé à un endroit où la transmission des signaux ne sera pas obstruée ou gênée par des structures, des arbres ou d'autres obstacles similaires. Un dispositif sans fil doit fonctionner dans les conditions pour lesquelles il a été conçu. 6) Au moins un capteur de contact doit être situé à l'intérieur et à l'extérieur du bord d'attaque d'une barrière battante. De plus, si le bord inférieur de la barrière battante est situé à plus de 101,6 mm (4 po), mais à moins de 406 mm (16 po) du sol à l'un des points de sa trajectoire, au moins un capteur de contact doit être situé sur le bord inférieur. 7) Pour un ouvre-barrière à bras levant utilisant un capteur de contact pour la protection contre le coincement de type B2, au moins un capteur de contact doit être situé sur le bord inférieur de la barrière à bras levant. 8) Au moins un capteur de contact doit être situé où il existe un risque de coincement ou d'obstruction sur une barrière pliante, comme : i) Au bord d'attaque intérieur et extérieur; ii) Entre le panneau de colonne extérieur et le panneau interne à deux volets d'une barrière pliante; iii) Entre le panneau de colonne extérieur et tout obstacle se trouvant à moins de 406 mm (16 po) du panneau de barrière lorsqu'il est en position complètement ouverte; iv) Aux points de charnière selon la construction de la barrière; v) Sur les bords inférieurs d'une barrière pliante, s'ils sont situés à plus de 152 mm (4 po), mais à moins de 406 mm (16 po) du sol à l'un des points de la trajectoire de la barrière.

Type D Constant Pressure Button Information

When a **constant pressure** control station (Type D) is connected to the operator:

- The gate operator controls must be placed so that the user has **FULL VIEW of the GATE AREA** when the gate is moving.
- The placard shall be placed adjacent to the controls,
- An automatic closing device (such as a timer, loop sensor, or similar device) shall **NOT** be employed, and
- No other activation device shall be connected.
- Permanently mounted controls intended for user activation must be located at least 1.83 m (6 ft) away from **any moving part of the gate** and where the user is prevented from reaching over, under, around or through the gate to operate the controls.



Important Notices

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

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

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

Be sure that the installer has trained you on proper and safe operation of this gate operating system and about the basic functions of the required reversing systems associated with your gate operating system and how to test them (see section 7). These include reversing loops, inherent reversing system, electric edges, photoelectric cells, or other external devices.

- This Owner's Manual is your property. Keep it in a safe place for future reference.
- Be sure that all access control devices are installed a minimum distance of 6 feet away from the gate and gate operator, or in such a way that a person cannot touch the gate or gate operator while using the device. If access control devices are installed in violation of these restrictions, immediately remove the gate operator from service and contact your installing dealer.

Opening device MUST be mounted a minimum of 6 feet (1.83 m) from the gate and NOT accessible through the gate!

Install it high enough to keep out of reach of small children.



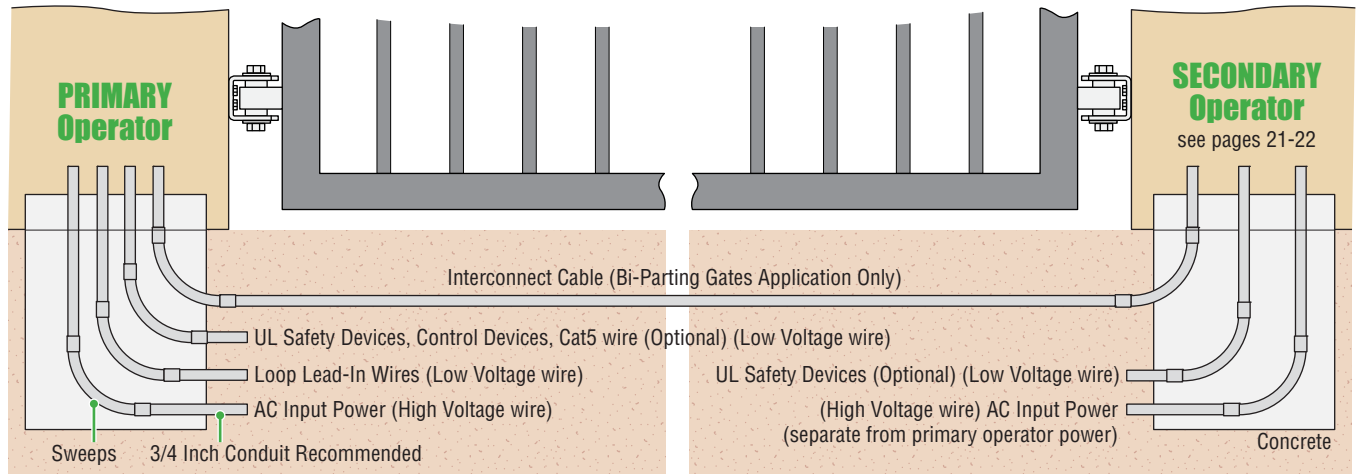
- Loops and loop detectors, photo-cells or other equivalent devices must be installed to prevent the gate from closing on vehicular traffic.
- The speed limit for vehicular traffic through the gate area is 5 MPH. Install speed bumps and signs to keep vehicular traffic from speeding through the gate area. Failure to adhere to posted speed limits can result in damage to the gate, gate operator, and to the vehicle.
- Be sure that all persons who will use the gate system are familiar with the proper use of the gate and gate operator and are familiar with the possible hazards associated with the gate system.
- Warning signs are to be permanently installed in the area of the gate in such a manner that at least one warning sign is visible by persons located on each side of the gate, for both the secure and unsecure sides of the gate.
- It is your responsibility to periodically check all entrapment protection devices. If any of these devices are observed to function improperly, remove the operator from service immediately and contact your installing or servicing dealer.
- Follow the recommended maintenance schedule.
- Do not allow children to play in the area of the operator or to play with any gate-operating device.
- To remove the gate operator from service, operate the gate to the full open position and then shut off power to the operator at the service panel.

Installation

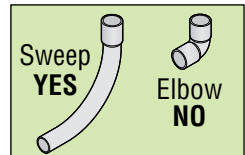
Prior to beginning the installation of the slide gate operator, we suggest that you become familiar with the installation instructions in this manual. This will help insure that your installation is performed in an efficient and professional manner compliant with **UL 325 safety** and **ASTM F2200 construction standards**.

The proper installation of the vehicular slide gate operator is an extremely important and integral part of the overall access control system. Check all local building ordinances and building codes prior to installing this operator. Be sure your installation is in compliance with local codes.

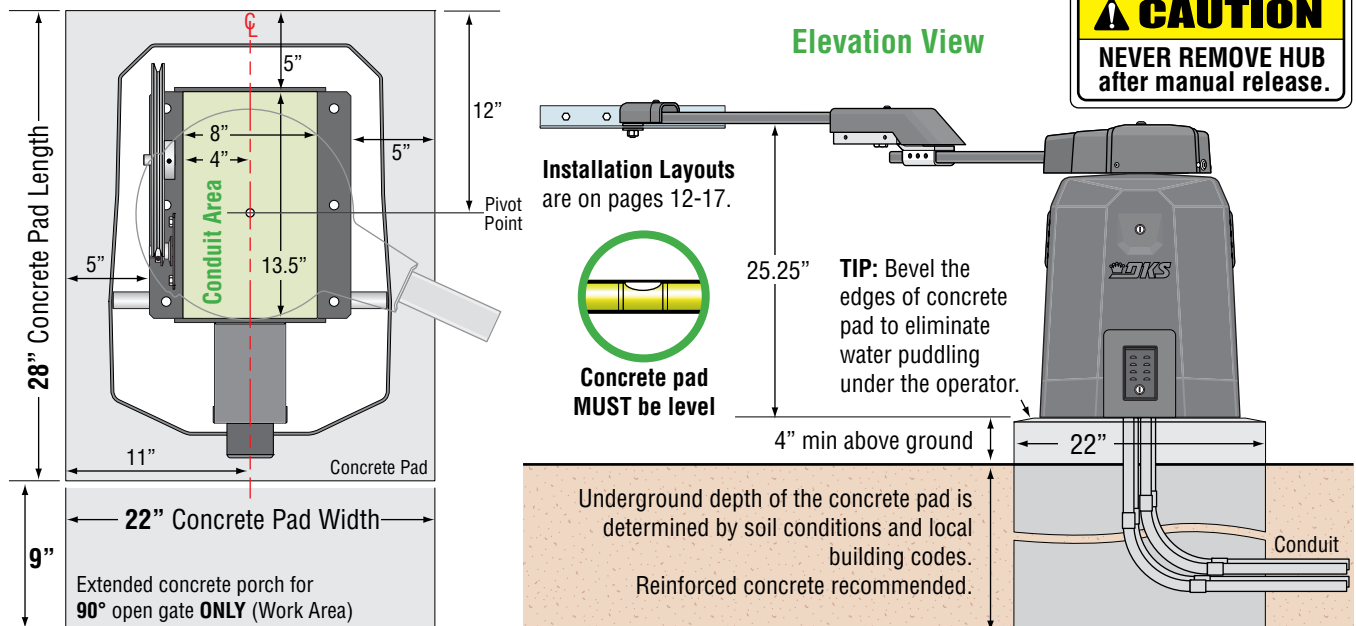
Underground Conduit Requirements



- The conduit requirements are for a typical slide gate operator installation (the secondary operator is shown when using bi-parting gates). **The conduit requirements for your application may vary from this depending on your specific needs.**
- Be sure that all conduits are installed in accordance with local codes.
- **Never** run low voltage rated wire in the same conduit as high voltage rated wire.
- Use only sweeps for conduit bends. Do not use 90° elbows as this will make wire pulls very difficult and can cause damage to wire insulation. DoorKing recommends using 3/4-inch conduit.
- **External Entrapment Protection is REQUIRED** (photocell and/or reversing edge). The operator will **NOT** run without **ONE** or more monitored type B1 or B2 external entrapment protection devices installed. See page 23.



Concrete Pad



Installation Layouts

ANY gate bracket position can be calculated as long as you follow the restrictions of "Calculating arm lengths". Examples on the next 5 pages.

48" Gate Attachment Point - Open 90° - Gates up to 22 Ft.

Closed Gate

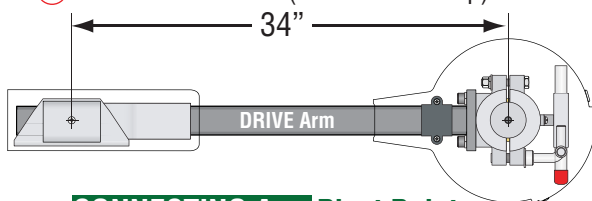
Calculating arm lengths:

A **STRAIGHT** line is drawn from the **closed gate bracket** through the **open gate bracket** and **MUST** intersect the **operator's pivot point**. The drive and connecting arm's pivot point calculations will be made from these **TWO measurements** taken from this line.

Arm Calculations

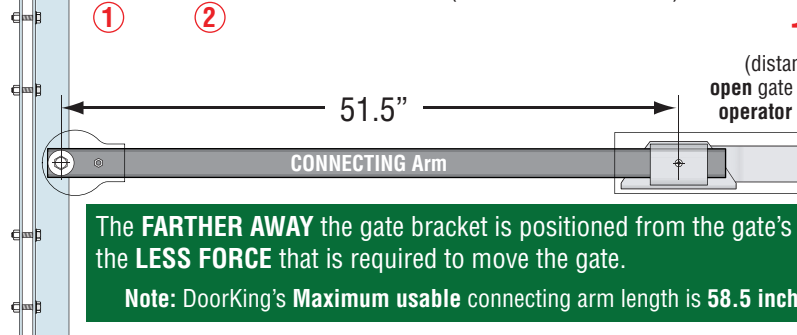
DRIVE Arm Pivot Points

① $67.94" \div 2 = 33.97$ (round number up) = **34 inches**



CONNECTING Arm Pivot Points

① $67.94" + 17.61" - 33.97" = 51.58$ (round number down) = **51.5 inches**



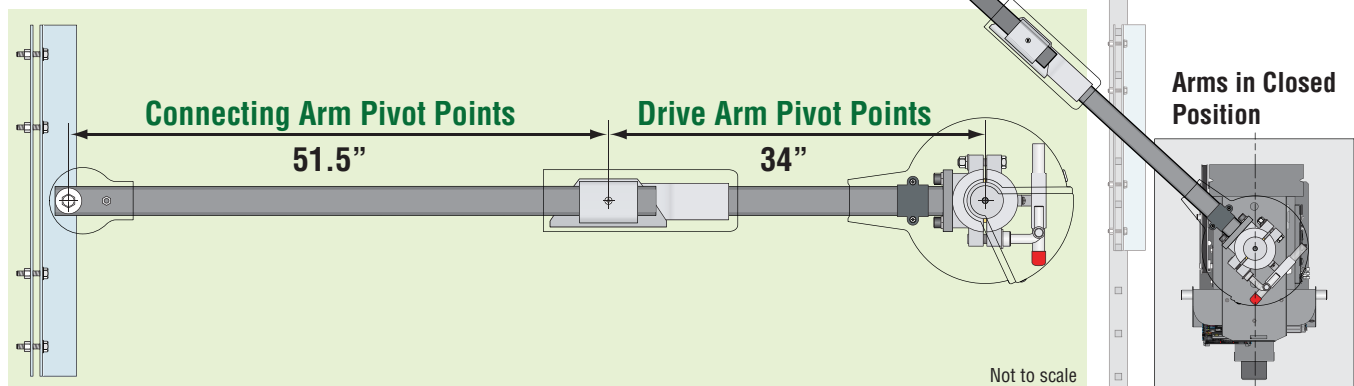
The **FARTHER AWAY** the gate bracket is positioned from the gate's hinge, the **LESS FORCE** that is required to move the gate.

Note: DoorKing's Maximum usable connecting arm length is 58.5 inches.

Closed Gate

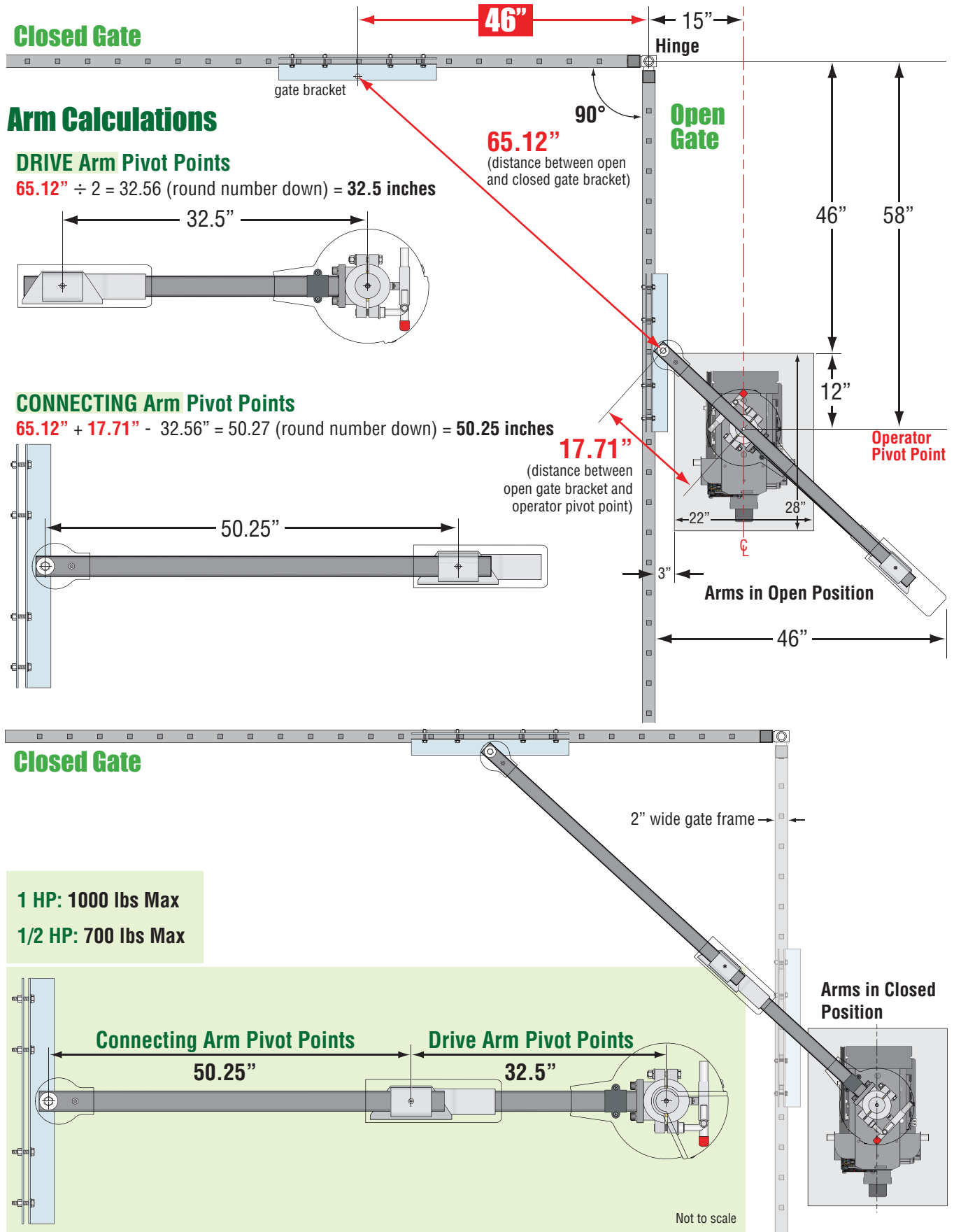
1 HP: Up to 22 Ft - 1000 lbs Max

1/2 HP: Up to 18 Ft - 700 lbs Max

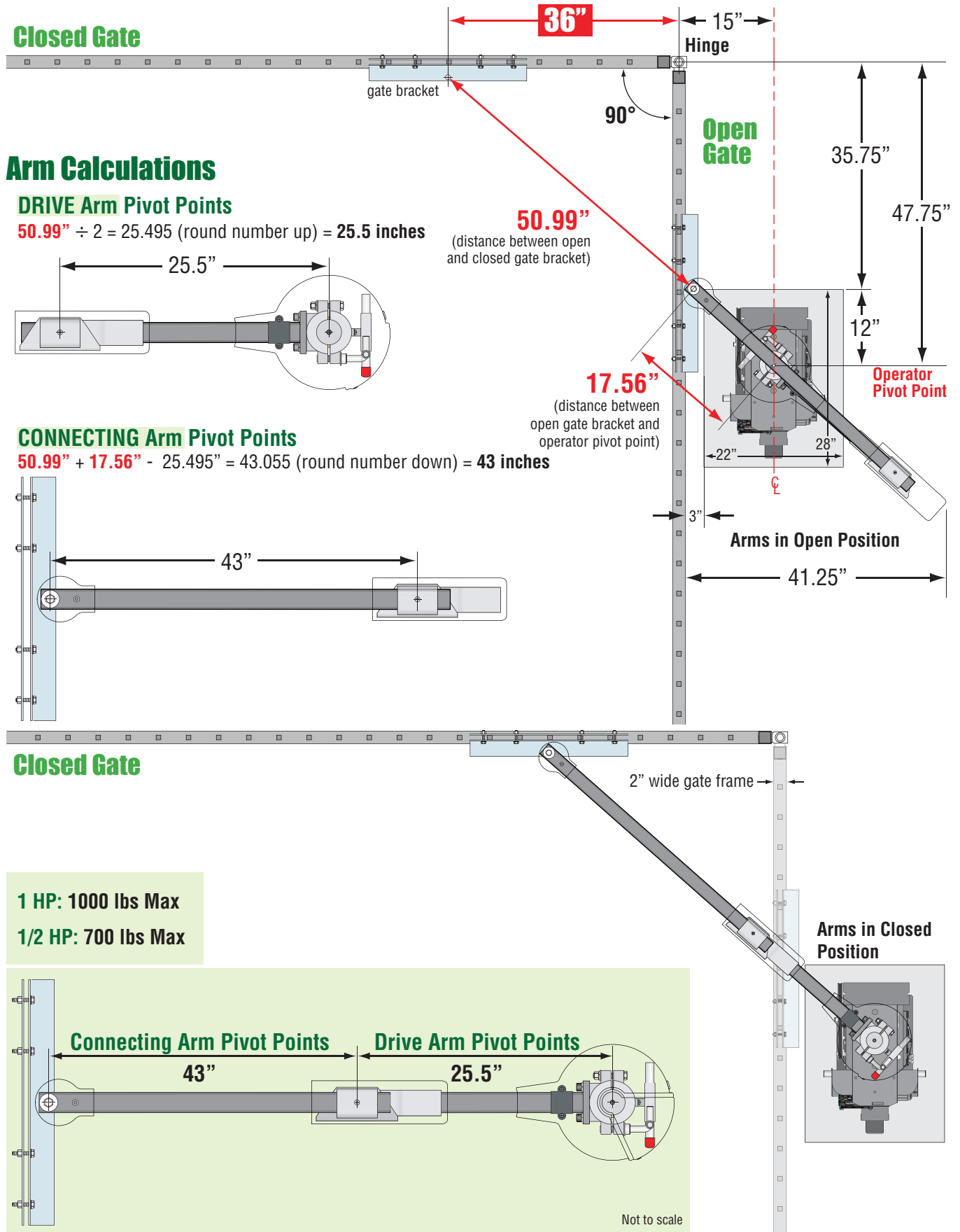


Not to scale

46" Gate Attachment Point - Open 90° - Gates up to 18 Ft.



36" Gate Attachment Point - Open 90° - Gates up to 14 Ft.



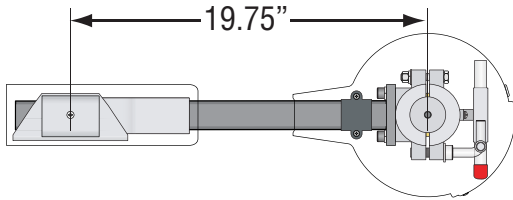
28" Gate Attachment Point - Open 90° - Gates up to 8 Ft.

Closed Gate

Arm Calculations

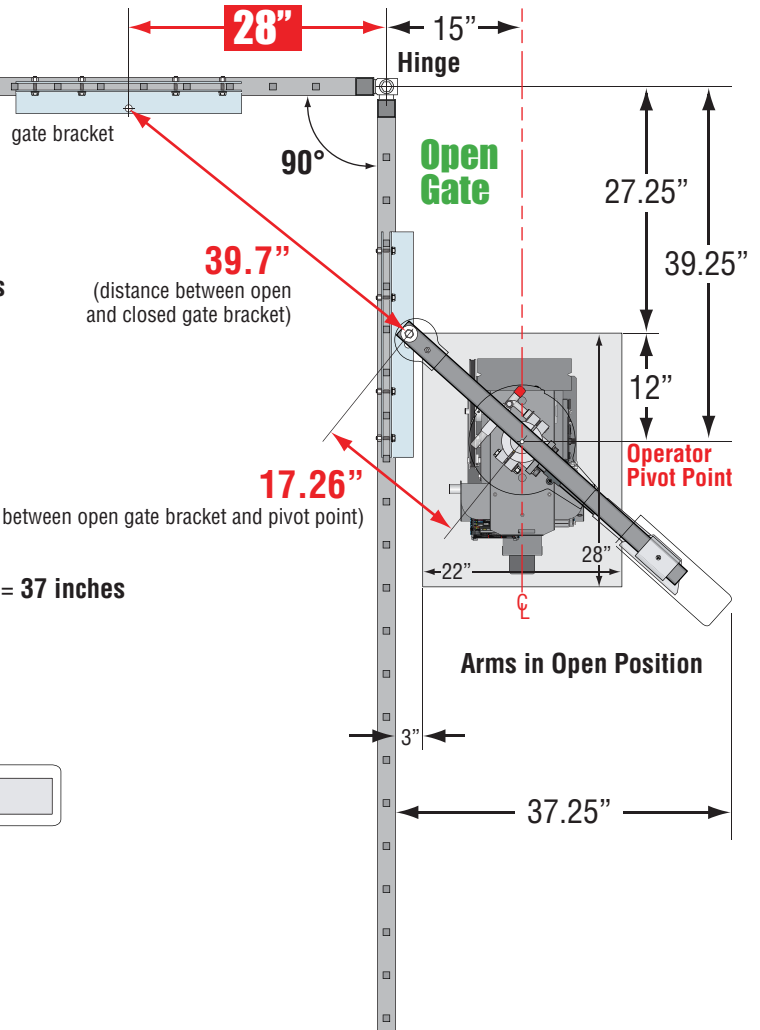
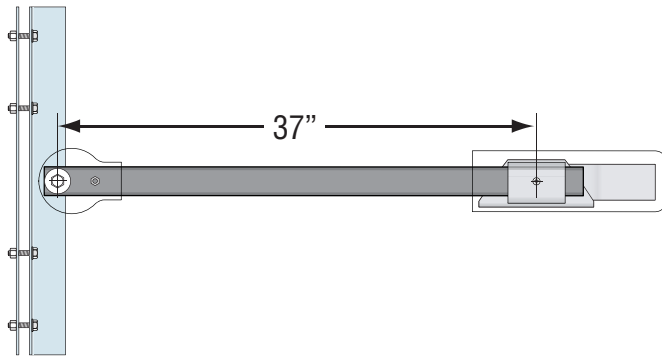
DRIVE Arm Pivot Points

$$39.7" \div 2 = 19.85 \text{ (round number down)} = 19.75 \text{ inches}$$



CONNECTING Arm Pivot Points

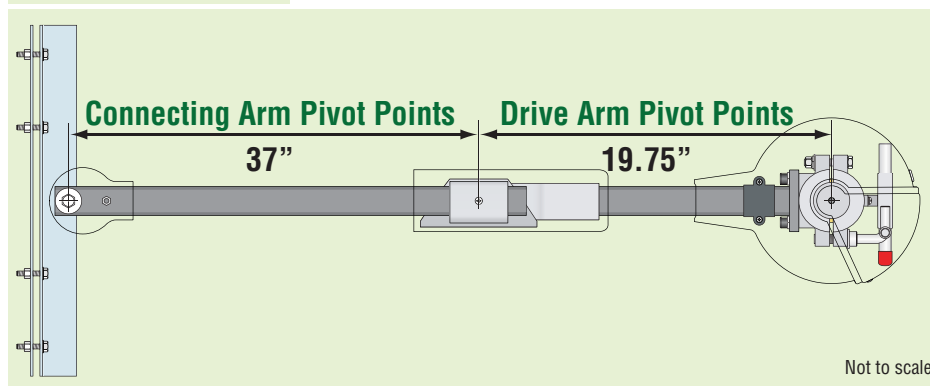
$$39.7" + 17.26" - 19.85" = 37.11 \text{ (round number down)} = 37 \text{ inches}$$



Closed Gate

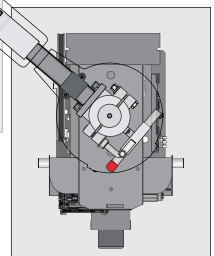
1 HP: 1000 lbs Max

1/2 HP: 700 lbs Max

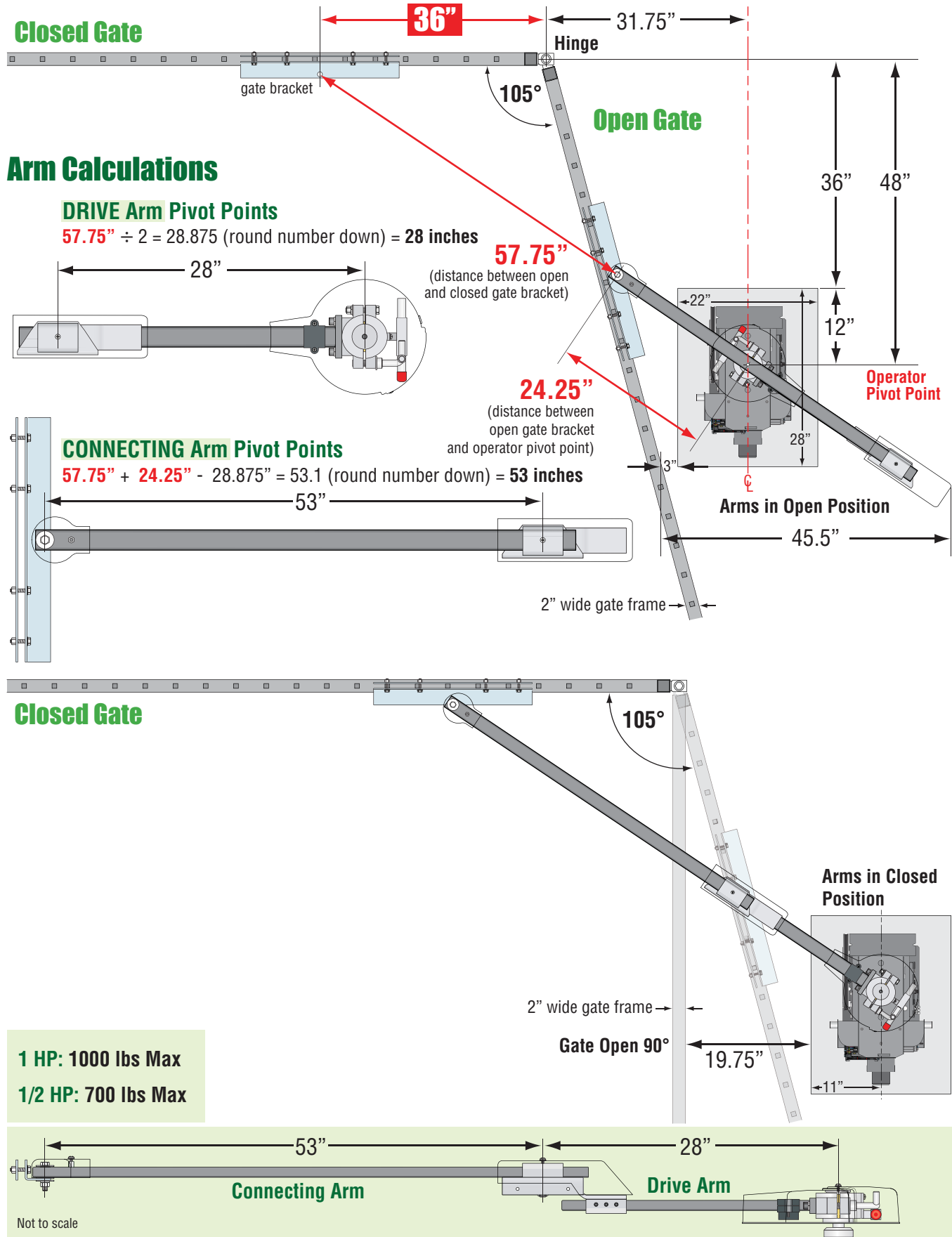


← 2" wide gate frame

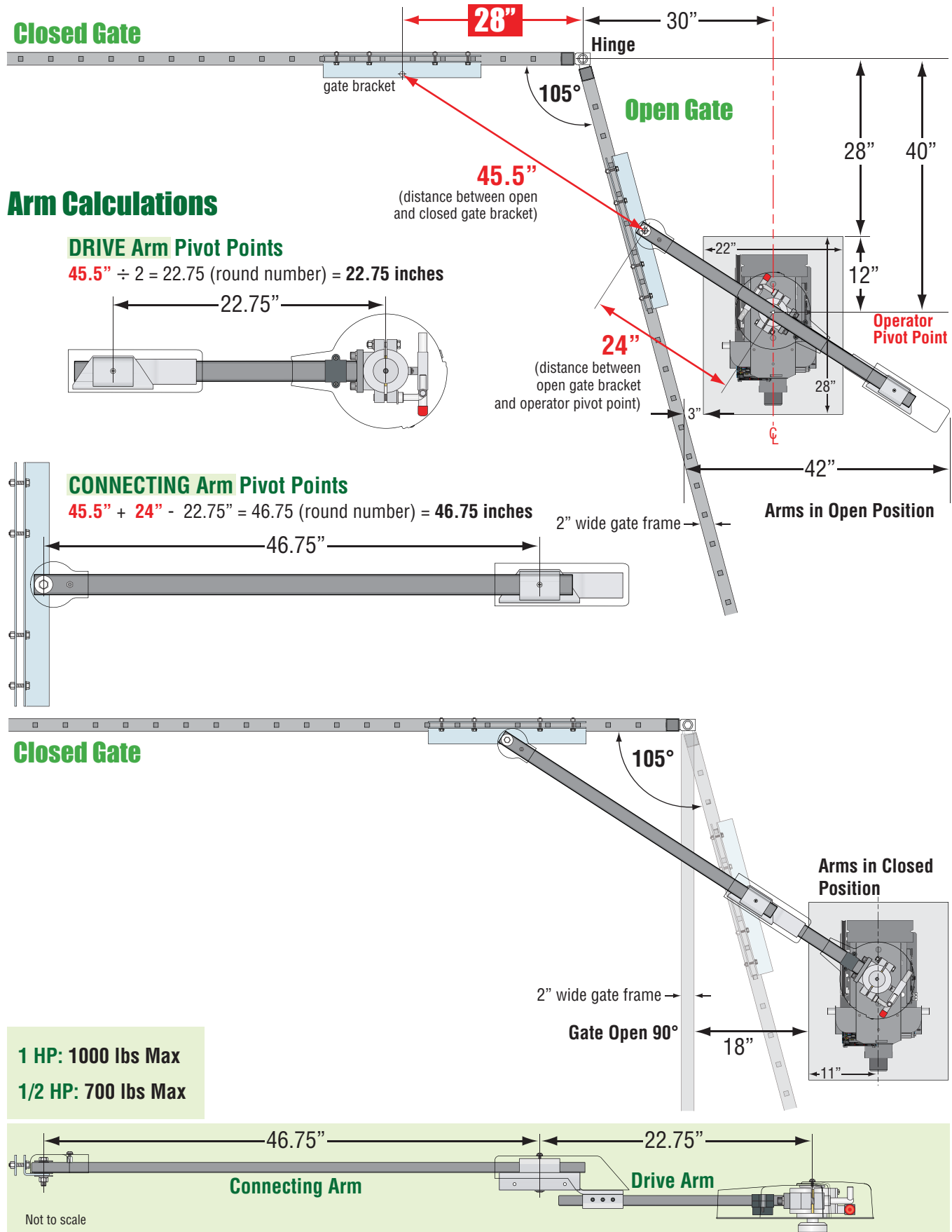
Arms in Closed Position



36" Gate Attachment Point - Open 105° - Gates up to 14 Ft.

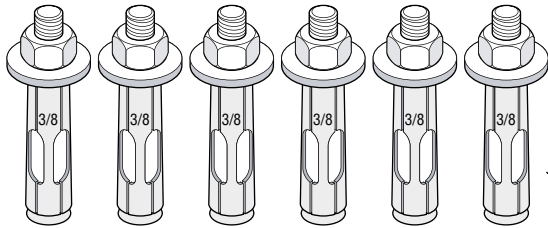


28" Gate Attachment Point - Open 105° - Gates up to 8 Ft.



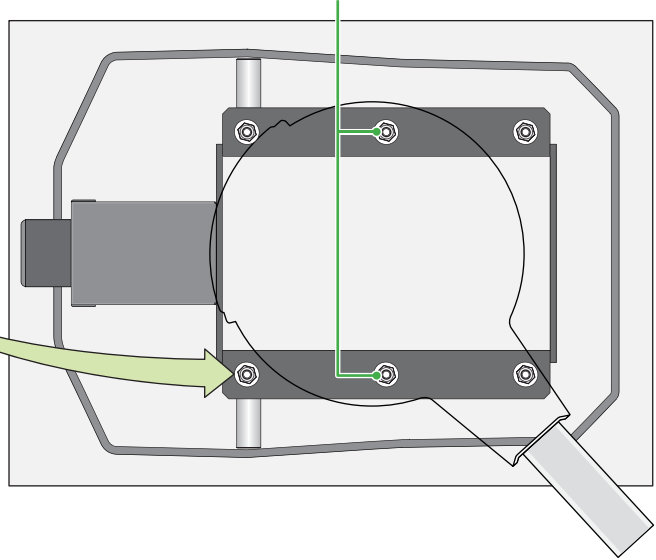
Securing Operator to Pad

Permanently attach the operator to the concrete pad using **SIX (6) 3/8" x 3" (Min)** wedge anchors (not supplied).



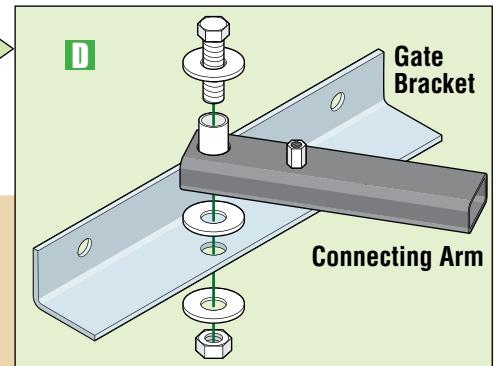
SIX (6) 3/8" x 3" (Min) Wedge Anchor (Not supplied)

IMPORTANT: Center mounted wedge anchors are **REQUIRED** to prevent chassis from flexing during operation.

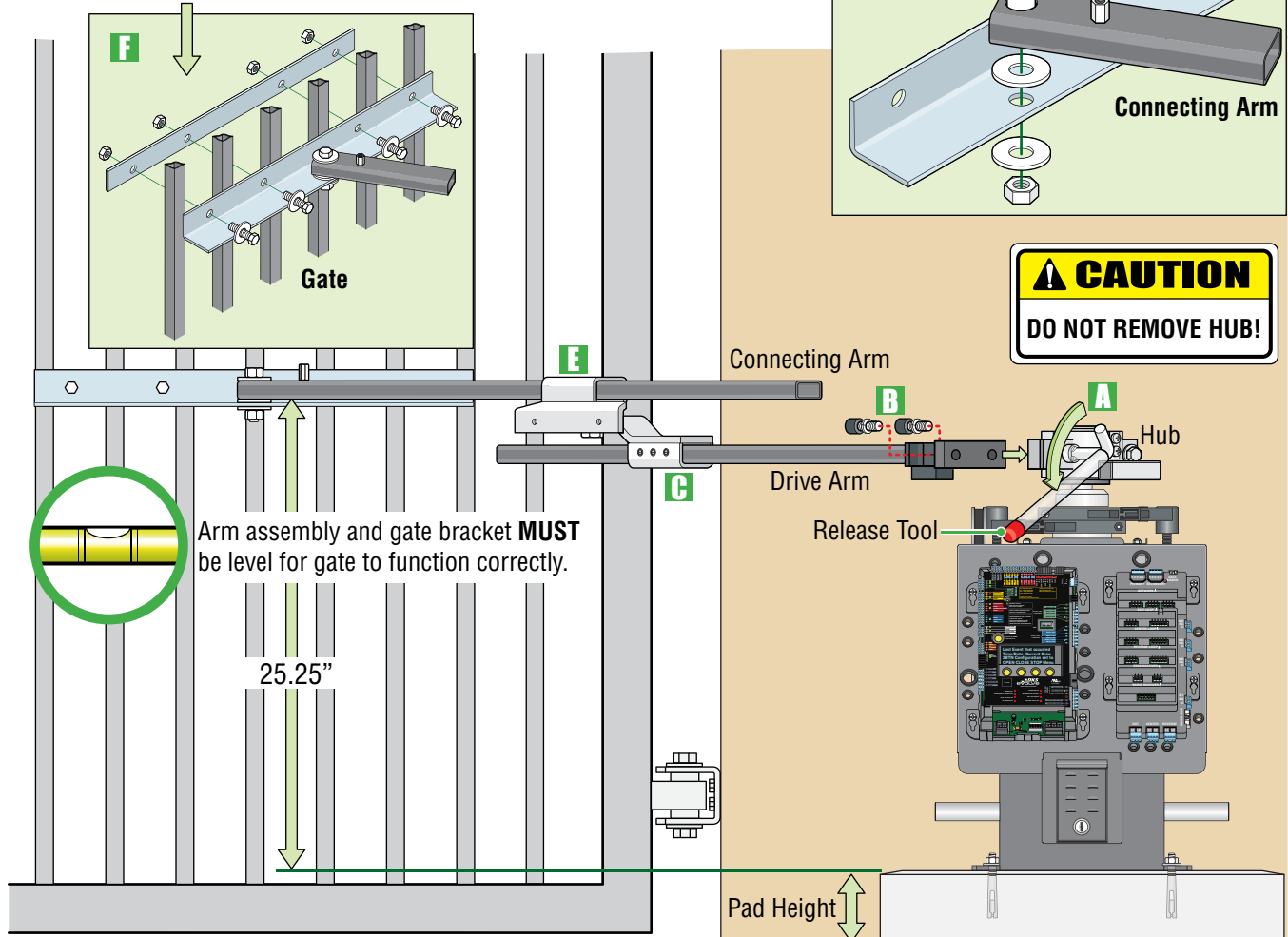


Attaching Arm

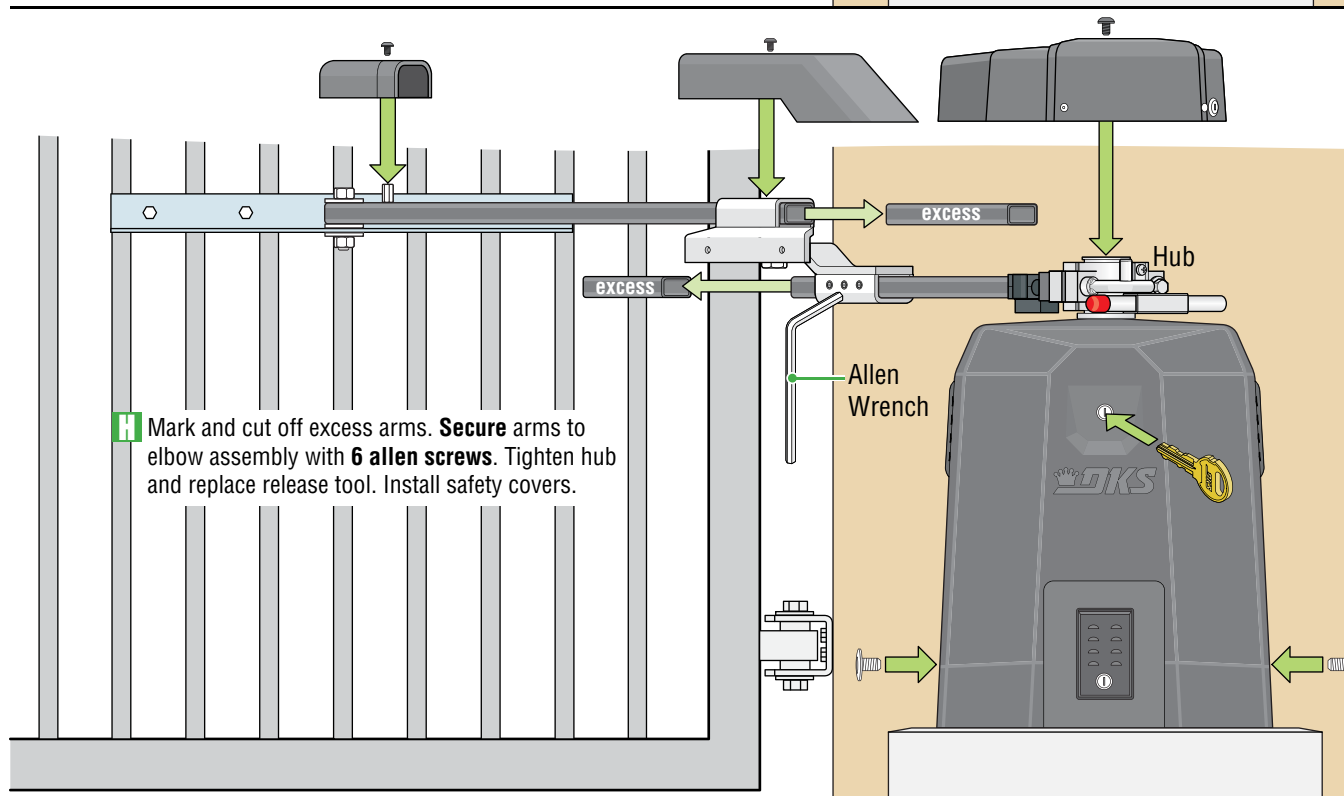
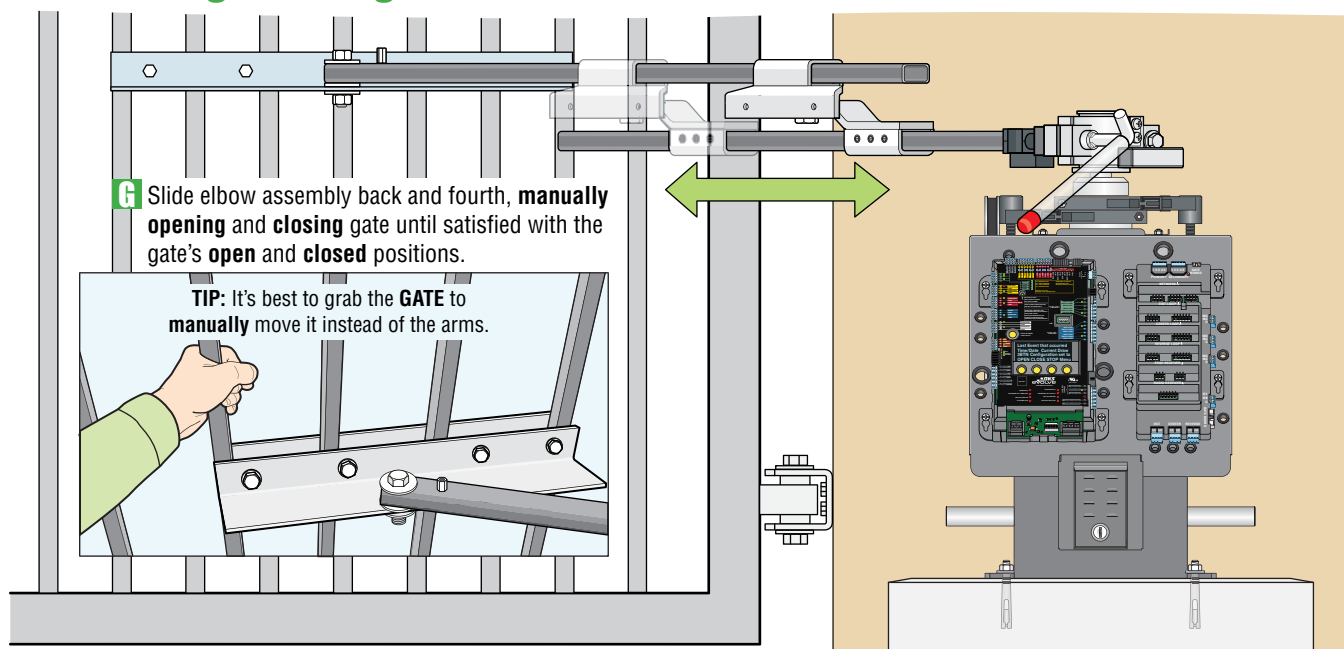
- A** Release hub with release tool. **DO NOT REMOVE HUB!**
- B** Bolt drive arm to operator.
- C** Slide elbow assembly on drive arm.
- D** Bolt connecting arm to gate bracket.
- E** Slide connecting arm into elbow assembly. **KEEP ARM ASSEMBLY LEVEL.**
- F** Bolt gate bracket to gate. Continued on next page



CAUTION
DO NOT REMOVE HUB!



Determining Arm Lengths

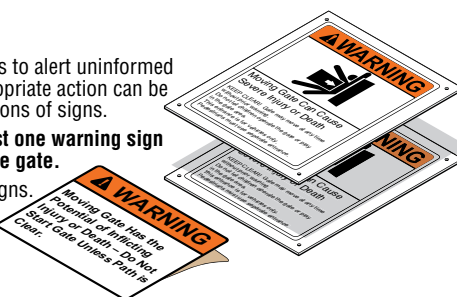


Installation of Warning Signs

This DoorKing Slide Gate Operator is shipped with two warning signs. The purpose of the warning sign is to alert uninformed persons, and to remind persons familiar with the gate system, that a possible hazard exists so that appropriate action can be taken to avoid the hazard or to reduce exposure to the hazard. See page 6 for suggested mounting positions of signs.

- Warning signs are to be permanently installed in the area of the gate in such a manner that at least one warning sign is visible by persons located on each side of the gate, for both the secure and unsecure sides of the gate.
- Use appropriate hardware such as wood or sheet metal screws (not supplied) to install the warning signs.

A decal for a **constant pressure button** (UL Type D) is included with the operator and needs to be placed next to the button when installed. See page 9 for more information about the constant pressure button.

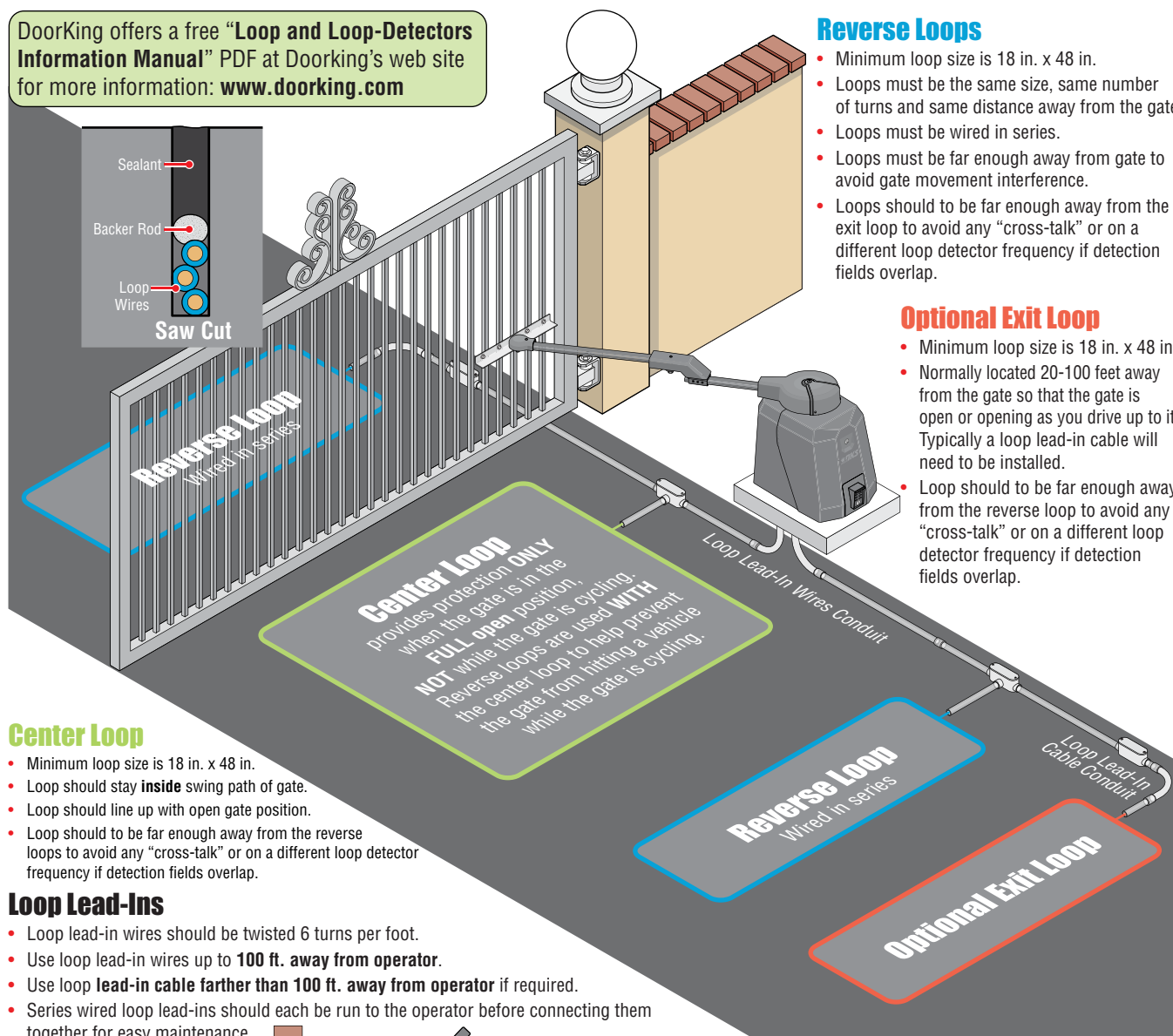


In-Ground Loops Typical Layout

Illustration not to scale.

Every swing loop installation is unique and may have **specific problems that are not fully explained in this manual**. DoorKing **HIGHLY RECOMMENDS** that the loop system is installed by a **Professional Installer** who understands loop systems and can foresee any problems that might occur for your specific installation. Swing gates require **two reversing loops** installed **outside** the swinging path of the gate to avoid detecting it in motion. A **center loop** allows the swinging gate to pass over it without detecting it and reversing the gate and provides protection when the gate is in the **FULL open** position.

DoorKing offers a free “Loop and Loop-Detectors Information Manual” PDF at DoorKing’s web site for more information: www.doorking.com



Reverse Loops

- Minimum loop size is 18 in. x 48 in.
- Loops must be the same size, same number of turns and same distance away from the gate.
- Loops must be wired in series.
- Loops must be far enough away from gate to avoid gate movement interference.
- Loops should be far enough away from the exit loop to avoid any “cross-talk” or on a different loop detector frequency if detection fields overlap.

Optional Exit Loop

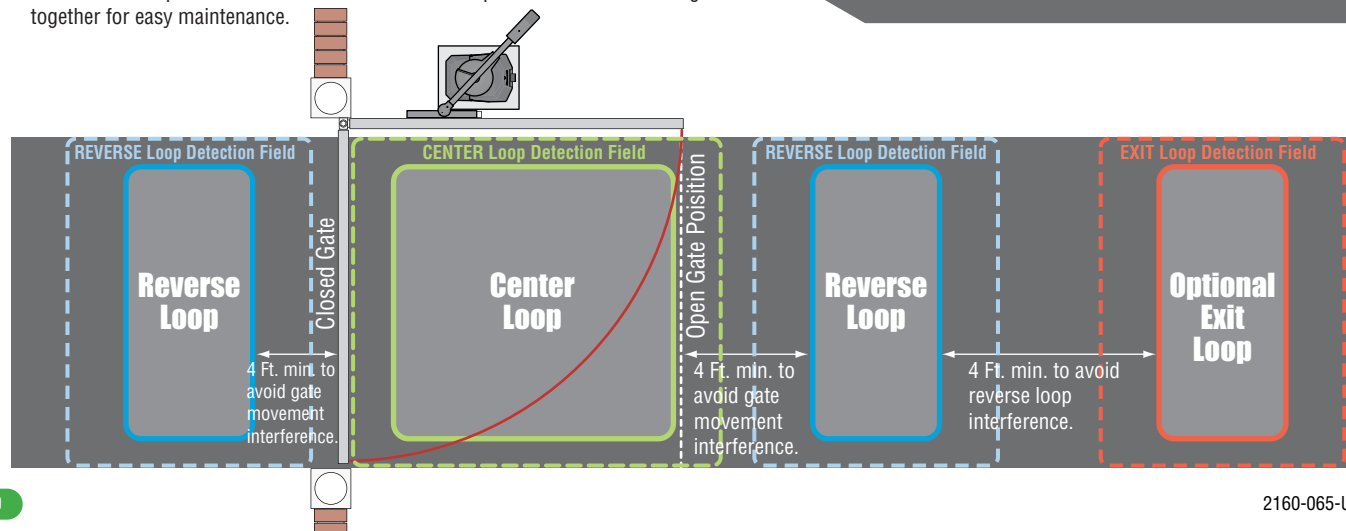
- Minimum loop size is 18 in. x 48 in.
- Normally located 20-100 feet away from the gate so that the gate is open or opening as you drive up to it. Typically a loop lead-in cable will need to be installed.
- Loop should be far enough away from the reverse loop to avoid any “cross-talk” or on a different loop detector frequency if detection fields overlap.

Center Loop

- Minimum loop size is 18 in. x 48 in.
- Loop should stay **inside** swing path of gate.
- Loop should line up with open gate position.
- Loop should be far enough away from the reverse loops to avoid any “cross-talk” or on a different loop detector frequency if detection fields overlap.

Loop Lead-Ins

- Loop lead-in wires should be twisted 6 turns per foot.
- Use loop lead-in wires up to **100 ft. away from operator**.
- Use loop **lead-in cable farther than 100 ft. away from operator** if required.
- Series wired loop lead-ins should each be run to the operator before connecting them together for easy maintenance.



Requirements for Bi-Parting Gate Operators

This information is needed to setup bi-parting gates. Run **all necessary conduits** for connection of devices to **EACH** gate operator depending on **your specific** bi-parting gate layout. **Never** run high voltage wires in the same conduit as low voltage wires.

EACH Operator Requirements and Available Inputs

➡ **Light Blue Arrow:** These are **REQUIRED** for Bi-Parting gate operators to function.

➡ **Yellow Arrow:** Only these inputs will **FUNCTION** on **EACH** operator when used.

Interconnect Cable: **REQUIRED** to **HARDwire** operators together.

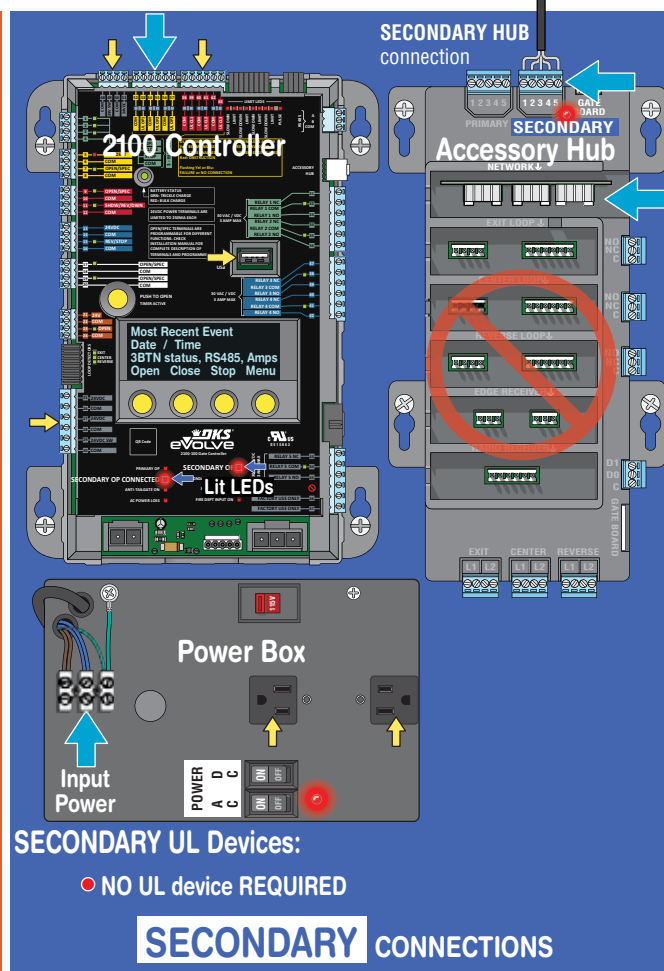
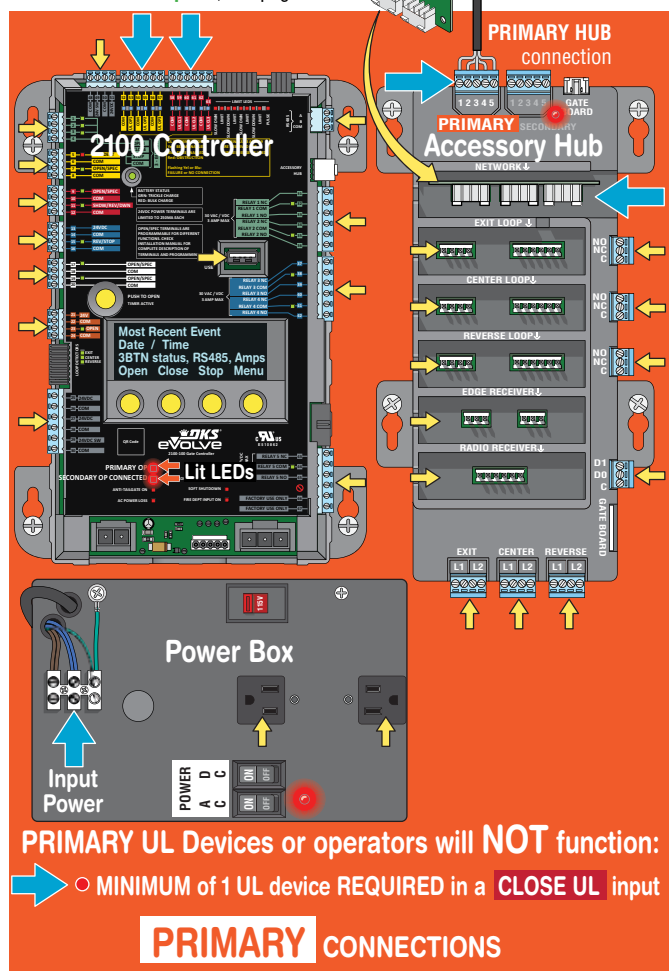
Bi-Parting HARDwiring Card: **REQUIRED** in **EACH** operator accessory hub's **NETWORK SLOT** for **HARDwiring**. (Included with each operator) **wireless option**, see page 29.

HARDwire Interconnect Cable **REQUIRED**

sold separately from DoorKing (30 ft, 40 ft, 50 ft or 200 ft)

Primary #1 ↔ #1 **Secondary**
 #2 ↔ #2
 #3 ↔ #3
 #4 ↔ #4
 #5 ↔ #5

Your choice on which operator is which depending on which Primary/Secondary terminals each operator is connected to.



See next page for some sample bi-parting gate UL Device layouts.

Power Up and Programming for Primary/Secondary Operators

ALL devices **MUST** be connected to **EACH** operator for **YOUR specific** layout choices **BEFORE** programming can begin.

ALL above requirements **MUST** be met **BEFORE** programming can begin.

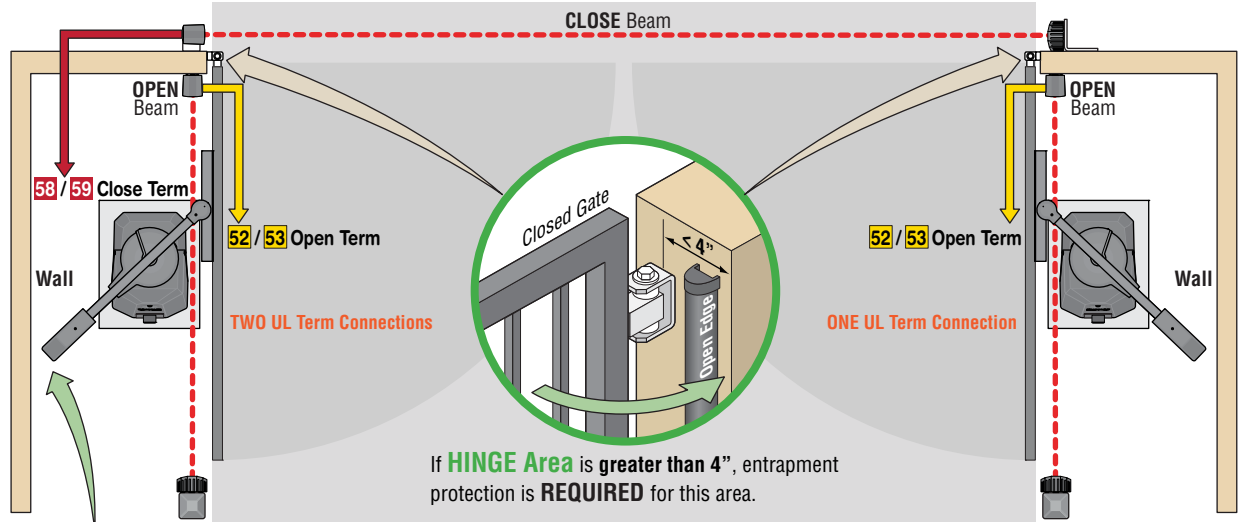
- Turn **ON** power to **BOTH** operators at **START** of programming. You **Must** program at least the **FIRST 6 steps** to setup the **PRIMARY OPERATOR** to function.
- **Step 8** will **ONLY** connect the operators together electronically (**pairing**). Programming **secondary operator** comes later in the programming sequence.
- Adjust the **Reverse Sensors** on the **SECONDARY OPERATOR** **AFTER** first completing the 21 steps needed on the **PRIMARY** operator's 2100 controller.

Bi-Parting Gates Technical Information Continued

Sample UL Device Layouts and Wiring for Bi-Parting Gates, Your layout can vary

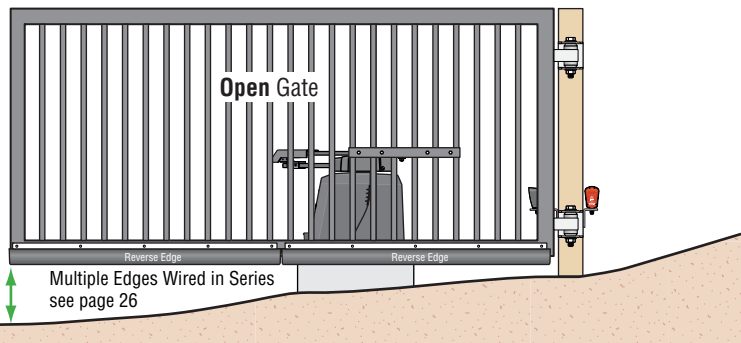
EACH operator may **NOT** have a **OPEN** and **CLOSE** UL device connected to them with certain bi-parting gate layouts, but **BOTH** gates **MUST** have the **OPENING** and **CLOSING** cycles monitored by a operational UL device(s) **CORRECTLY POSITIONED** to cover **EACH** gate's movement.

Open Beams & Close Beam (possible reversing edges for hinge area and/or bottom of gate)

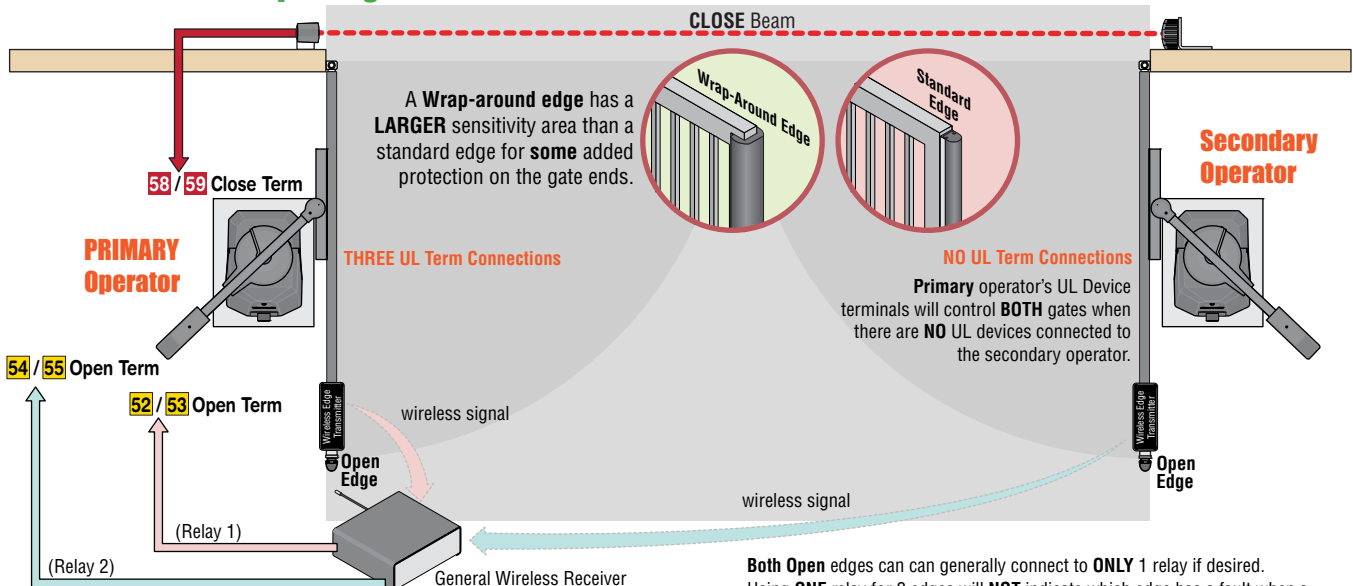


Gates **may** create an entrapment area when **open**. If the distance between an entrapment or obstruction exists **less than 16"** from the open gate, then entrapment protection is **REQUIRED** for this area.

If the **Bottom of Gate** is greater than 4" but less than 16" above the ground at any point in its arc of travel, entrapment protection is **REQUIRED** for this area.



OPTIONAL Wireless Open Edges & Close Beam



NOTE: Any of the wireless receivers can handle **MULTIPLE transmitters** when using wireless edges.

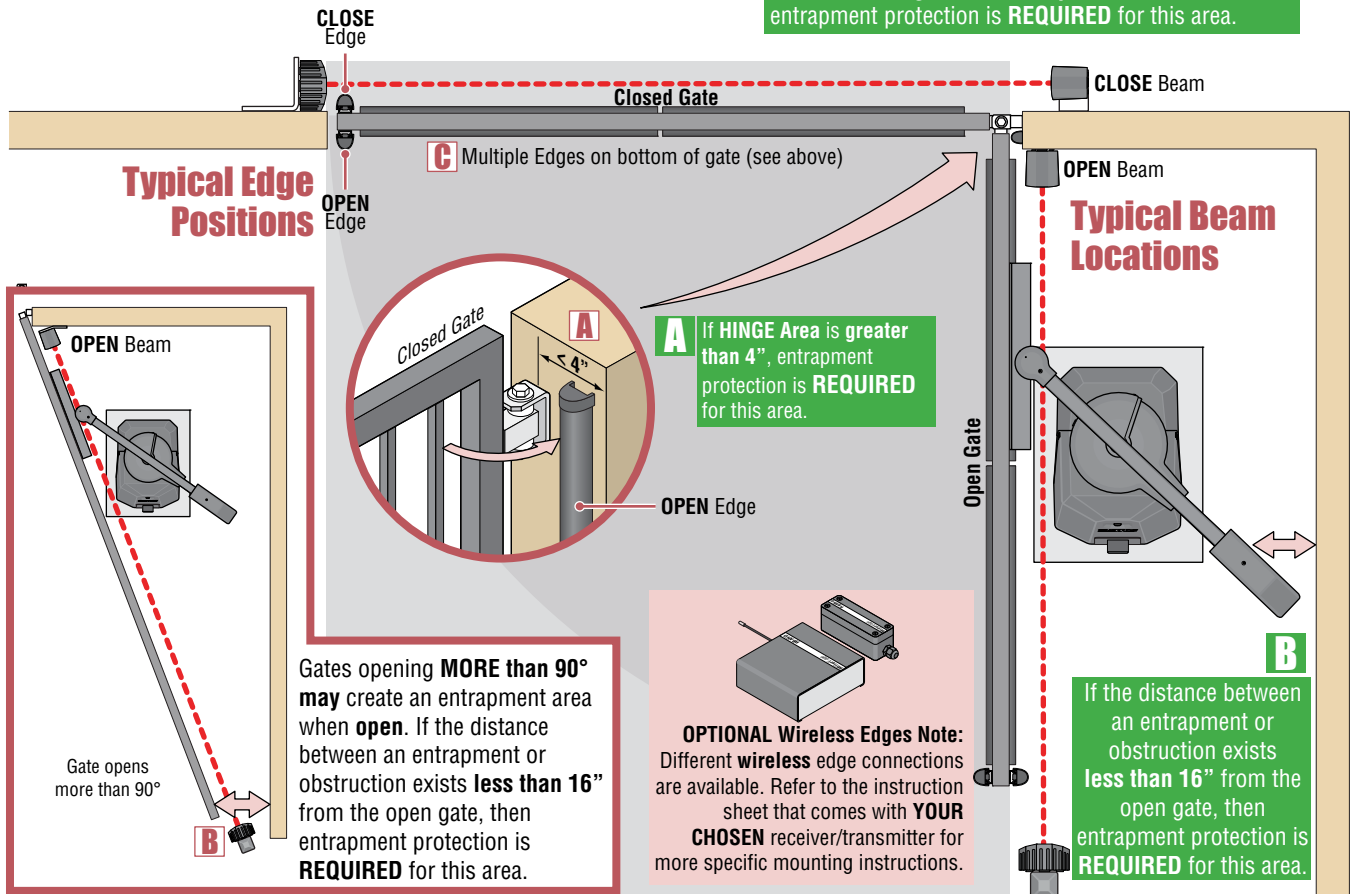
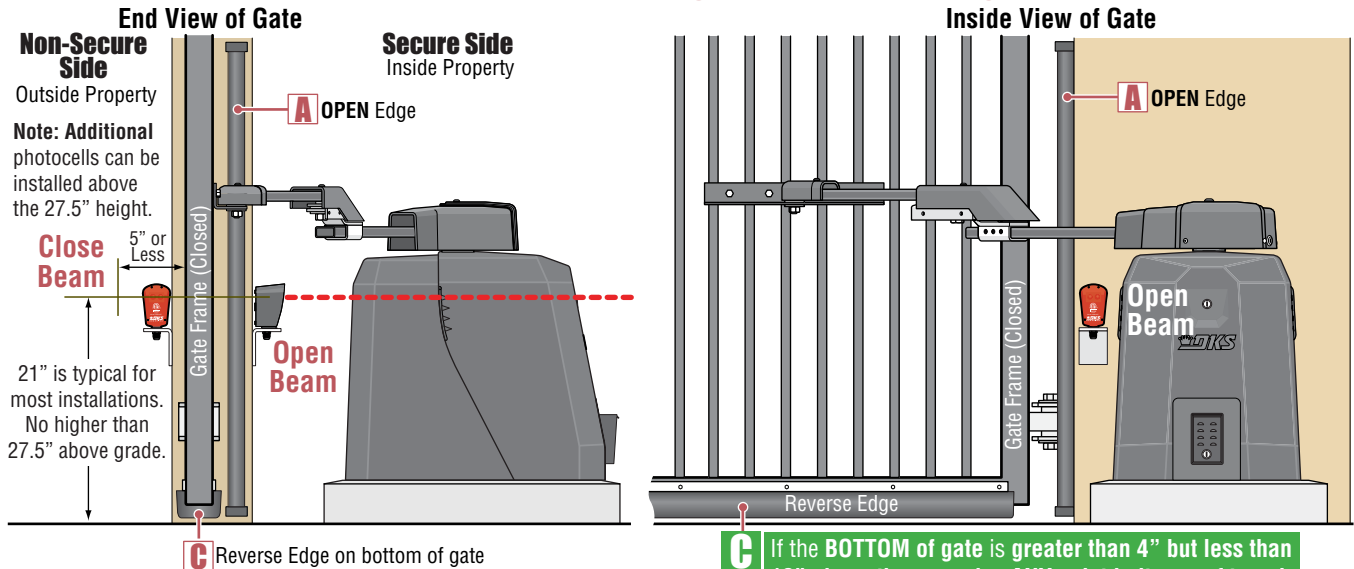
Both Open edges can generally connect to **ONLY 1 relay** if desired. Using **ONE** relay for 2 edges will **NOT** indicate which edge has a fault when a malfunction occurs, just **a edge** connected to 52/53 **Open Term** has a fault and **You** will have to determine which edge is malfunctioning. Using **2 relays** for this layout **WILL** indicate which specific edge is malfunctioning.

UL Device Mounting Positions and Locations

In addition to the inherent reversing sensor system-Type A, this operator has UL 325 terminals for the connection of **photo beams**-Type B1 and/or **reversing edges**-Type B2 entrapment protection required by UL 325 standards. Install these devices where the risk of entrapment or a safety hazard exists. Types of UL devices and typical mounting positions are shown below and the next 3 pages. **Your installation can vary.**

Entrapment Protection MUST be provided for the gate system where the risk of entrapment or obstruction exists. The operator will NOT run without ONE or more monitored type B1 or B2 external entrapment protection devices installed. Install these devices where ever the risk of entrapment or obstruction exists.

Typical UL devices mounting positions and heights.



UL Devices - Sold Separately

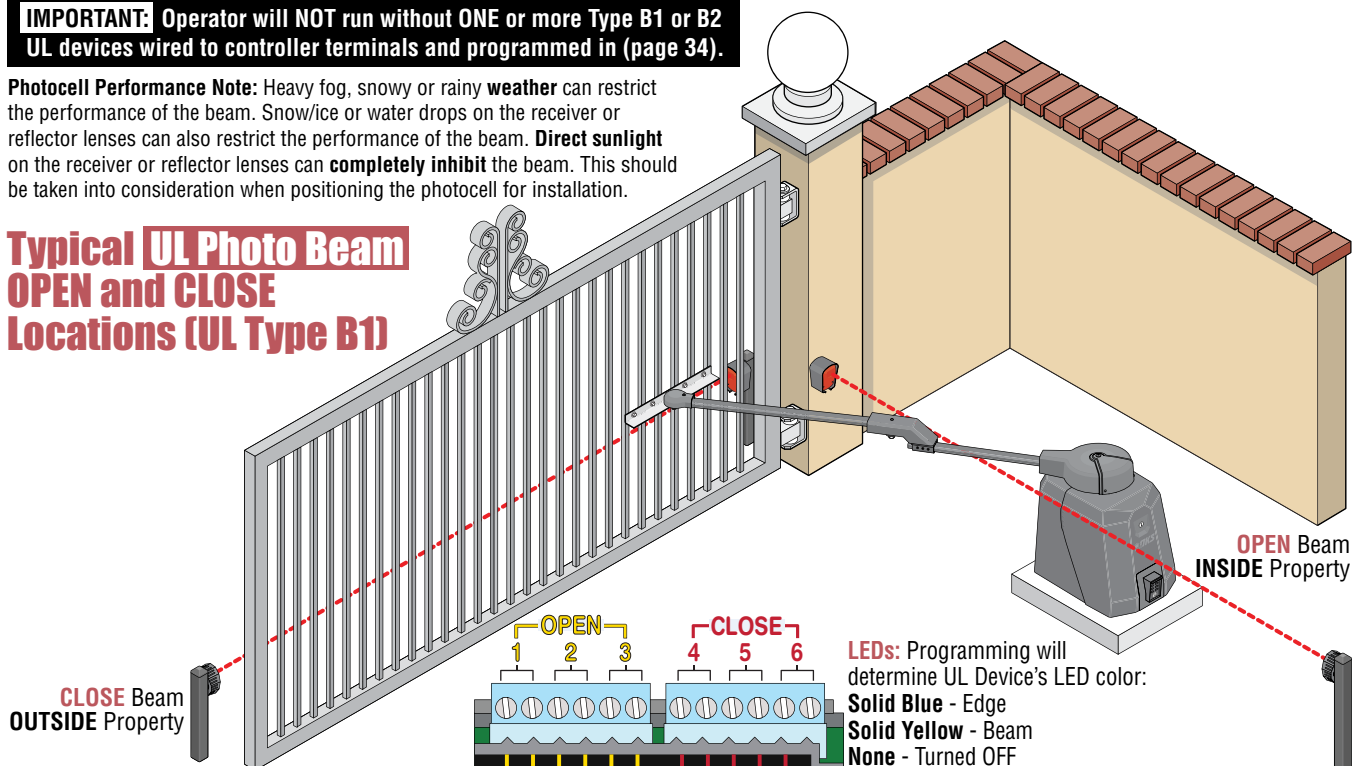
UL Device Locations and Terminal Inputs

This operator has UL 325 terminals for the connection of **photo beams**-Type B1 and/or **reversing edges**-Type B2 entrapment protection devices required by UL 325 standards. Install these UL devices where the risk of entrapment or a safety hazard exists. Terminal numbers for UL devices are shown here and on the next 2 pages. **ALL connected UL devices MUST be programmed or they will NOT function.**

IMPORTANT: Operator will NOT run without ONE or more Type B1 or B2 UL devices wired to controller terminals and programmed in (page 34).

Photocell Performance Note: Heavy fog, snowy or rainy weather can restrict the performance of the beam. Snow/ice or water drops on the receiver or reflector lenses can also restrict the performance of the beam. **Direct sunlight** on the receiver or reflector lenses can **completely inhibit** the beam. This should be taken into consideration when positioning the photocell for installation.

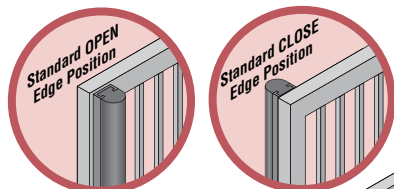
Typical UL Photo Beam OPEN and CLOSE Locations (UL Type B1)



UL Device Terminals:

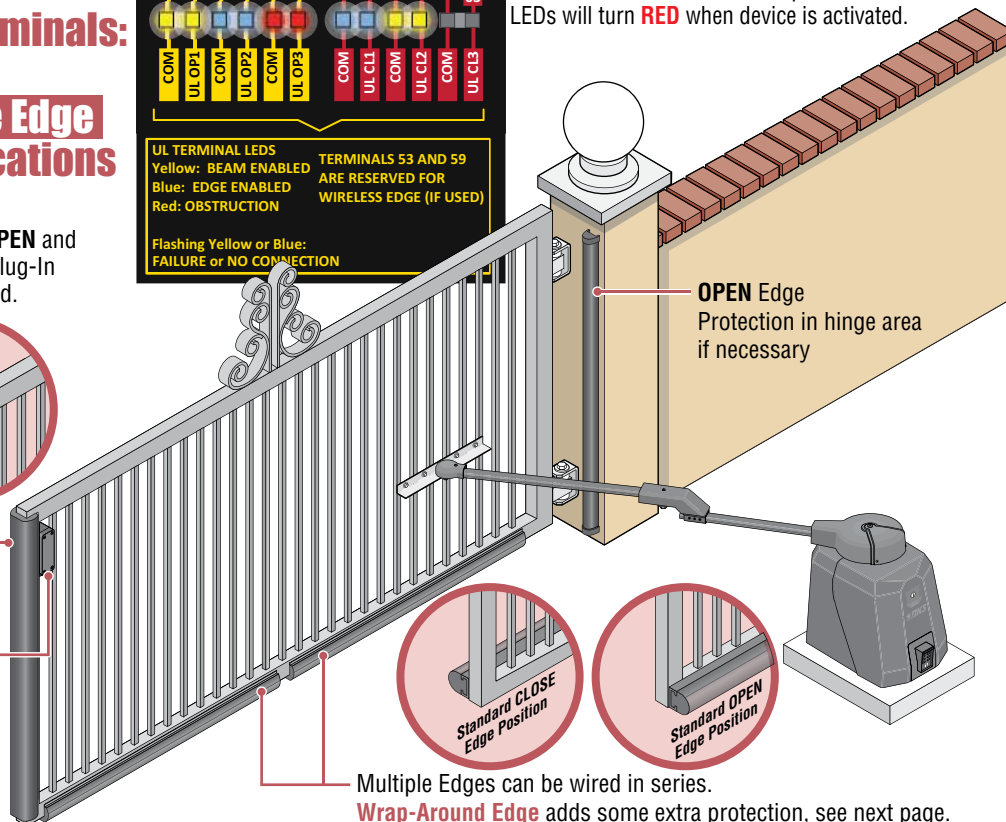
Typical UL Reverse Edge OPEN and CLOSE Locations (UL Type B2)

UL Terminal Note: Terminals **53 OPEN** and **59 CLOSE** are **Reserved** for DKS Plug-In Wireless Edge Receiver when used.



Wrap-Around Edge adds some extra protection, see next page.

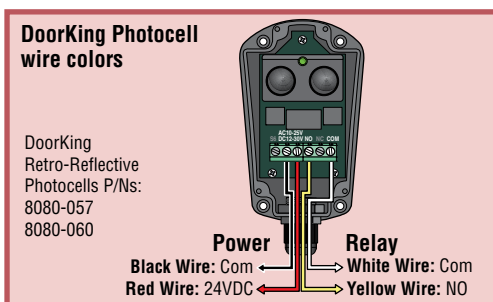
MONITORED Wireless Edge transmitter can be mounted on gate when used for reversing edges connection if desired. (sold separately)



Multiple Edges can be wired in series.
Wrap-Around Edge adds some extra protection, see next page.

UL Device Layouts and Wiring Examples

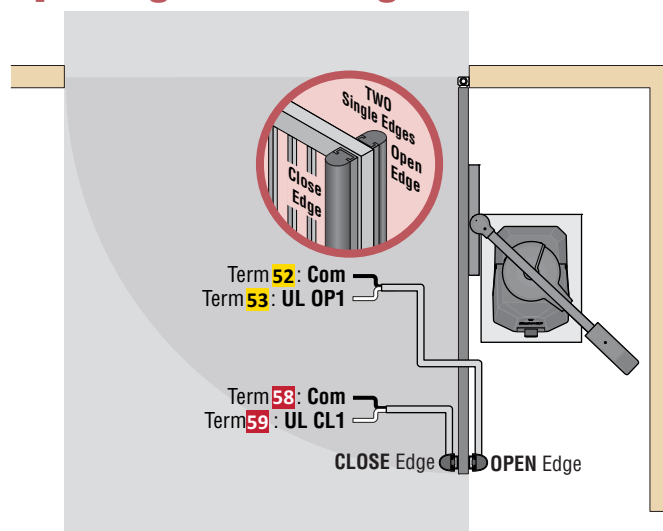
These layouts below are typical for **MOST** swing gate UL 325 entrapment protection device requirements. UL Terminal connection numbers are shown for each UL device used in these layouts. **Each** UL device **MUST** be specifically programmed to enable them, see "UL Device Set up" Step 3 programming. UL devices can be connected to **EITHER** operator when installing bi-parting gates (see pages 22 and 34). **Your layout can vary.**



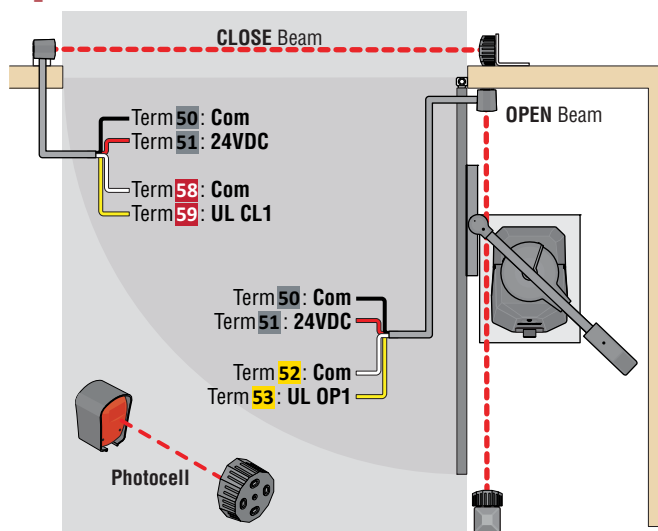
IMPORTANT: The operator will **NOT** run without **ONE** or more UL devices wired to controller terminals. Your gate system may require more entrapment protection devices than are shown here. You **MUST** protect ALL entrapment areas according to UL 325 standards.

OPEN and CLOSE Terminals Note: You can wire **ANY OPEN** UL Device to **ANY OPEN** UL terminal and wire **ANY CLOSE** UL Device to **ANY CLOSE** UL terminal.

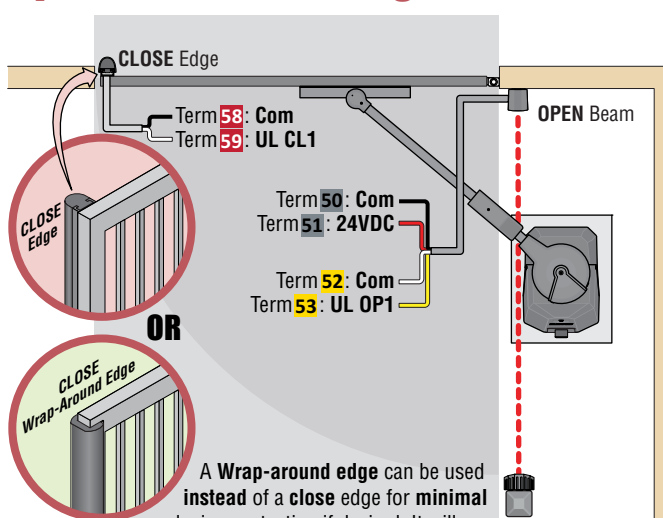
Open Edge + Close Edge



Open Beam + Close Beam

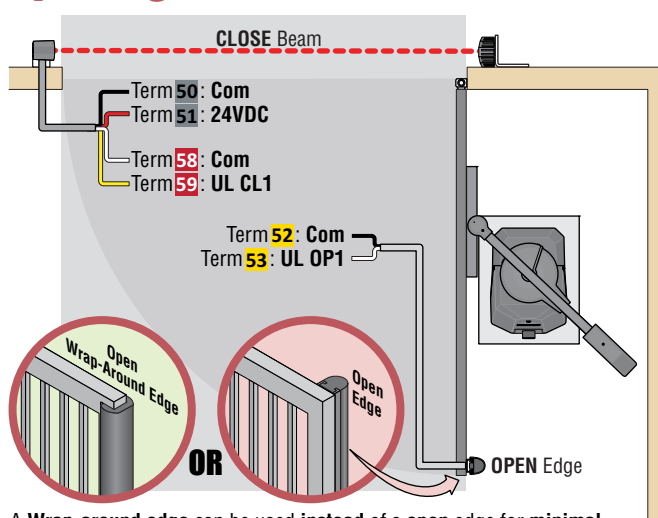


Open Beam + Close Edge



A **Wrap-around edge** can be used instead of a close edge for minimal closing protection if desired. It will reverse gate **ONLY** during the **CLOSE** cycle. It will act as a "Bumper", but **NOT** reverse the gate during the **OPEN** cycle for some opening protection.

Open Edge + Close Beam

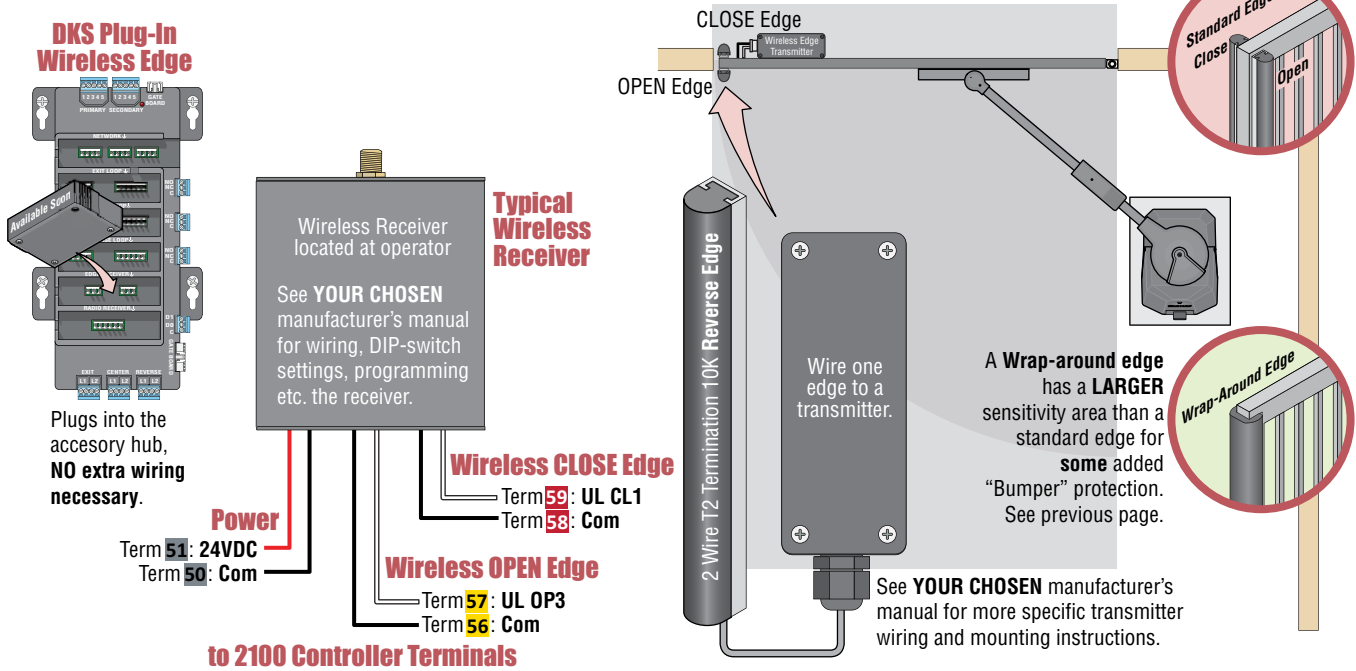


A **Wrap-around edge** can be used instead of an open edge for minimal closing protection if desired. It will reverse gate **ONLY** during the **OPEN** cycle. It will act as a "Bumper", but **NOT** reverse the gate during the **CLOSE** cycle for some closing protection.

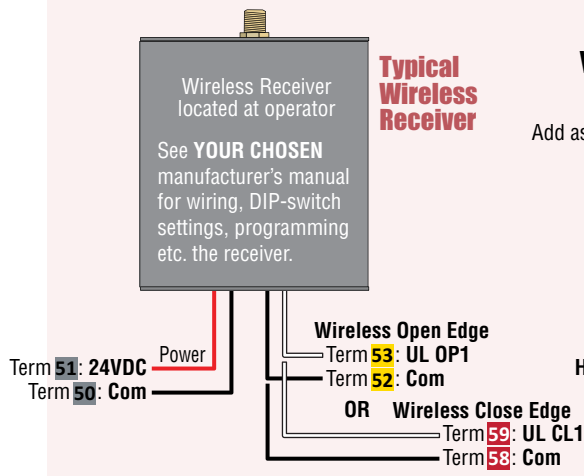
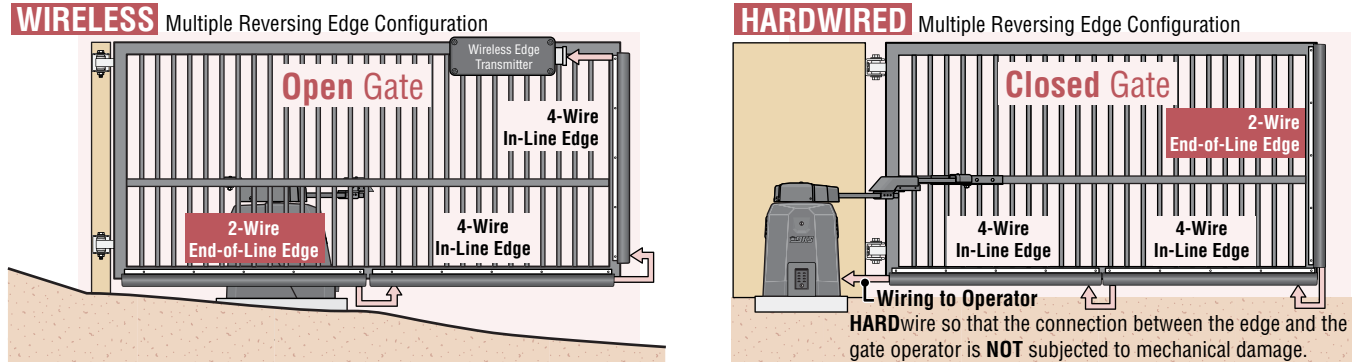
UL Device Examples Continued

UL Terminal connection numbers are shown for each UL device used in these layouts. Each UL device **MUST** be specifically programmed to enable them, see "UL Device Set up" Step 3 programming. UL devices can be connected to **EITHER** operator when installing bi-parting gates (see pages 22 and 34). Your layout can vary. You can wire **ANY OPEN** UL Device to **ANY OPEN** UL terminal and wire **ANY CLOSE** UL Device to **ANY CLOSE** UL terminal.

Gate with OPEN or CLOSE Edge with General Wireless Edge Setups

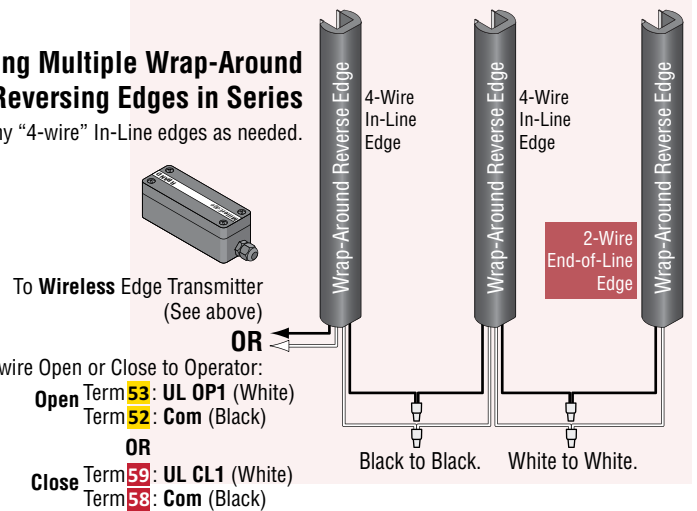


Multiple OPEN or CLOSE Edges HARDwired or Wireless - Series Wired



Wiring Multiple Wrap-Around Reversing Edges in Series

Add as many "4-wire" In-Line edges as needed.



VAC Input Power Wiring

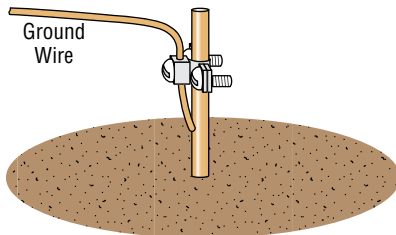
Before attempting to connect any wiring to the operator, **be sure that the circuit breaker in the electrical panel is in the OFF position.** Permanent wiring must be installed to the operator as required by local electrical codes. It is recommended that a licensed electrical contractor perform this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

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

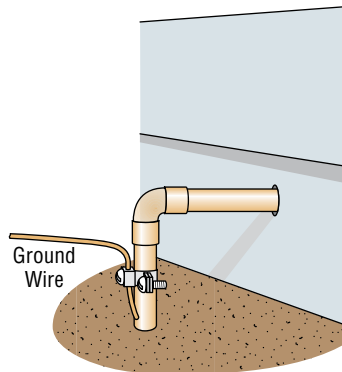
THIS GATE OPERATOR MUST BE PROPERLY GROUNDED!!

Typical Grounding Sources

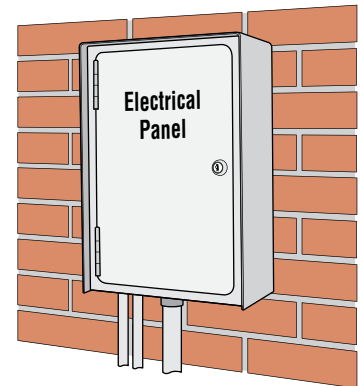
IMPORTANT: Ground wire shown without safety protection for clarity. Make sure ground wire is protected from being touched or electrical shock could occur!



Grounding rod 10 feet in soil.



Ground to metallic cold water pipe.



Ground to existing electrical system.

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

Operator Type - Motor HP - Watts - Phase	Input Voltage	Amps Required	Wire Sizes and Max Distances in Feet			
			12 AWG	10 AWG	8 AWG	6 AWG
Swing - 1/2 HP DC - 500 Watt - Single Phase	115	5	175	275	450	700
Swing - 1/2 HP DC - 500 Watt - Single Phase	230	3	600	950	1500	2400
Swing - 1 HP DC - 750 Watt - Single Phase	115	7	125	200	325	500
Swing - 1 HP DC - 750 Watt - Single Phase	230	4	450	700	1150	1800

Installation Note: Table is for **operator** wire run distances **ONLY**. If **additional devices** requiring power are needed, wire run distances **will** be shorter.

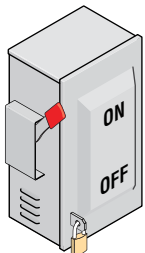
Bi-Parting Gate Operators Note: Separate power **REQUIRED** for **EACH** operator.

MAKE SURE POWER IS OFF BEFORE WIRING

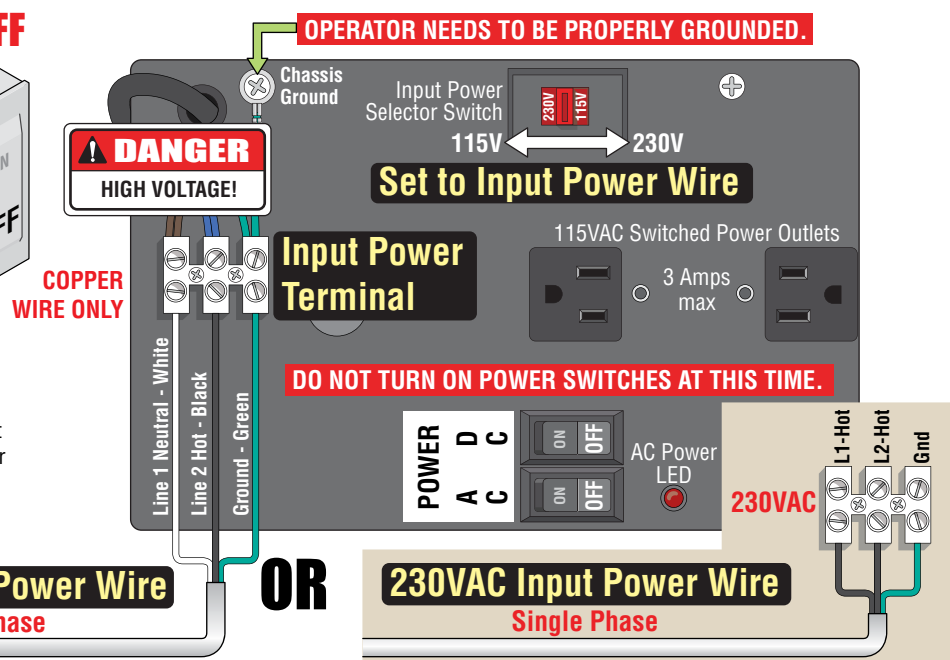


Operator should have a "Dedicated" circuit breaker or disconnect switch.

External Power Disconnect Switch

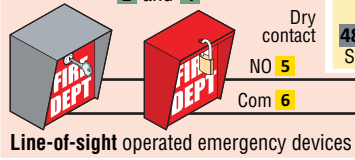


A **separate** power disconnect switch may be needed in your area. Check local building codes before installation. Recommended by DoorKing.

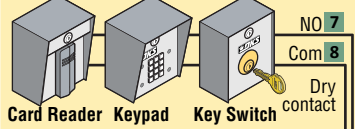


2100 Controller/Accessory Hub Overview

Fire Dept Entry Devices
DoorKing recommends using **ONLY** Knox box devices for **line-of-sight** emergency operation. Remotely operated fire dept devices should be connected to terminals **1** and **4**.

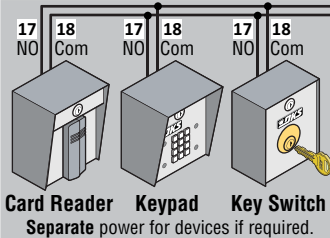
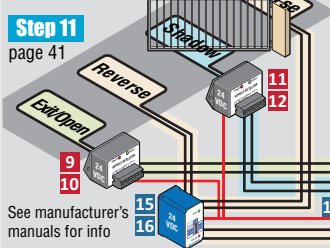


Line-of-sight operated emergency devices
PARTIAL Open Device for **SLIDE** gates **ONLY**
FULL OPEN terminal for **ALL** other operators

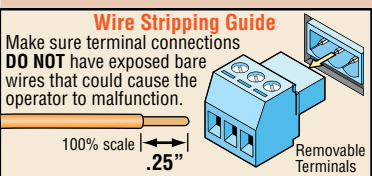
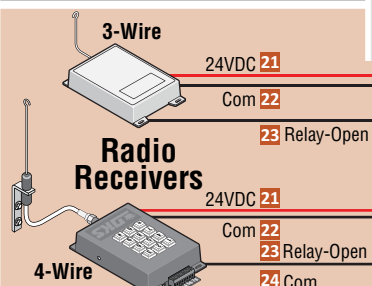


External Loop Detectors (Third Party)

SHADOW Loop for **SWING** Gates **ONLY**

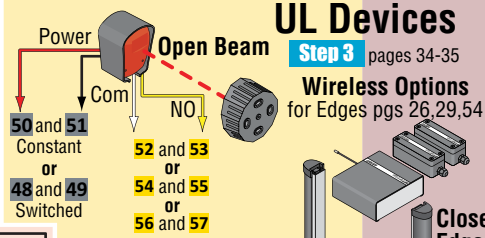


FULL Open Devices
NO partial open

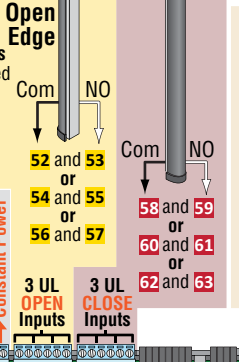
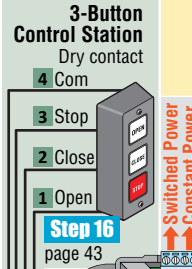


UL Devices

Step 3 pages 34-35
Wireless Options
for Edges pgs 26,29,54



Terminals **53** OPEN and **59** CLOSE are Reserved for DKS Plug-In Wireless Edge Receiver when used



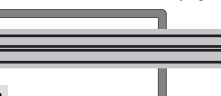
5 Relays

(Form C) dry contact Relays for Normally Closed OR Normally Open activation devices. Type of Devices: Access control systems, security sensors, remote controls, keypads, smart home hubs, motion detectors, intercom systems, lights, timers, loops and locks. These type of devices will trigger after receiving a low power signal from the 2100 Controller's Five relay terminals.



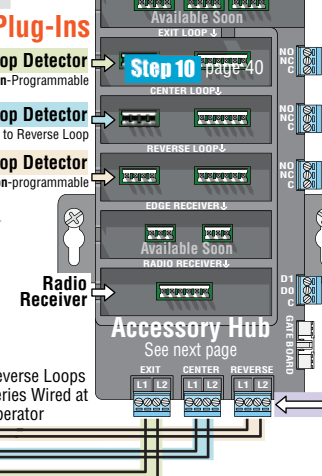
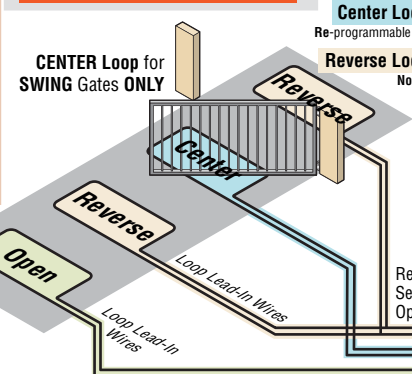
Operator "BEEP" Setup and Warn Before Move Devices

3-Button Operator Controls: OPEN, CLOSE, and STOP functions on **HOME** SCREEN. Enter **Programming** Button page 32



Switched Power Terminals 29 49:
Power will shut off when NOT cycling gate.
Constant Power Terminals 13 21 25 27 51:
Power always ON.
24VDC power terminals are limited to 250MA each
TOTAL available 24V power is 3 Amps - DO NOT EXCEED

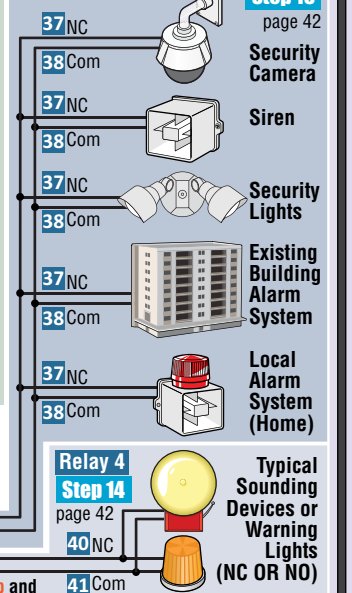
DKS Plug-Ins
Exit Loop Detector Non-Programmable
Center Loop Detector Re-programmable to Reverse Loop
Reverse Loop Detector Non-Programmable



Primary/Secondary Operator Tech Info for Bi-Parting Gates
pages 21-22



Typical Fault Devices (NC OR NO)



Relay 3 **Step 15** page 42
Security Camera

Relay 4 **Step 14** page 42
Typical Sounding Devices or Warning Lights (NC OR NO)

Relay 5 **Step 12** page 41
Typical Locking Devices (NC OR NO)

Relay 6 **Step 12** page 41
Maglock

Relay 7 **Step 12** page 41
Solenoid Lock

Relay 8 **Step 12** page 41
Interconnect Cable

Relay 9 **Step 12** page 41
Interconnect Cable

Relay 10 **Step 12** page 41
Interconnect Cable

Relay 11 **Step 12** page 41
Interconnect Cable

Relay 12 **Step 12** page 41
Interconnect Cable

Relay 13 **Step 12** page 41
Interconnect Cable

Relay 14 **Step 12** page 41
Interconnect Cable

Relay 15 **Step 12** page 41
Interconnect Cable

Relay 16 **Step 12** page 41
Interconnect Cable

Relay 17 **Step 12** page 41
Interconnect Cable

Relay 18 **Step 12** page 41
Interconnect Cable

Relay 19 **Step 12** page 41
Interconnect Cable

Wiring

DKS Plug-Ins

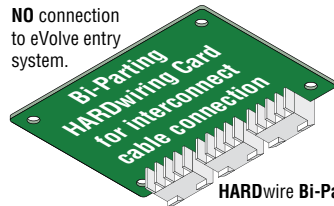
These “Plug-Ins” are designed to be used with DoorKing Evolve vehicular gate operators **ONLY**. They simplify installation of key components that a gate operator uses to function.

DKS Plug-In HARDwire Card OR Network Card

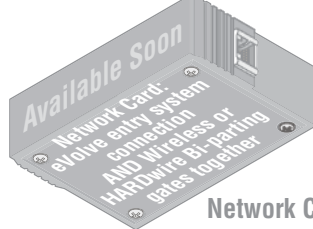
Network Jumper Card: Included with each operator and **MUST** be used when **ONLY** HARDwiring interconnect cable for Bi-Parting gates.

Network Card: for connection to eVolve entry system **AND WIRELESS** or HARDwire connection between bi-parting gates, (sold separately) available soon.

NO connection to eVolve entry system.



HARDwire Bi-Parting gates together.



Network Card P/N XXXX-010

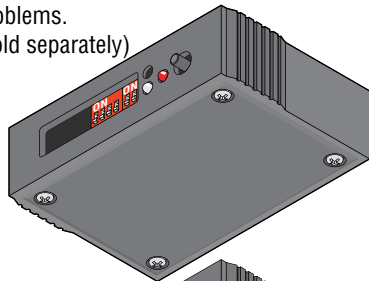
ONLY connects to a existing eVolve Entry System.

DKS Plug-In Loop Detectors

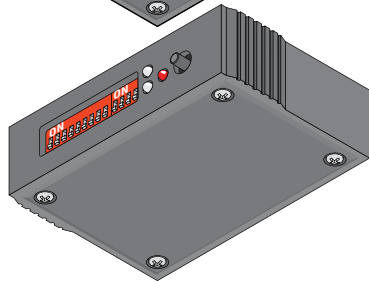
These “Plug-In” single-channel or dual-channel loop detectors can control **ONE loop OR** control **TWO separate loops** (including 2 series wired reversing loops configuration) depending on which detector is used.

These “Self-tuning” detectors will constantly **monitor** the **loop’s frequency** status and “Self-tune” for any minor deviations with frequencies to keep the loop operating normally and decrease “false calls”. The detectors also employs several automatic and advanced features that will assist technicians in the field with trouble shooting loop problems.

(sold separately)



Single-Channel Loop Detector P/N 2100-221
9412-065.pdf manual.

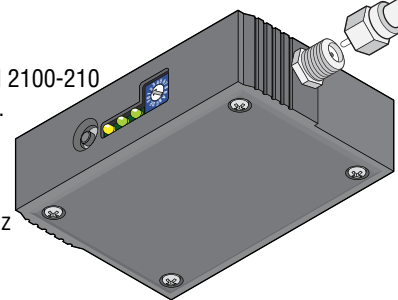


Dual-Channel Loop Detector P/N 2100-222
9413-065.pdf manual.

DKS Plug-In Radio Receiver

This “Plug-In” **DIRECT programmable** radio receiver is a versatile RF receiver that can output received transmitter codes in 26, 30 or 31-bit wiegand format. The receiver operates at 318 MHz and can be used with both MicroPlus® and MicroClik® transmitters set to this frequency.

(sold separately)



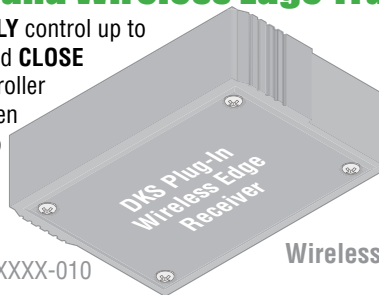
Radio Receiver P/N 2100-210
8045-065.pdf manual.

DKS Plug-In Wireless Edge Receiver and Wireless Edge Transmitter

This “Plug-In” **Wireless Edge Receiver** is designed to **WIRELESSLY** control up to **TWO Wireless Edge Transmitters** that are located on the **OPEN** and **CLOSE** gate ends. UL terminals **53 OPEN** and **59 CLOSE** on the 2100 controller are **automatically** connected to the Plug-In receiver after it has been plugged into the accessory hub. Edges are controlled by those two terminals after programming them.

(sold separately)

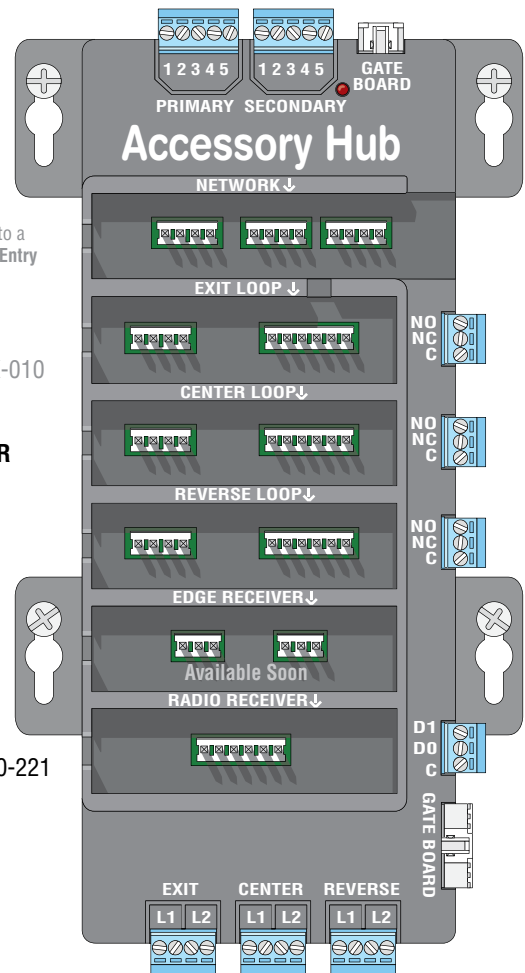
Available Soon



DKS Plug-In Wireless Edge Receiver P/N XXXX-010



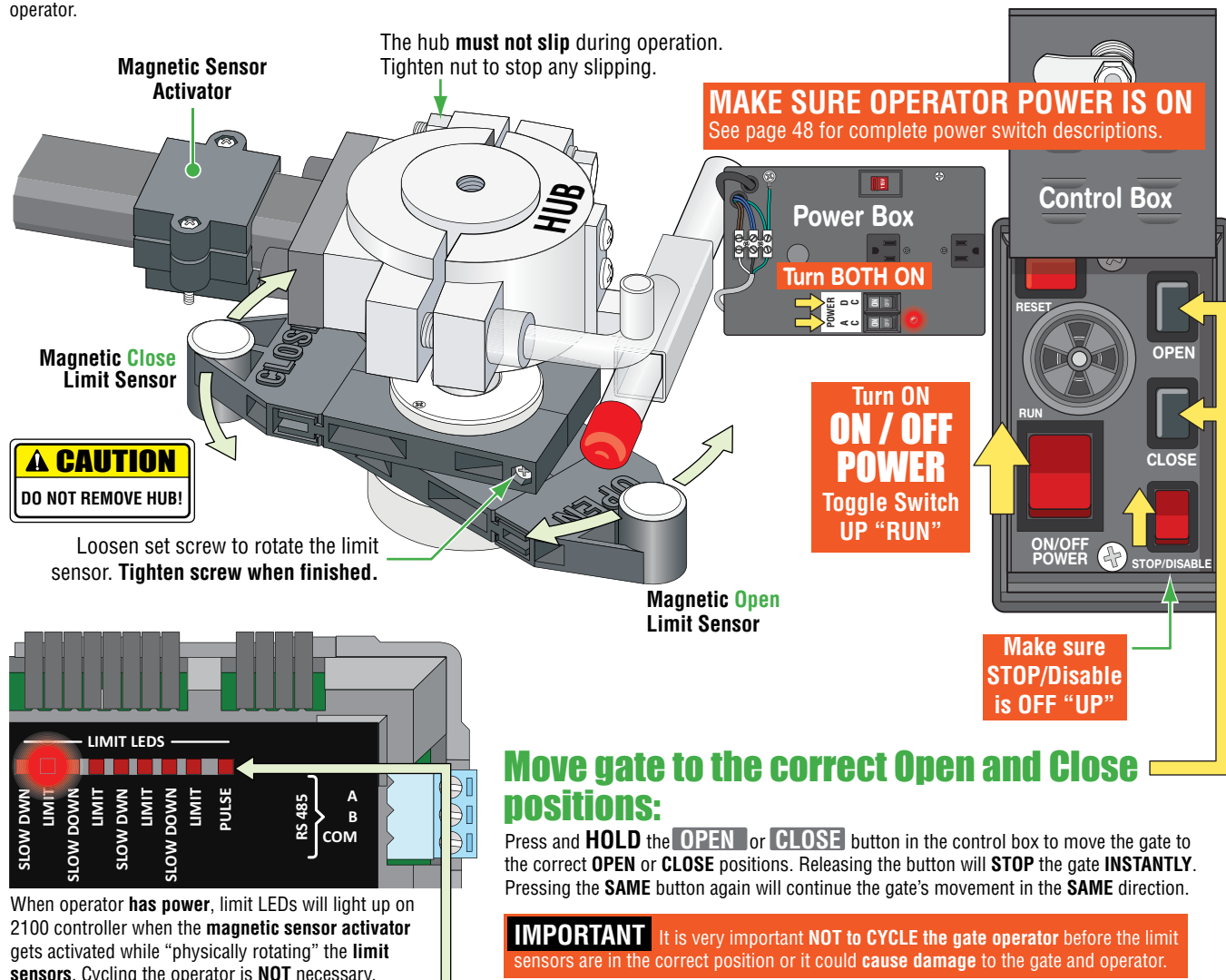
Wireless Edge Transmitter P/N XXXX-010
Sold Individually



Coax cable (not included)

“Physically Set” Swing Gate Magnetic Limit Sensors

Some swing gate operator models have magnetic limit sensors that **MUST** be “physically adjusted” instead of programmed in. The operator **MUST** have power to light up the LEDs while adjusting but, **DO NOT CYCLE THE GATE OPERATOR** while adjusting the limit sensors! The operator normally stops a cycling gate using the open and close sensors. If the sensors have not been set, the gate could continue beyond its **full open** and **close** positions, damaging the gate and operator.



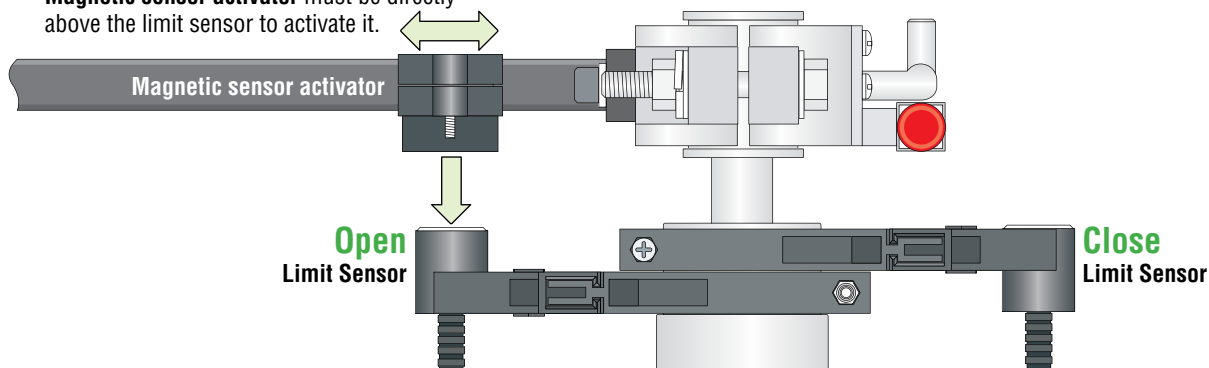
When operator **has power**, limit LEDs will light up on 2100 controller when the **magnetic sensor activator** gets activated while “physically rotating” the **limit sensors**. Cycling the operator is **NOT** necessary.

Note: Limit sensor’s **opening** and **closing** direction LEDs are determined by **Step 1 “Set OPEN Direction”** programming.

Adjust Limit Sensors

With the gate in the desired **OPEN** position, loosen the set screw on the **OPEN** limit sensor and slowly rotate it under the **magnetic sensor activator** until the **OPEN** limit Sensor **LED lights up** on the 2100 controller. Tighten the set screw and **repeat this process** for the **CLOSE** gate position. When finished, cycle the gate a few times and re-adjust if necessary.

Magnetic sensor activator must be directly above the limit sensor to activate it.



BEFORE Programming

General programming notes:

The “Next” function button is located on the **FIRST** screen in **each** step. This button allows you to proceed to the **next** step. Use the “Back” function button to go back to the previous step.

The “Home” function button returns to the “Home Screen” and “EXIT PROGRAMMING”.

The **YELLOW** arrow shows the programming path(s) “in each step”. Your choices will determine **different** programming paths or **repeating** the screens as needed, typically pressing “Ent” or “Set” to complete a screen and proceed to the next one. After completing a programming step, press the “Next” button to continue to the next programming step.

The **GREEN** arrow typically shows the **return path(s)** back to the “FIRST screen in a step” so you can then press the “Next” button to continue to the next programming step. Some pathways will “Return without completing” the programming for that step if desired.

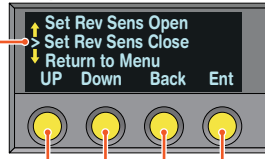
If you desire to **ONLY** go to a specific step, you must enter programming and then keep pressing the next button until you reach your desired step.

Example: To get to the “Logs and Operation Info” step 7, you must press the “Menu” button to enter programming and then **keep pressing** the “Next” button until you get to Step 7 “Logs and Operation Info”.

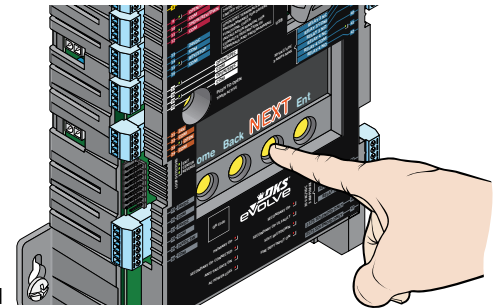
Making Programming Choices:

“▶” **Selection Arrow:** shows the **chosen** selection in a list. The arrow can move up or down using the “Up” or “Down” function buttons to **change** the selection. Typically “Ent” or “Set” must then be pressed to **confirm** your **selected choice** and continue programming.

Sample Screen

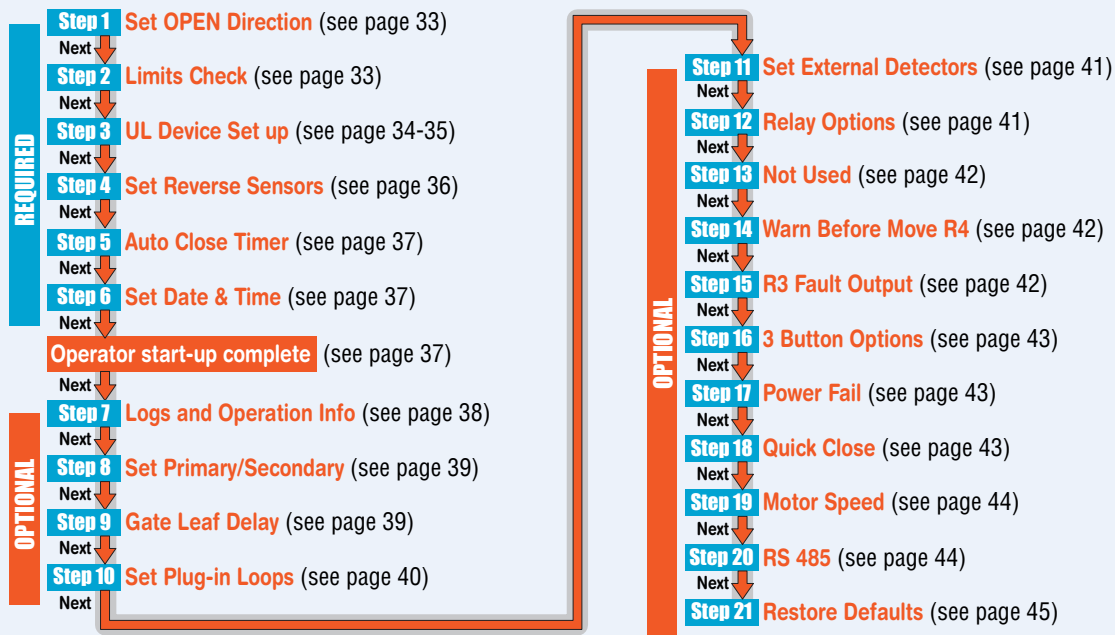


Function Buttons: are labeled above them and will change functions from screen to screen.

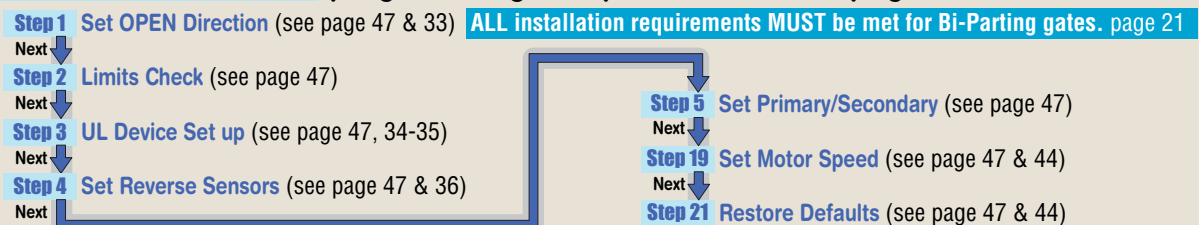


Keep pressing “Next” button to scroll through steps

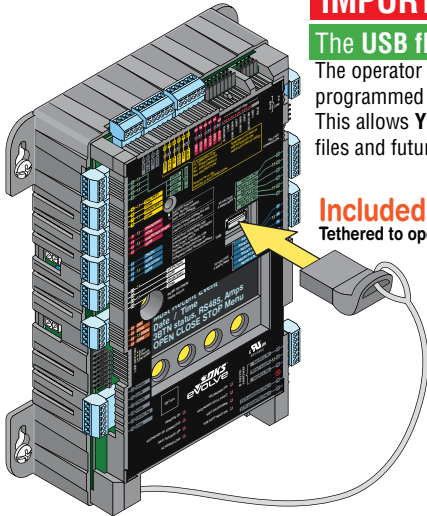
ALL SINGLE/PRIMARY OPERATOR programming “Steps” in order and page references



ALL SECONDARY OPERATOR programming “Steps” in order and page references



USB Flash Drive



IMPORTANT

The **USB flash drive** that comes installed (tethered), should remain in the controller USB port. The operator creates files on the installed flash drive **while** programming **YOUR specific settings**. It will re-load these programmed settings from the flash drive back onto the 2100 controller's memory **EVERYTIME power is restored** to it. This allows **YOUR specific programmed settings to remain intact**. The USB port can also be used for Importing/Exporting files and future firmware updates.

Included USB Flash Drive

Tethered to operator to prevent loss

IMPORTANT TIP: Store a **back-up copy** of **ALL** files from the operator's flash drive to your computer or cell phone **after** programming is complete. In case the operator's flash drive ever **fails** and you have to replace it.

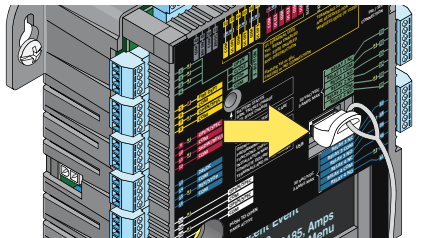
IF your back-up files are copied to a **NEW** flash drive, then those files will be re-loaded and used on the 2100 controller **after powering it up**, **NO** re-programming is necessary.

IF NO files are detected on a **NEW** flash drive after **powering up the 2100 controller**, then the controller will have to be completely **re-programmed**.

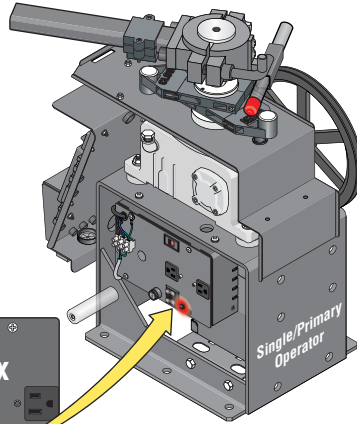
Bi-Parting Gates Note: 2100 controllers need to be backed-up **separately** when using **TWO** operators (Primary Back-Up and Secondary Back-Up).

TURN ON SINGLE/PRIMARY OPERATOR POWER

USB Flash Drive Inserted



Make sure **Flash Drive** is inserted in the **USB Port** **BEFORE** turning power **ON**, see above.



Single/Primary Operator Control Box

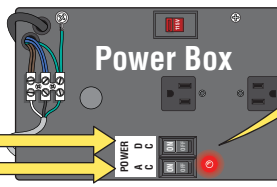
Turn ON
ON / OFF POWER
Toggle Switch
UP "RUN"

See page 48 for complete power switch descriptions.



Make sure **STOP/DISABLE** is OFF "UP"

BOTH AC and DC Power Switches MUST BE ON



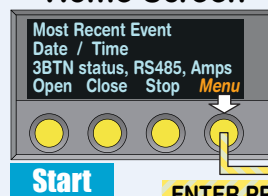
Bi-Parting Gates Note: Turn ON **BOTH** operator's power at start but **DO NOT CYCLE OPERATORS, DAMAGE/INJURY COULD OCCUR.**

ALL Devices MUST be connected to operator(s) BEFORE programming can begin.

Programming Single/Primary Operator

When the operator is **FIRST** powered up, the screen will show the boot-up sequence, after the boot-up is complete, it will show "Bulk Charging" or "Trickle Charging" in the "Most Recent Event" column.

Home Screen

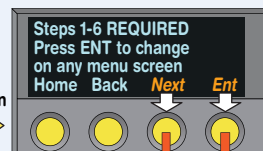


Press "Menu" button

ENTER PROGRAMMING

Steps 1 thru 6 **MUST** be programmed in.

Generally, pressing "Ent" will confirm "▢" selection arrow's choice and then go to the next screen.



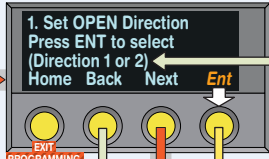
Press "Next" OR "Ent" to continue

Changing Existing Programming Note: Operator **MUST** be **POWERED DOWN** then back UP again **BEFORE** any changes to **EXISTING** programming will take effect.

Continued on next page

Continued from previous page

Step 1 Set OPEN Direction (for Single/Primary operator) Required



Press "Ent" to select (Direction 1 or 2)
to previous step

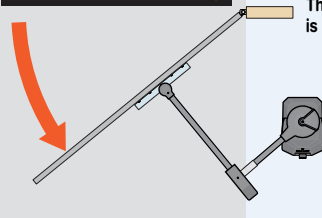
This will show "Present Setting:"
CHOSEN AFTER step is COMPLETED
(Typical throughout programming)

Press "Ent" to continue

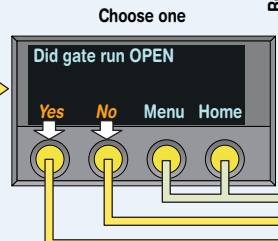


Press and HOLD "Open" button for
ONLY A FEW SECONDS and
release button to INSTANTLY stop gate.
This shows which direction gate
is running

Position gate half-way
open BEFORE starting

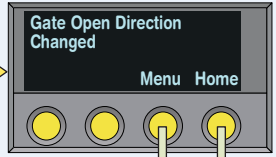


CAUTION Gate should NOT swing past it's approximate open or close positions, damage and/or injury could occur.



- YES - gate is opening
- NO - gate is closing

No - "Direction 2"



Step 1 Completed

Press a button to return to first screen:

- Pressing "Menu" button DOES NOT save changes
- Pressing "Home" button SAVES changes

Yes - "Direction 1"

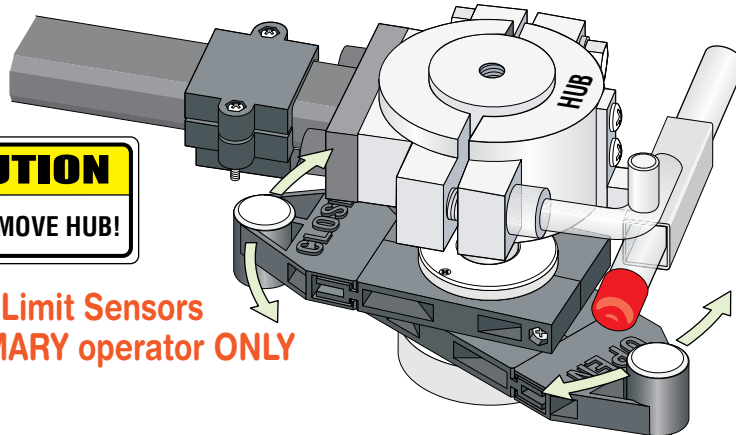


Step 1 Completed

Press a button to return to first screen:

- Pressing "Menu" button DOES NOT save changes
- Pressing "Home" button SAVES changes

The "Physical" limit sensors **MUST** be adjusted on the **SINGLE/PRIMARY** operator **BEFORE** continuing to **Step 2**, see page 30 for **ALL** the information to adjust the limit sensors.

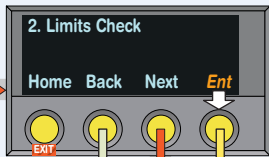


"Physically" Set Limit Sensors on SINGLE/PRIMARY operator ONLY

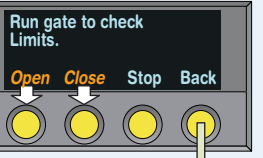
Bi-Parting Gates Note:

The **SECONDARY** operator limit sensors will be adjusted later in the manual, no need to adjust them now.

Step 2 Limits Check Required



to previous step



Press "Open" button and operator will cycle gate to OPEN position.
Press "Close" button to then cycle gate to CLOSED position.

"Stop" button used in case of problems with gate cycling

When OK, press "Back" button to continue

CAUTION Be careful not to cycle gate before limits sensors have been adjusted, damage and/or injury could occur.

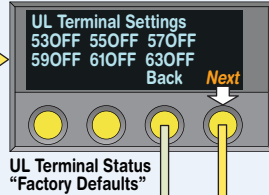
Continued on next page

Continued from previous page

Step 3 UL Device Set up Required



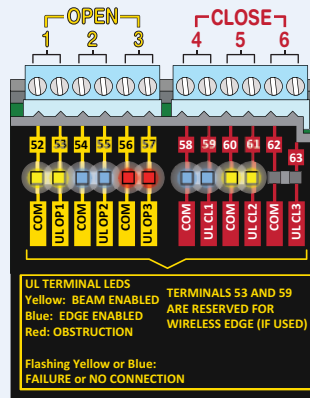
This screen will indicate **YOUR choices** AFTER "Set Up UL Inputs" have been programmed.



UL Terminal Status "Factory Defaults"

Entrapment Protection (monitored type B1 or B2 UL devices) **MUST** be installed where ever the gate system is at risk of entrapment or obstruction while the gate is in motion. Operator(s) will **NOT** function without **ONE** or more UL devices installed.

IMPORTANT ALL UL inputs are **MONITORED**. BEFORE the gate will open after a "open command" is given, the operator will "Check" ALL connected UL devices to verify that they are all in good working order. IF they are, then the gate will open. IF they are NOT, then the gate will NOT function and the LEDs on the malfunctioning UL device(s) input(s) will flash on the 2100 controller to indicate a fault with the device(s).



Non-contact Device (Beam) - UL Type B1
 Contact Device (Edge) - UL Type B2

Six UL Device Terminals:

EACH UL terminal **MUST** be programmed to activate the UL device that's connected to it.

LED color will be determined by the programming:

- Solid Blue - Edge
 - Solid Yellow - Beam
 - None - Turned Off
- LEDs will **FLASH** when there is a problem with the device
- LEDs will change to **Red** when device is activated

DKS Plug-In Wireless Edge Receiver Note:

Terminals **53** OPEN and **59** CLOSE are **RESERVED** for DKS Plug-In Wireless Edge Receiver when used.

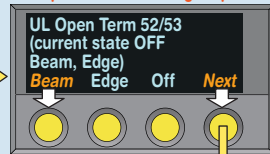
Single/Primary UL Devices:			
OPEN Terminals			
1 52 / 53 Term	Off	Edge	Beam
2 54 / 55 Term	Off	Edge	Beam
3 56 / 57 Term	Off	Edge	Beam
CLOSE Terminals			
4 58 / 59 Term	Off	Edge	Beam
5 60 / 61 Term	Off	Edge	Beam
6 62 / 63 Term	Off	Edge	Beam

Secondary UL Devices:			
OPEN Terminals			
1 52 / 53 Term	Off	Edge	Beam
2 54 / 55 Term	Off	Edge	Beam
3 56 / 57 Term	Off	Edge	Beam
CLOSE Terminals			
4 58 / 59 Term	Off	Edge	Beam
5 60 / 61 Term	Off	Edge	Beam
6 62 / 63 Term	Off	Edge	Beam

Set Up UL Inputs: ANY terminal can be set up for "Beam", "Edge" or remain "Off" if not used. Use the UL Device checklists above to keep track of the UL device types and terminals used.

Open Term 52 / 53

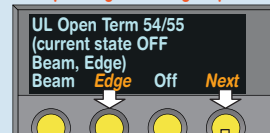
Example: Beam Button gets pressed



Press "Beam" then press "Next"

Open Term 54 / 55

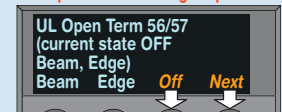
Example: Edge Button gets pressed



Press "Edge" then press "Next"

Open Term 56 / 57

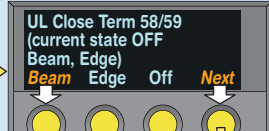
Example: OFF Button gets pressed



Press "OFF" then press "Next"

Close Term 58 / 59

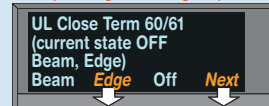
Example: Beam Button gets pressed



Press "Beam" then press "Next"

Close Term 60 / 61

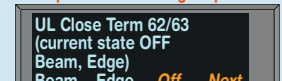
Example: Edge Button gets pressed



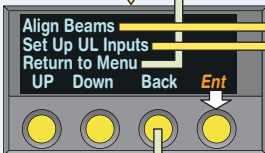
Press "Edge" then press "Next"

Close Term 62 / 63

Example: OFF Button gets pressed



Press "OFF" then press "Next"



to previous screen
 Press "Ent" to confirm a choice

UL Terminal Status indicating **Example Choices**



to First screen in Step 3

Align Beams on next page

Align Beams on next page

Continued on page 36

Continued from previous page

Align Beams: ANY terminal can have a Beam connected to it which may need to be aligned.

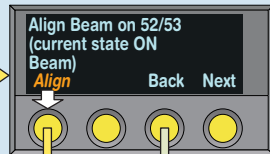
IMPORTANT "Set Up UL Inputs" MUST be programmed BEFORE Beam Alignment can take place, see previous page.

Alignment programming will only be allowed on terminals that have been "Set Up" as "Beam ON".

It skips over "Term OFF" or "Edge ON" terminals. If NO beams have been set up, it goes back to "UL Terminal Settings" screen.

Open Term 52 / 53

Example: Beam ON Set up

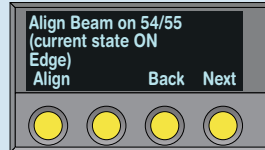


Align button Pressed (see below)

to previous screen

Open Term 54 / 55

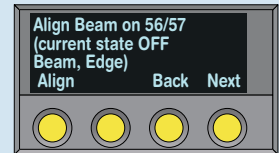
Example: Edge ON Set up



Screen for "Edge ON" WILL be skipped

Open Term 56 / 57

Example: Term OFF Set up



Screen for "Term OFF" WILL be skipped

Close Term 58 / 59

Example: Beam ON Set up



Align button Pressed

to previous "Beam ON" screen

Close Term 60 / 61

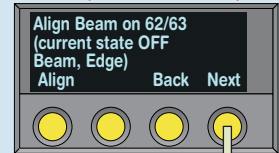
Example: Edge ON Set up



Screen for "Edge ON" WILL be skipped

Close Term 62 / 63

Example: Term OFF Set up



Screen for "Term OFF" WILL be skipped

Align Button Screen



"Physically align" your photocell to silence tone after pressing "Align" button.

If NO tone is heard after pressing align button, then beam is aligned.

AFTER Beam is aligned, Press "Next" to continue to next "Beam ON" term

OR
If there are NO more "Beam ON" terms

Returns to screen: "Align Beams" "Set Up UL Inputs" see previous page

Continued from page 34

Step 4 Set Reverse Sensors **Required**

Inherent Reverse Sensor - UL Type A

CAUTION You **MUST** re-adjust the Open **AND** Close sensors from the factory setting.

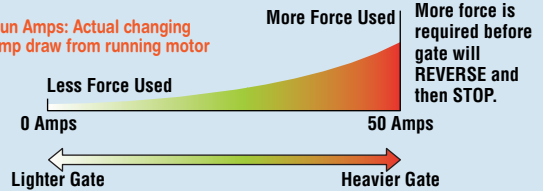
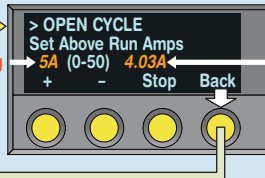
Factory Setting Note: If the factory default "10A" setting is **TOO LOW**, the gate will **reverse by itself**. Pressing the "STOP" button will stop the reversing gate cycle. Use the "+" button to **RAISE** the amp setting until the gate stops reversing by itself and **fully** completes a cycle. Then you can adjust **BOTH** reverse sensors.

Moving gate will "Beep" while adjusting sensors

Adjust OPEN Amps **REQUIRED**

Gate Must be in the **CLOSED** position

Press the **OPEN** button and **obstruct the gate** while it is **opening**. The gate should **stop**, then **reverse a few inches** and then **stop again**. If it doesn't reverse, then press the "Stop" button to stop gate. Adjust the open amps by using the "+" - "-" buttons to increase or decrease the force. Retest with the new settings until you are satisfied with the gate's performance, then press the "Back" button to continue programming.



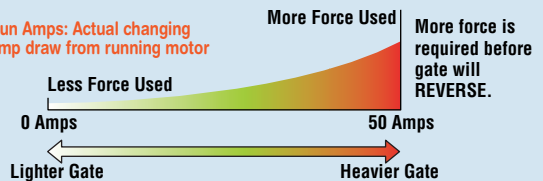
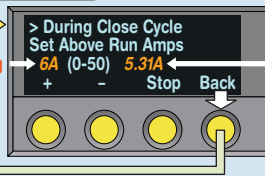
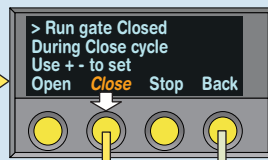
Adjusting Amps Note: A "One Amp Setting Change" can make the difference between having the gate **perform well** verses having the gate use **TOO much** force before reversing.

Example: 6A amp setting is **TOO LOW** because gate **reverses by itself** (run amps show 6.25A on screen) but an 8A setting is **TOO HIGH** because gate uses **TOO much** force to reverse when encountering an **obstruction** (run amps show 7.35A on screen). Setting the reverse sensor to 7A allows the gate to **fully** cycle and has **minimal** resistance to reverse itself when encountering an obstruction. **Open** and **Close** sensors **MUST** be individually adjusted and may have different amp settings.

Adjust CLOSE Amps **REQUIRED**

Gate Must be in the **OPEN** position

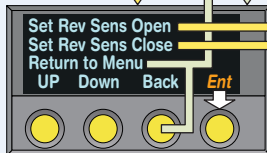
Press the **CLOSE** button and **obstruct the gate** while it is **closing**. The gate should **stop** and then reverse back to the **open position**. If it doesn't reverse, then press the "Stop" button to stop gate. Adjust the close amps by using the "+" - "-" buttons to increase or decrease the force. Retest with the new settings until you are satisfied with the gate's performance, then press the "Back" button to continue programming.



CAUTION Make sure gate area is clear **BEFORE** adjusting reverse sensors.



to previous step

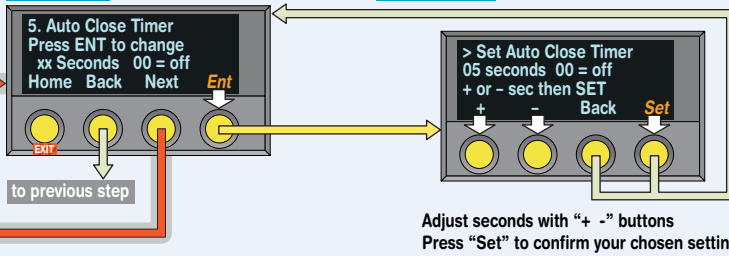


BOTH sensors **MUST** be adjusted.
Press "Ent" to confirm a choice

Continued on next page

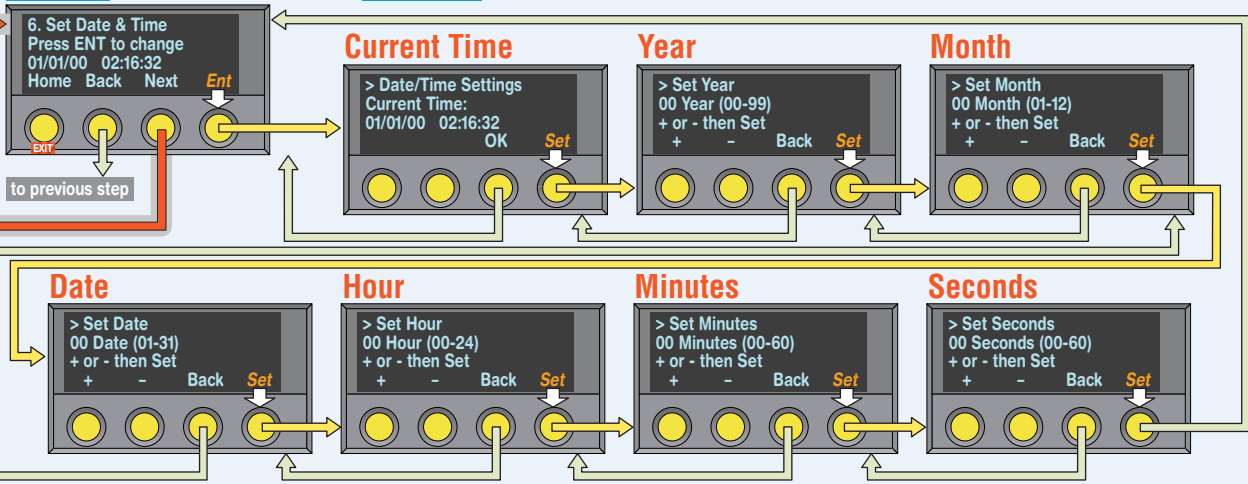
Continued from previous page

Step 5 Auto Close Timer Required

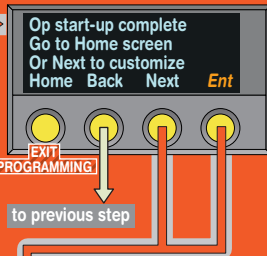


Set from 01-99 seconds for timer to close, 00 = timer Off

Step 6 Set Date & Time Required



Single/Primary Operator Start-up Complete



The basic Single/Primary operator will function "normally" after completing these programming steps and NO further programming is necessary. IF YOUR operator requires more customizing and/or you are installing bi-parting gates (see below), then press "Next" or "Ent" button to continue programming for YOUR SPECIFIC requirements.

IMPORTANT TIP: Make a back-up copy of ALL files on the operator's flash drive to your computer or phone after programming is complete for future use.

Continue programming OPTIONAL "Steps" to further customize YOUR gate system:

- OPTIONAL**
- Step 7 Logs and Operation Info (see page 38)
 - Next
 - Step 8 Set Primary/Secondary (see page 39)
 - Next
 - Step 9 Gate Leaf Delay (see page 39)
 - Next
 - Step 10 Set Plug-in Loops (see page 40)
 - Next
 - Step 11 Set External Detectors (see page 41)
 - Next
 - Step 12 Relay Options (see page 41)
 - Next
 - Step 13 Not Used (see page 42)
 - Next
 - Step 14 Warn Before Move R4 (see page 42)
 - Next

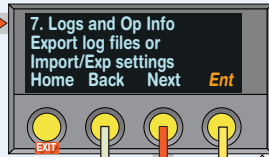
- OPTIONAL**
- Step 15 R3 Fault Output (see page 42)
 - Next
 - Step 16 3 Button Options (see page 43)
 - Next
 - Step 17 Power Fail (see page 43)
 - Next
 - Step 18 Quick Close (see page 44)
 - Next
 - Step 19 Motor Speed (see page 44)
 - Next
 - Step 20 RS 485 (see page 44)
 - Next
 - Step 21 Restore Defaults (see page 45)

**Bi-Parting Gates
Secondary Operator** (see pages 46-47)

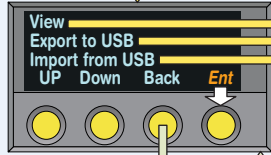
Continued on next page

Continued from previous page

Step 7 Logs and Operation Info

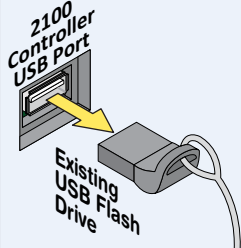


to previous step

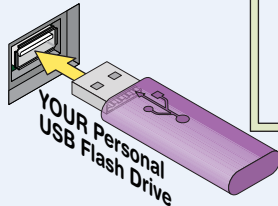


Press "Ent" to confirm a choice

FIRST Unplug existing USB Flash Drive while operator is powered up . .

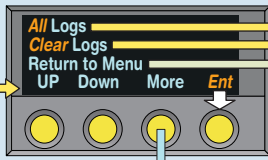


THEN connect YOUR Personal USB Flash Drive to Export or Import files



USB Power Note: Operator requires a USB flash drive WITH programmed files on it whenever POWERING it UP or it will have to be re-programmed.

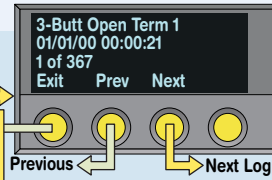
View



More Button

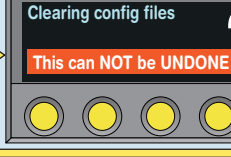


More Button



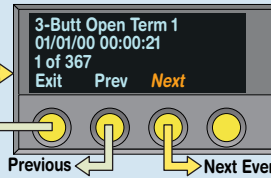
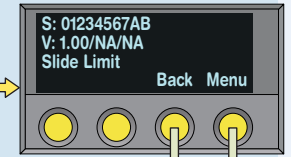
Previous

Next Log



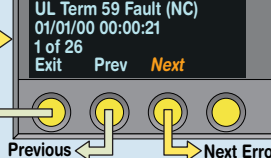
Reboot NOTE: If you reboot several times, it will show EACH reboot BEFORE the last logged event:

1. "Logic Board Reboot"
2. "Logic Board Reboot"
3. "Logic Board Reboot"
4. "Last Event"
5. "Previous Event etc...."



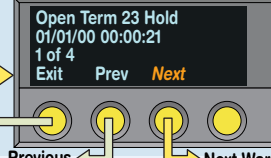
Previous

Next Event



Previous

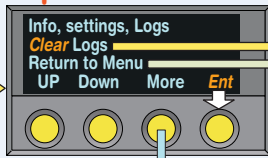
Next Error



Previous

Next Warning

Export



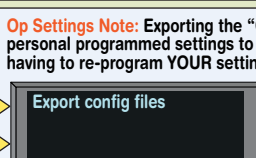
More Button



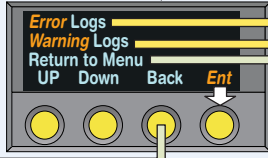
Press "Ent" if choosing "Clear Logs" otherwise press "More"



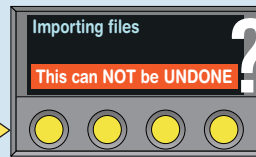
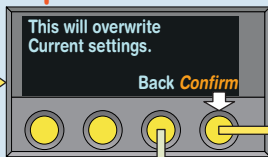
More Button



Press "Ent" to confirm ONE choice on TWO screens



Import



Continued on next page

Step 8 Set Primary/Secondary Operators ("PAIRING" for Bi-parting gates ONLY)

Skip this step for a SINGLE operator, Primary/Secondary setting is ONLY used for Bi-Parting gates.

SECONDARY operator should already be powered up at start of programming:

DO NOT ADJUST SECONDARY LIMIT SENSORS.
DO NOT CYCLE SECONDARY OPERATOR.

Damage and/or Injury could occur.

Continue programming from PRIMARY 2100 controller

"Primary" is default "Present setting"

8. Set Primary/Second
Present Setting:
Primary (or Secondary)
Home Back Next Ent

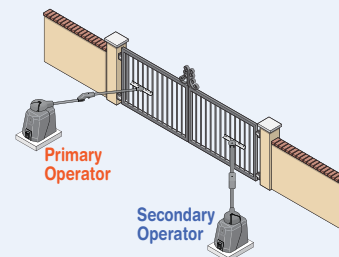
to previous step

Set Operator Function
Primary
Secondary
UP Down Back Set

Primary Op Only
Connect to Secondary
UP Down Back Set

Press "Set" to confirm a choice
"Primary" on "Present Setting:"
screen if "Primary" chosen

Press "Set" to confirm a choice
"Pri Waiting to Pair" on "Present Setting:"
screen if "Connect to Secondary" chosen



ALL Bi-Parting REQUIREMENTS MUST be met BEFORE "Pairing" operators together.
 see page 21

Step 9 Gate Leaf Delay - For OVERLAPPING Bi-Parting Gates ONLY

9. Gate Leaf Delay
Present Setting
OFF
Home Back Next Ent

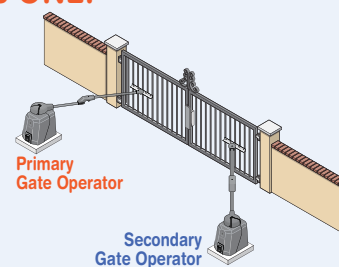
to previous step

Leaf Delay
OFF
ON
UP Down Back Ent

Leaf Delay
Primary opens 1st
Secondary opens 1st
UP Down Back Ent

Press "Ent" to confirm a choice

"Present Setting" will change to YOUR choice
after "Ent" is pressed



Gate Leaf setting is ONLY used for
Bi-Parting gates with a **OVERLAP**.

Continued on next page

Continued from previous page

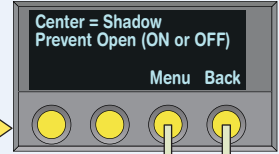
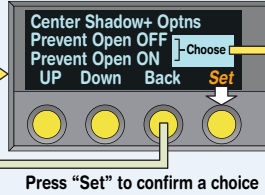
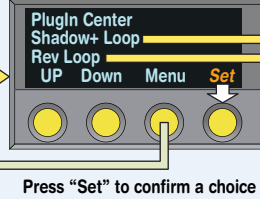
Step 10 Set Plug-in Loops



to previous step



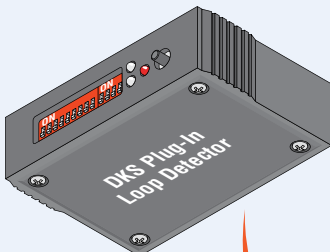
Center Options



Exit Port CANNOT be re-programmed.
It functions as a normal EXIT loop.

Reverse Port CANNOT be re-programmed.
It functions as a normal REVERSE loop,
NO STOP loop function.

See page 45 for ALL
"Plug-In Loop Default Settings"



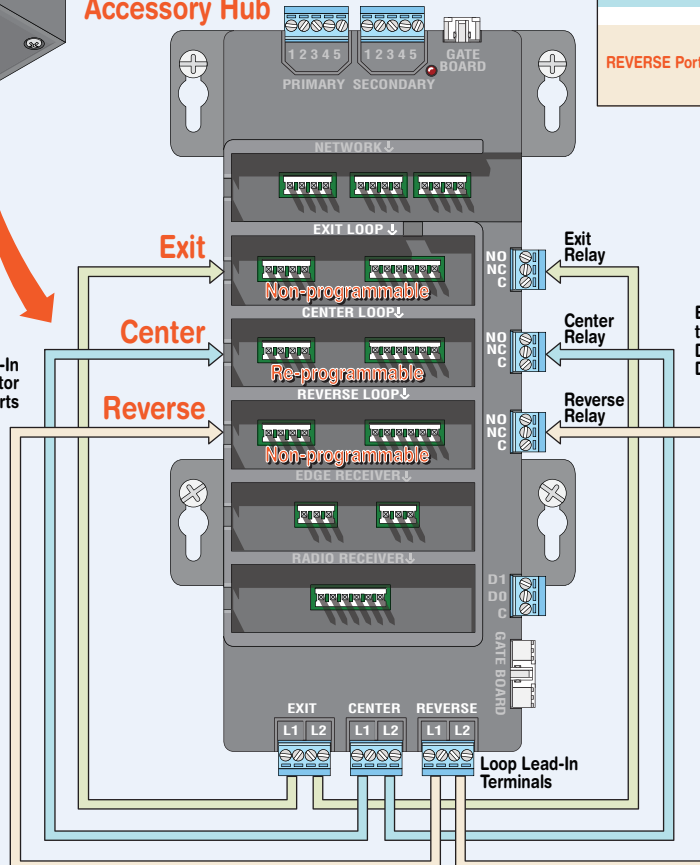
See 9413-065 PDF for
DKS **Dual Channel** plug-in
loop detector information.

See 9414-065 PDF for
DKS **Single Channel** plug-in
loop detector information.

Plug-In
Loop Detector
Ports

The "Center" Loop port can be
re-programmed to a Reverse loop
if more loop ports are required for
your installation.

Accessory Hub



EACH "L2" terminal activates
the RELAY terminal for EACH
DUAL Channel Plug-In Loop
Detector ONLY.

Plug-In Detector Settings:

EXIT Port	☐ Not Used	☐ Exit Loop
CENTER Port	☐ Not Used	☐ Prevent Open On ☐ Prevent Open Off ☐ Re-programmed Center Loop ☐ Re-programmed Reverse Loop
REVERSE Port	☐ Not Used	☐ Reverse Loop

Continued on next page

Continued from previous page

Step 11 Set External Detectors

11. Set External Det
Present setting:
Exit, Shadow, Rev
Home Back Next Ent

to previous step

Term 9 = Exit Loop
> Set Term 11 Center
Term 15 = Rev
UP Down Menu Ent

Term 9 CANNOT be re-programmed.
It functions as a normal EXIT loop.

Term 15 CANNOT be re-programmed.
It functions as a normal REVERSE loop,
NO STOP loop function.

See page 45 for ALL
"External Loop Default Settings"

Term 11 Options

Terminal 11 Options
Shadow+ Loop
Rev Loop
UP Down Menu Set

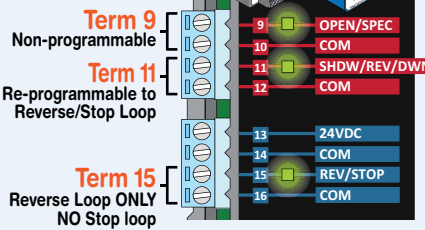
Press "Set" to confirm a choice

T11 Shadow+ Opns
Prevent Open OFF
Prevent Open ON
UP Down Back Set

Term 11 = Shadow
Prevent Open (ON or OFF)
Menu Back

Press "Set" to confirm a choice

Term 11 = Reverse
Menu Back



Step 12 Relay Options

12. Relay Options
Relays 1, 2 & 5
1-off 2-off 5-off Next Ent

to previous step

Steps are repeated for EACH Relay chosen.

Setup Relay 1
Setup Relay 2
Setup Relay 5
UP Down Back Ent

Press "Ent" to confirm a choice

Select Relay Option
Relay Off
More Ent

Press "Ent" if choosing
"Relay Off" otherwise
press "More" button

More Button

Relay Active When
Gate at OPEN Limit
Opening & Open
UP Down More Set

More Button

Opening & Closing
Gate Not Closed
UP Down More Set

More Button

When car on Loop 1
When car on Loop 2
When car on Loop 3
UP Down Back Set

More Button

Maglock Function
Solenoid Function
Return to Menu
UP Down Back Set

More Button

Relay Saved
Return to Menu
Menu Back

Press "Set" to confirm
ONE choice on ANY of
the "More" screens

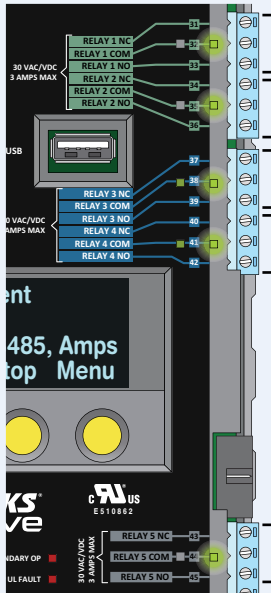
Loop 1: Plug-In Exit loop port OR
Term 9 Exit/Open

Loop 2: Plug-In Center loop port OR
Term 11 Shadow/Reverse

Loop 3: Plug-In Reverse loop port OR
Term 15 Reverse/Stop

Maglock Function: Normally Closed
Active when gate is closed

Solenoid Function: Normally Open
Active when gate opens



(Form C) dry contact Relays for Normally Closed OR Normally Open activation devices.
Type of Devices: Access control systems, security sensors, remote controls, keypads, smart home hubs, motion detectors, intercom systems, lights, timers, loops and locks. These type of devices will trigger after receiving a low power signal from the 2100 Controller.

Extra "More" Screen for "Setup Relay 5" ONLY
Screen is NOT offered for relay 1 or 2

Continued on next page

Continued from previous page

Step 13 Not Used



to previous step

Step 14 Warn Before Move R4

Operator can be setup for one long "BEEEEEEP" BEFORE starting gate cycle and/or short beeps "BEEP" "BEEP" "BEEP" . . . DURING cycling.

An external device can be connected to activate when operator starts beeping if desired (Relay 4 terminal).



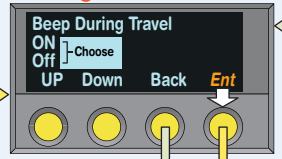
to previous step

Before Travel (Long Beep)

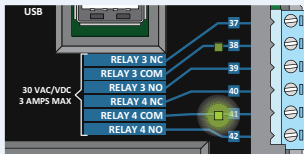
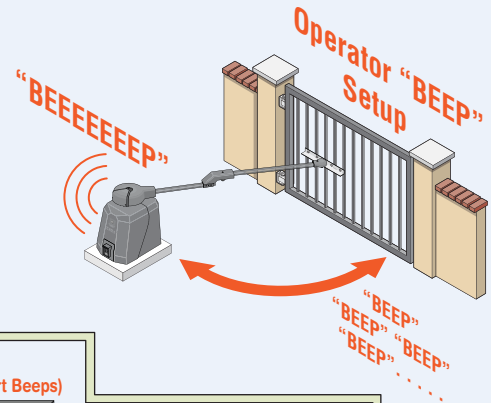


Press "+" "-" to adjust seconds for ONE long beep, "00 sec" = No beep BEFORE gate cycle.
Press "Set" to confirm adjusted seconds

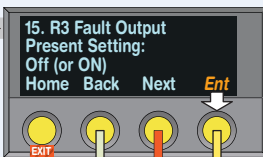
During Travel (Short Beeps)



"ON" setting will "BEEP" "BEEP" . . . even if previous screen is turned "OFF - 00 sec"
Press "Ent" to confirm a choice



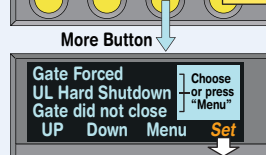
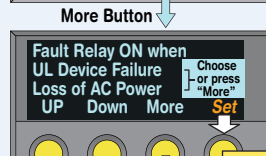
Step 15 R3 Fault Output



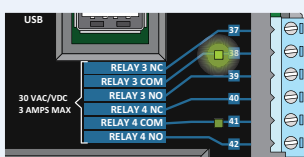
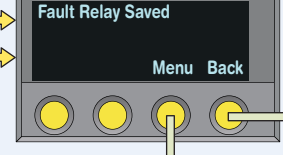
to previous step



Press "Ent" if choosing "OFF" otherwise press "More"



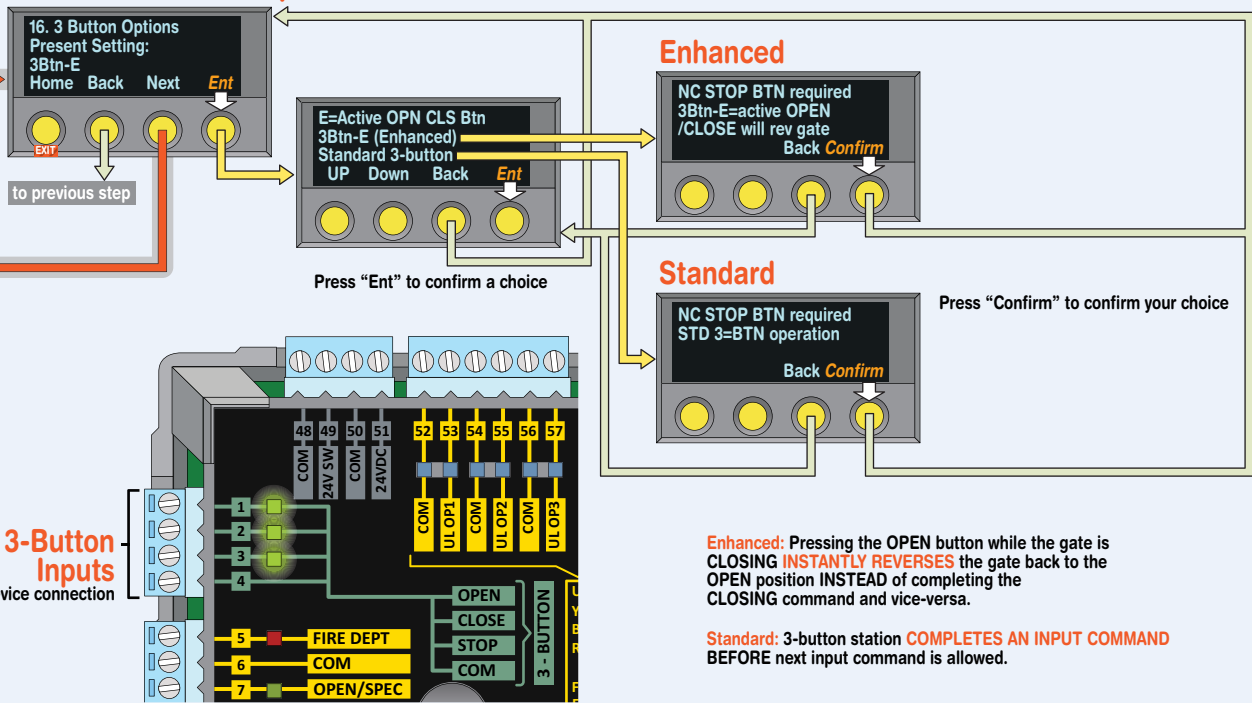
Press "Set" to confirm ONE choice on the TWO "More" screens



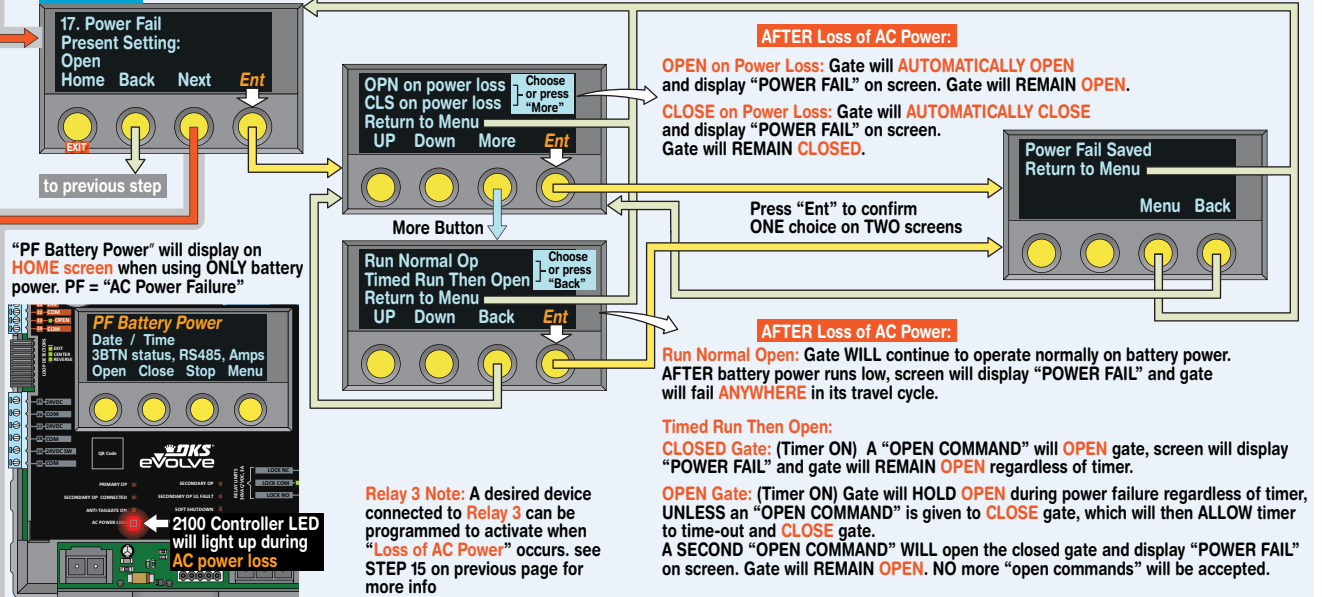
Continued on next page

Continued from previous page

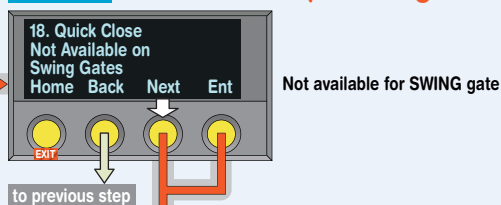
Step 16 3 Button Options



Step 17 Power Fail



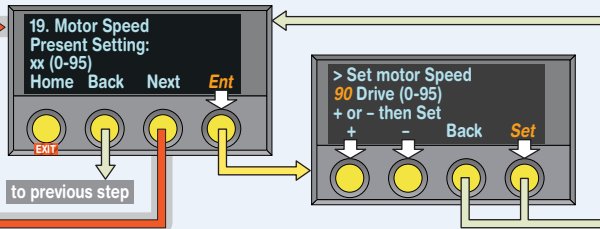
Step 18 Quick Close (SLIDE gate ONLY)



Continued on next page

Continued from previous page

Step 19 Motor Speed

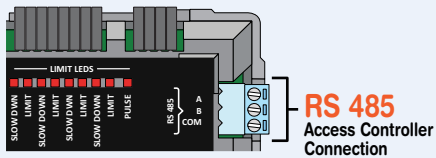


Press “Set” to set the motor speed indicated on the screen

Step 20 RS 485 (Access Controller Connection)



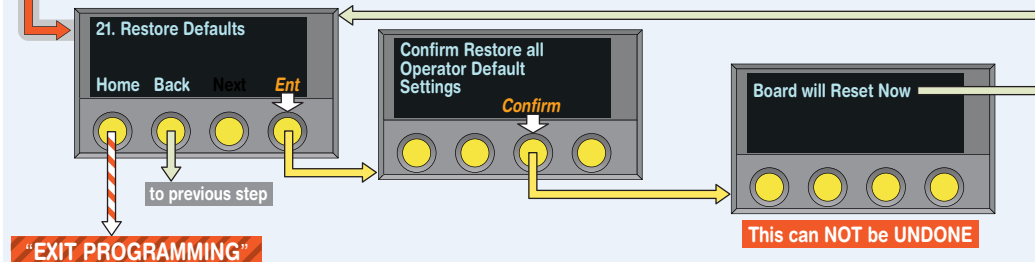
Available Soon



IMPORTANT TIP: Make a **back-up copy** of **ALL** files on the operator's flash drive to your computer or phone **after** programming is complete.

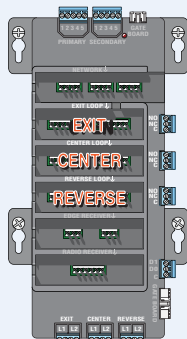
Continued on next page

Step 21 Restore Defaults



Default Setting for EACH Step:

- | | |
|--|---|
| Step 1 Set OPEN Direction: Open Direction 1 | Step 12 Relay Options: 1-OFF, 2-OFF, 3-Lock-OFF |
| Step 2 Limits Check: N/A | Step 13 Not Used |
| Step 3 UL Device Set up: OFF for ALL SIX UL device terminals
Operator will NOT function with ALL UL Device terminals OFF | Step 14 Warn Before Move R4: 00 sec, OFF |
| Step 4 Reverse Sensors: 10A (MUST be re-programmed) | Step 15 R3 Fault Output: OFF |
| Step 5 Auto Close Timer: 00 sec, OFF | Step 16 3 Button Options: 3Btn-E (Enhanced) |
| Step 6 Set Date & Time: No Date or Time | Step 17 Power Fail: OPEN |
| Step 7 Logs and Operation Info: N/A | Step 18 Quick Close: Not Available |
| Step 8 Set Primary/Secondary: Primary ONLY, No Secondary | Step 19 Motor Speed: (0-95)?? |
| Step 9 Gate Leaf Delay: OFF | Step 20 RS 485: Termination OFF (No Address set) |
| Step 10 Set Plug-in Loops: (DKS Plug-In Loop Detectors ONLY) | Step 21 Restore Defaults: N/A |



Accessory Hub

Exit Loop Port - Non-programmable

- Loop activated **while** gate **OPENING** will **continue opening** gate
- Loop activated **while** gate **CLOSING** will **reverse** and open gate
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop activated **when** gate **CLOSED** will **open** gate

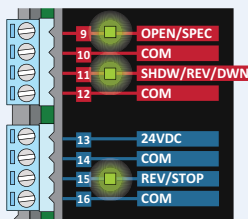
Center Loop Port - Re-programmable to a Reverse Loop

- Loop **inactive** while gate **OPENING** so gate will **continue opening**
- Loop **inactive** while gate **CLOSING** so gate will **continue closing**
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop activated **when** gate **CLOSED** will **NOT allow** gate to open (plus **NOT allow** any **Exit/Open** loops to open gate)

Reverse Loop Port - Non-programmable

- Loop activated **while** gate **OPENING** will **reverse** and close gate
- Loop activated **while** gate **CLOSING** will **reverse** and open gate
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop **inactive** while gate **CLOSED** so nothing happens

Step 11 Set External Detectors: (Third Party Loop Detectors)



External Loop Detector Connections

Terminal 9-Exit/Open - Non-programmable

- Loop activated **while** gate **OPENING** will **continue opening** gate
- Loop activated **while** gate **CLOSING** will **reverse** and open gate
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop activated **when** gate **CLOSED** will **open** gate

Terminal 11-Shadow/Reverse - Re-programmable to a Reverse Loop

- Loop **inactive** while gate **OPENING** so gate will **continue opening**
- Loop **inactive** while gate **CLOSING** so gate will **continue closing**
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop activated **when** gate **CLOSED** will **NOT allow** gate to open (plus **NOT allow** any **Exit/Open** loops to open gate)

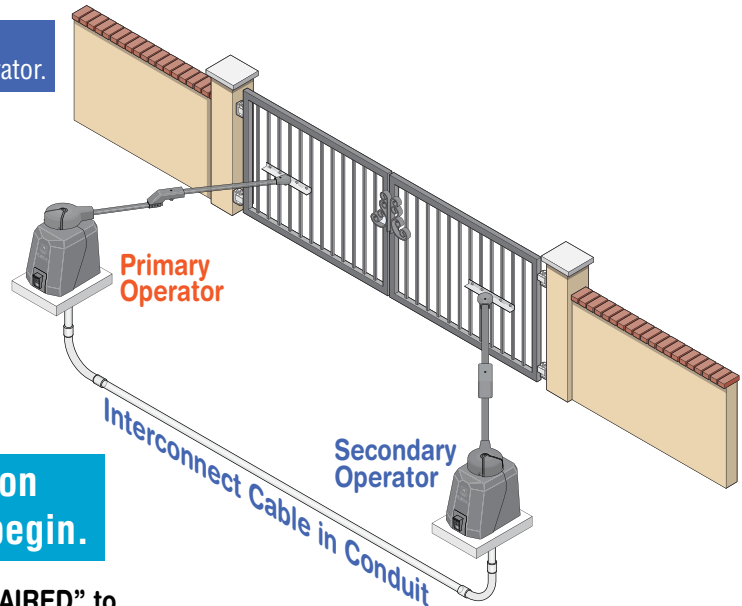
Terminal 15-Reverse/Stop - Non-programmable

- Loop activated **while** gate **OPENING** will **reverse** and close gate
- Loop activated **while** gate **CLOSING** will **reverse** and open gate
- Loop activated **when** gate **OPEN** will **hold** gate open
- Loop **inactive** while gate **CLOSED** so nothing happens

NOTE: Loop activates when a vehicle is directly above it.

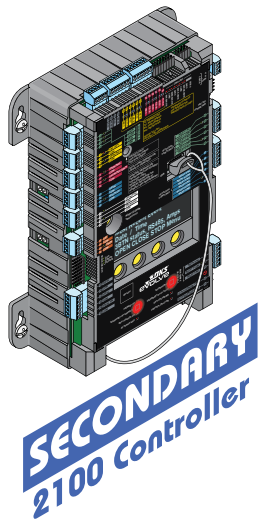
Programming Secondary Operator

All programming for the **PRIMARY** operator **MUST** be complete **BEFORE** programming the **SECONDARY** operator.

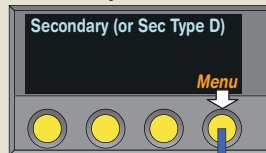


ALL requirements **MUST** be met on page 21 **BEFORE** programming can begin.

Secondary operator should be **POWERED UP** and **“PAIRED”** to **PRIMARY/SINGLE** operator.



Secondary Home Screen

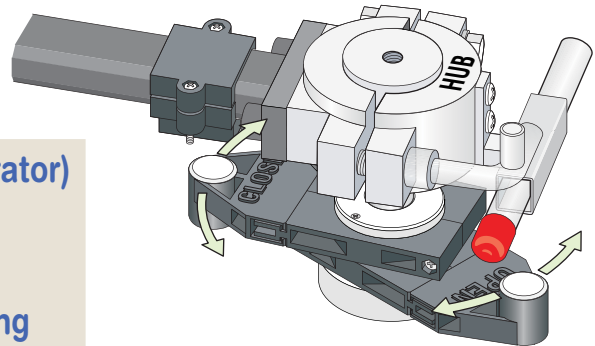


Press “Menu” to enter programming

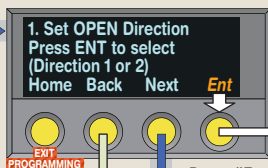
Type D: Constant pressure needed to operate opening devices for gate

“Physically” Set Limit Sensors on SECONDARY Operator

The **“Physical”** limit sensors **MUST** be set for **SECONDARY** operator **BEFORE** continuing programming, see page 30 for all the information to **“Physically”** set the limit switches.



Step 1 Set OPEN Direction (for Secondary Operator)



See page 33 for programming

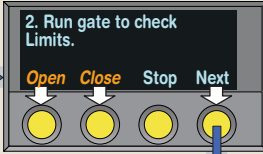
Press “Ent” to enter Step 1

to previous step

Continued on next page

Continued from previous page

Step 2 Limits Check



CAUTION Be careful not to cycle gate before limits sensors have been adjusted, damage and/or injury could occur.

Press "Open" button and operator will cycle gate to OPEN position. Press "Close" button to then cycle gate to CLOSED position. When OK, press "Next" to continue

Step 3 UL Device Set up



to previous step

See pages 34-35 for programming

ALL requirements MUST be met for Bi-Parting gates. page 21

Step 4 Reverse Sensors

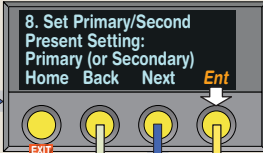


to previous step

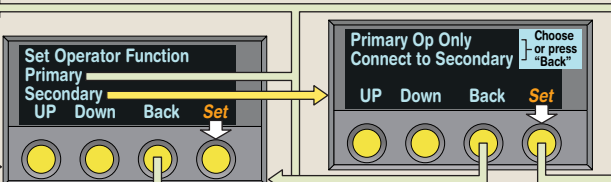
See page 36 for programming

Step 8 Set Primary/Secondary Operators

"Primary" is default "Present setting"



to previous step



Press "Set" to confirm a choice
"Primary" on "Present Setting:"
screen if "Primary" chosen

Press "Set" to confirm a choice
"Pri Waiting to Pair" on "Present Setting:"
screen if "Connect to Secondary" chosen

Step 19 Motor Speed



to previous step

See page 44 for programming

Step 21 Restore Defaults



to previous step

See page 45 for programming

"EXIT PROGRAMMING"

IMPORTANT TIP: Make a **back-up copy** of **ALL** files on **EACH** operator's flash drive to your computer or phone **after** programming is complete.
(Primary Back-Up and Secondary Back-Up)

Operating Instructions

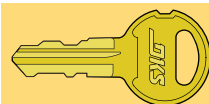
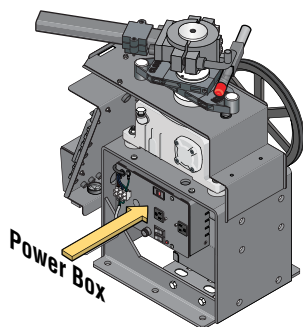
IMPORTANT SAFETY INSTRUCTIONS

WARNING - To reduce the risk of severe injury or death:

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

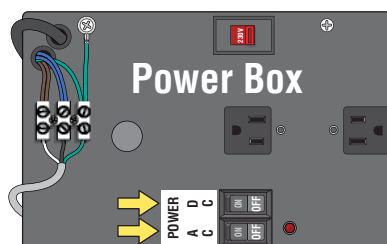
Control Box and Power Box

Control the **POWER, CYCLING** and **ALARM RESET** of operator.



A KEY has been supplied that will unlock the control box cover on this gate operator.

Note: The owner of the gate operator is responsible for the KEY availability.



AC and DC ON / OFF Power Toggle Switches on Power Box - Switches will shut-off **EACH POWER type (AC and DC)** to operator individually, as long as control box **Main ON / OFF** power toggle switch **remains ON** (see below).

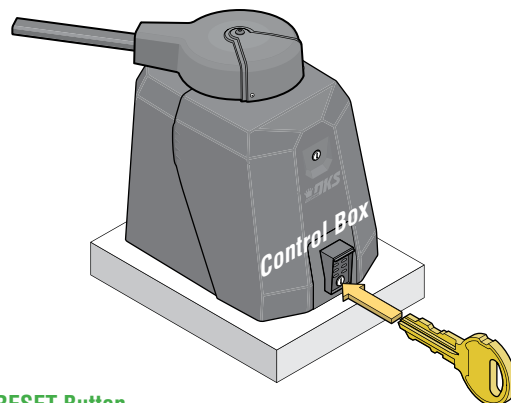
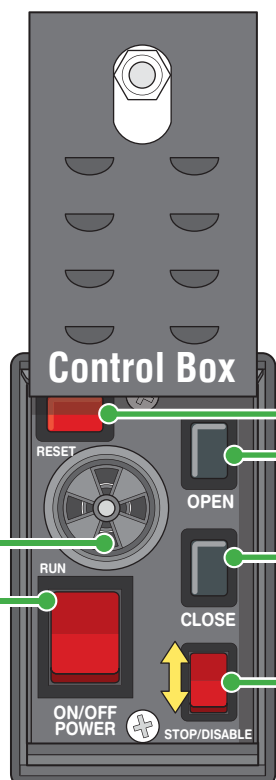
Note: Turning **BOTH** of these switches off will **Shut-Off ALL power** to operator, even if **Main ON / OFF power toggle switch** remains **ON**.

Alarm Siren

Main ON / OFF POWER

Toggle Switch - Shuts-off **ALL POWER** to operator, **BOTH AC and DC** when switch is **DOWN (OFF)**, even if power box **AC and DC** toggle switches are **ON**.

Note: **EVERYTIME** operator is powered up, it will re-load **YOUR specific programmed settings** back into its memory **BEFORE** it can resume normal operation again.



Alarm RESET Button

Turns **OFF** the **Entrapment Alarm** and restarts the operator **AFTER** a **HARD** shutdown has occurred (See next page). **2100 controller will remain powered up.**

OPEN Button - Operator **OPEN** cycle.

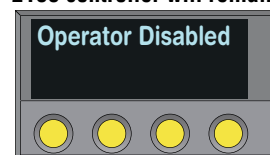
CLOSE Button - Operator **CLOSE** cycle.

Once the **Open** or **Close** buttons have been pressed, they will **complete** their cycles unless the **Stop** toggle switch is turned to **"DISABLE"**.

STOP / DISABLE Toggle Switch

Disables operator from functioning when switch is **DOWN (Disable On)** or operator will function **NORMALLY** when switch is **UP**.

2100 controller will remain powered up.



Operator's 2100 controller screen will show **"Operator Disabled"** when disable switch is **"DOWN"**.

Shutdown Conditions

Under various entrapment conditions the operator will assume either a **soft** or **hard (alarm)** shutdown. To determine what type of reset action is required, you will need to understand how the different entrapment conditions affect the gate operator.

SOFT Shutdown - NO Alarm

This occurs in various situations where the **inherent reverse sensors** or **entrapment protection devices** have been activated. In a soft shutdown condition, the operator **will not** respond to any input that was present when the entrapment protection device sensed an obstruction. If the gate stops at the open position, the operator **will not** respond to the automatic close timer.

- **Example 1** - A time clock keys the gate open in the morning and an **entrapment protection device** senses an obstruction prior to the gate reaching the full open position. If the entrapment is sensed by the **inherent reverse sensors**, the gate will reverse and run back to the closed position. The time clock input is still present, but the gate will not re-open.

NOTE: In some systems, the time clock input comes from the telephone entry system relay. This same relay may also provide open commands for a card reader, MicroPLUS transmitters and the visitor telephone entry. If so, these devices will also be disabled in a soft shutdown condition.

- **Example 2** - If the gate is closing and an entrapment protection device is activated, the gate will either stop or reverse and run back to the open position, depending upon if the secondary or inherent device was activated. The automatic close timer will not close the gate.
- **Example 3** - Vehicle arrives at open loop and gate runs towards the open position. The inherent reverse sensor is activated. The gate reverses and runs back to the closed position. If the vehicle is still present at the open loop a soft shutdown condition does not occur. The loop input provides an immediate reset of the operator and the gate will again run to the open position.

Resetting a SOFT Shutdown

In some conditions, a soft shutdown **will reset as soon as the entrapment condition clears**. For **example**: if a non-contact device (photocell) is sensing an obstruction, the operator will stop the gate and assume a soft shutdown condition. When the photocell clears, the operator will return to normal operation.

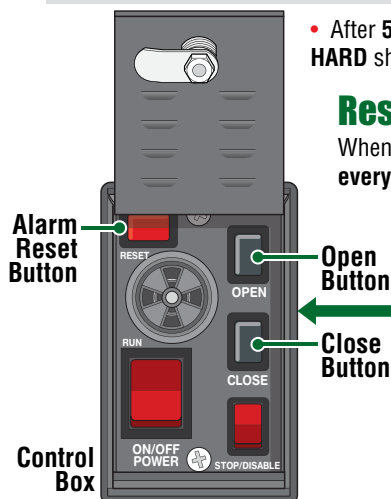
When the operator is in a soft shutdown, activation of any “**intended input**” will reset the operator. An “intended input” includes any command, any standard safety input and any loop input. Activating any of these inputs will reset the gate. At that point the gate will return to normal operation. If the gate is open, the automatic close timer will then time out and close the gate.

HARD Shutdown - Alarm Sounding OR “Chirping”

A hard shutdown condition occurs when the **inherent reverse sensor** has sensed **TWO** consecutive obstructions before the gate reaches the **full open** or **closed position**.

- **Example** - The gate is closing and the **inherent reverse sensor** senses an obstruction and causes the gate to reverse direction. As the gate begins to run in the open direction, a **second obstruction** is sensed prior to the gate reaching the full open position. Once the **second obstruction** has been sensed, the operator will stop, the audio alarm will sound and **all standard inputs are SHUTDOWN** (including open commands, safety commands, loop inputs, etc.).

The audio alarm will sound for five minutes, or until the operator’s reset button is pushed. After (5) five minutes the alarm will “chirp every 5 sec.” and the hard shutdown condition will remain in affect until the reset button is pushed.



- After **5 minutes**, the audio alarm will “**Chirp**” every **5 seconds**. This indicates that the operator is in a **HARD** shutdown condition and the **reset button must be pressed** to reset the operator and silence the alarm.

Resetting a HARD Shutdown

When the operator is in a hard shutdown condition (audio alarm activated or audio alarm “**chirps**” every 5 seconds), to silence the alarm, **press the alarm reset button**.

- Before resetting a hard shutdown, determine **why** the shutdown occurred. Inspect the gate for any obstructions along its path that could have activated the inherent reverse sensor. Inspect the gate and gate hardware.

NOTE: DoorKing operators have a built-in alarm reset push button. Activating this button will return the gate operator to normal operation, **but WILL NOT cycle the gate operator**. The **OPEN** and **CLOSE** buttons **WILL** cycle operator.

Once the gate has been reset, an **open** or **close command** is needed to cycle the gate operator. **Most activating commands** will cause the gate operator to **cycle to the open position**. This includes activation of a key switch or open command and activation of the automatic exit loop. Activation of a **close command** will cycle the gate to the **closed position**.

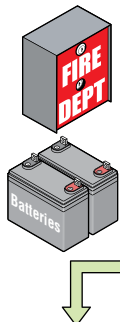
Manual Gate Operation

This operator is equipped with a manual release system that will allow the gate to be **pushed open** in the event of a **power outage** or equipment failure. **NEVER** remove the hub from the operator **after manually releasing it**.

This gate operator CAN NOT be manually forced open in the event of a power failure without FIRST manually releasing the gate!

Emergency Vehicle Access Conditions

The automatic vehicular gate system must be designed to allow access to emergency vehicles under different operating conditions.



1 During normal powered operation, emergency vehicles access the gate by use of the **Emergency Vehicle Access Device** installed on your gate system. The type of device that is used in your community is dependent on your city codes. These devices may include (but are not limited to) Fire Department lock boxes, Click-2-Enter radio receivers, strobe light sensors, siren sensors, etc.

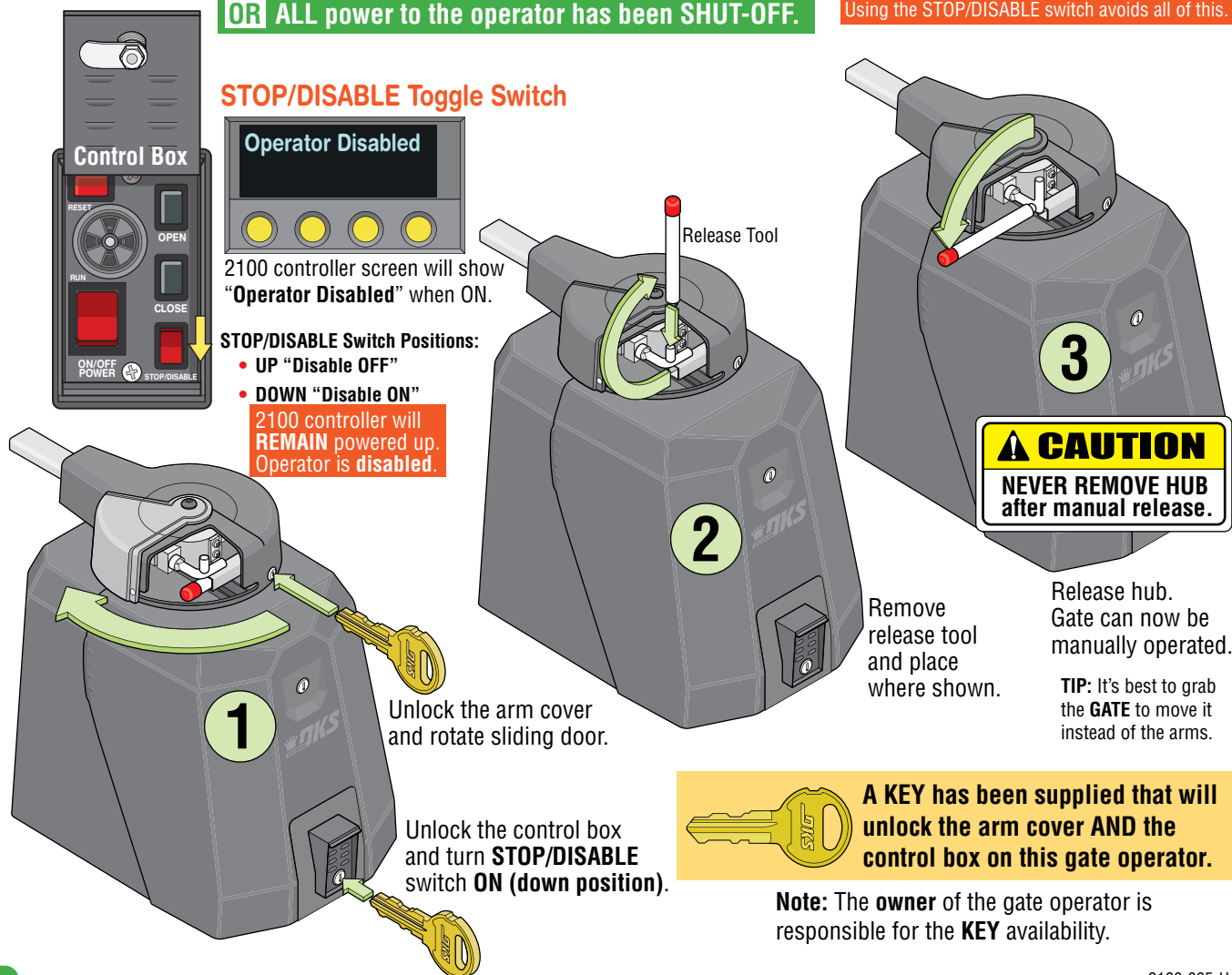
2 In the event of a (AC) power failure, The gate operator is equipped with a built-in **Battery Back-Up System (DC)**, this system will allow the gate operator to continue to function normally when primary (AC) power is removed.

3 In the event of a primary (AC) power failure AND a back-up system (DC) power failure (low charged or dead batteries for example), the system has a release system that allows the gate to be **Manually Operated** (See below).

Manual Release

Never attempt to manually push open the gate with the operator attached to it until you have verified that STOP/DISABLE switch is set for "DISABLE ON" OR ALL power to the operator has been SHUT-OFF.

Note: ANYTIME operator is powered down, it has to re-load YOUR specific programmed settings back into its memory after it gets powered UP again BEFORE it can resume normal operation. Using the STOP/DISABLE switch avoids all of this.



MAINTENANCE AND TROUBLESHOOTING

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

Maintenance

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

Always check the entrapment protection devices (external and internal) when performing any maintenance. If any of these devices cannot be made operable, remove this operator from service until the cause of the malfunction is identified and corrected. Keeping this operator in service when any entrapment protection devices are malfunctioning creates a hazard for persons which can result in severe injury or death should they become entrapped in the gate.

When servicing this gate operator, always turn power **OFF!!**

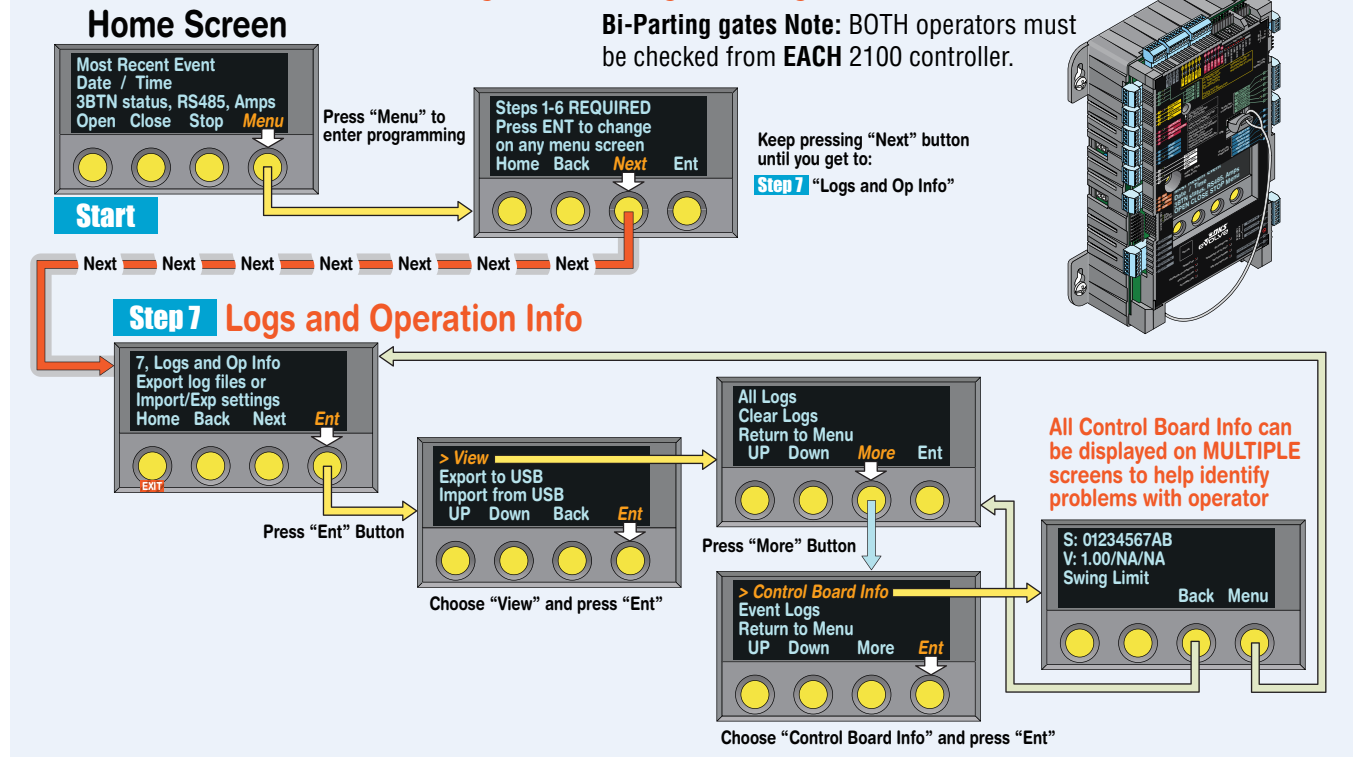
If gearbox requires oil, use only Mobil SYNTHETIC SHC-629 Oil. Do not completely fill gearbox with oil. Gearbox should be half full only. Do not exceed this level.

Operator Component	Maintenance	Monthly Interval		
		1	6	12
Diagnostic Programming	This programming can display problems with the operator. Use when necessary. See next page to access it on 2100 controller. Note: This is a good time to check if you have a current BACK-UP copy of ALL files on the 2100 controller's flash drive(s) for future use.			
Warning Signs	Check that warning signs are on BOTH sides of the gate area.	✓		
Alarm	Activate the inherent reverse sensors by blocking the gate with a solid object. When the gate reverses, block the gate in the opposite direction prior to the limit being reached. The entrapment alarm should activate. Press the reset button to silence the alarm.	✓		
Arms	Check set screws and nuts. Check bushings for wear.		✓	
Batteries	Check the batteries for any leakage or loose connections. Batteries should be replaced every two years.	✓		
Drive Belt	Check for alignment, tightness and wear.		✓	
Fire Dept.	Check emergency vehicle access device for proper operation.	✓		
Gate	Inspect for damage. Check gate hinges for wear and grease if necessary.		✓	
Inherent Reverse Sensors	Check that the gate reverses on contact with an object in both the opening and closing cycles. Use Step 4 in programming to re-adjust reverse sensors if necessary.	✓		
Loop(s)	Check ALL vehicular loops for proper operation.	✓		
Manual Release	Check manual release for proper operation. See page 56.	✓		
External Reverse Device	Check external reverse device(s) reverse the gate when activated. See page 57.	✓		
Complete System	Complete check of gate and gate operating system.			✓

Troubleshooting Diagnostics and Problem Solving

The gate operator has programming diagnostics that will display **potential** or **existing problems** that the 2100 controller has detected. Specific fault conditions are checked and the operator will display that a fault exist through the “**Control Board Info**” programming step. This programming, along with a visual inspection of the gate area, should identify **MOST** of the problems with the gate system. Some problems that may arise that are not quickly identifiable by the operator’s diagnostic programming or visual inspection are listed below.

Go to “Control Board Info” Diagnostics Programming



Problems that can be solved without diagnostic programming

Operator **HARD Shutdown Conditions** (see previous page)

If a CONSTANT tone is heard: This indicates that the operator is in a **HARD shutdown** condition. The tone will continue to sound for five minutes, and then will beep once every five seconds. The alarm **Reset Button** must be pressed to return the operator to normal operation.

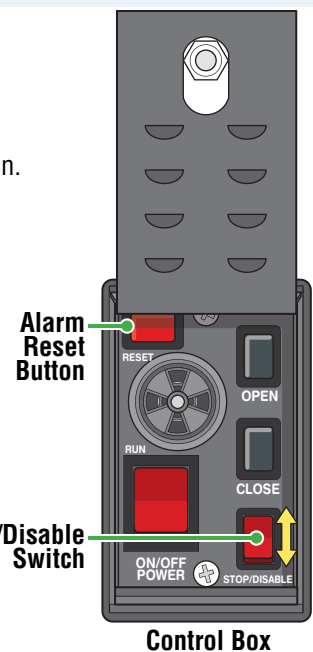
If a SHORT tone is heard every five seconds: This indicates that the operator has been in a **HARD shutdown condition in excess of five minutes**. This will continue until the alarm **Reset Button** is pressed.

STOP/DISABLE Toggle Switch ON

When toggle switch is **DOWN** (Disable On) position, it disables operator from functioning. **UP** (Normal) position will allow operator to function normally.

NO Operator Power

Check the incoming power supply wire with a VOM meter. A voltage drop on the input power wire (usually caused by using **too small** input power wires) will cause the operator to malfunction. Refer to the wire size chart on page 27.



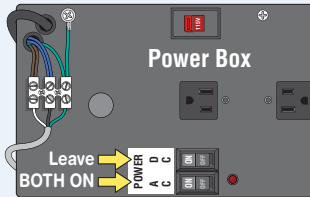
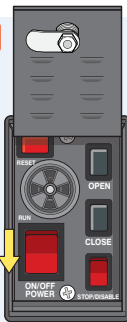
Note: A Meg-Ohm meter capable of checking up to 500 meg-ohms of resistance may be necessary to properly check the integrity of the **in-ground loops**.

Updating eVolve Firmware

1 Power DOWN Operator

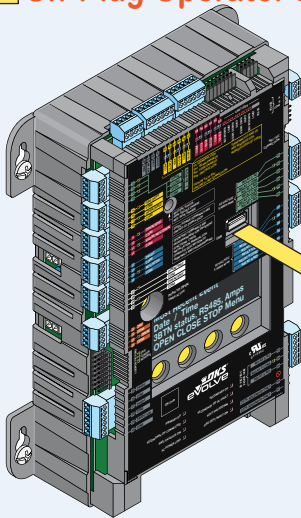
Control Box

ON/OFF Power Switch "DOWN" OFF



Download Firmware Update at:
www.doorking.com

2 Un-Plug Operator's Flash Drive



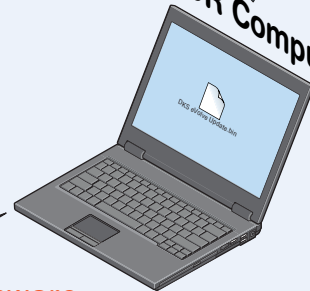
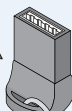
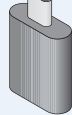
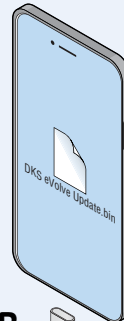
YOUR Cell Phone

DKS eVolve Firmware Update.bin

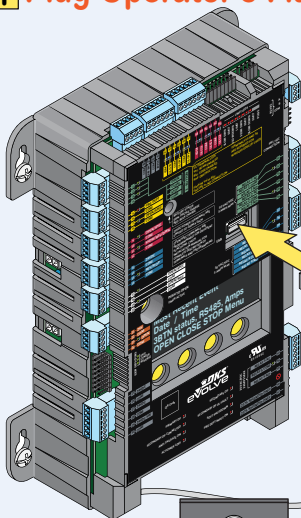
OR

YOUR Computer

YOUR USB Phone Adapter



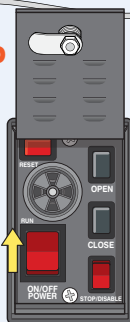
4 Plug Operator's Flash Drive Back In



3 Copy firmware file to Operator's Flash Drive (Replace older file if prompted)

5 Power UP Operator

ON/OFF Power Switch "UP" ON



Firmware will update on screen AUTOMATICALLY displaying new firmware version number

This can NOT be UNDONE

Secondary operator **MUST** be updated also when using Bi-Parting gates.

IMPORTANT TIP: Back-up **ALL** files from the operator's flash drive to **YOUR** computer or phone **after** firmware update is complete. In case the operator's flash drive ever fails and you have to replace it. Secondary operator's flash drive files **MUST** also be backed-up when using bi-parting gates.

Accessory Items

UL 325 Entrapment Protection Devices

Type B1 Non-Contact Devices (Beam)

DoorKing

Model 8080-057 Standard (Retroreflective 35 ft)
Model 8080-060 Deluxe Adjustable (Retroreflective 35 ft)

Miller Edge

OptiGuard (Thru-Beam 100 ft)
TruGuard (Retroreflective 30 ft)

EMX Industries

Model IRB-MON2 8080-052 (Thru-Beam 115 ft)
Model IRB-RET2 8080-053 (Retroreflective 60 ft)
Model IRB-325 (Thru-Beam 65 ft)
Model NIR-50-325 (Retroreflective 50 ft)

Omron

Model E3K-R10K4 8080-056 (Retroreflective 30 ft)

Seco-Larm

Model E-936-S45RRGQ 8080-055 (Retroreflective 45 ft)
Model E-960-D90GQ 8080-054 (Thru-Beam 90 ft)

Type B2 Contact Devices (Edge)

DoorKing

8080 Series Sensing Edges

DKS 8080-250 5ft 2-wire
DKS 8080-254 5ft 4-wire
DKS 8080-260 6ft 2-wire
DKS 8080-264 6ft 4-wire

ASO

ASO Sentir 35.55 CT
Max Length 25m
ASO Sentir 35.85 CT
Length 6m / 25m
ASO Sentir 95.20 AT
Length on request
Wrap-Around Edge
ASO Sentir 92.20 RT
Length on request
Wrap-Around Edge

Miller Edge

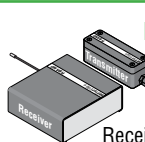
ME120-T2 Max-100ft 2-wire
ME120 Max-100ft 4-wire
CPT210-T2 Max-50ft 2-wire
CPT210 Max-50ft 4-wire
ME120C5 Bottom Gate Mount
for ME120 and CPT210 Edges
CPT215-T2 Max-50ft 2-wire
CPT215 Max-50ft 4-wire
ME110-T2 Max-50ft 2-wire
ME110 Max-50ft 4-wire
8080-071 ME111-T2 6ft 2-wire
8080-091 ME111 6ft 4-wire
8080-070 MG123-T2 5ft 2-wire
8080-090 MG123 5ft 4-wire
8080-066 MGS20-T2 5ft 2-wire
8080-086 MGS20 5ft 4-wire
Wrap-Around Edge
8080-065 MGR20-T2 5ft 2-wire
8080-085 MGR20 5ft 4-wire
Wrap-Around Edge

Wireless Edge Connection Devices



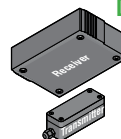
EMX Industries

WEL-200K
Wireless Edge Kit
(200 ft line-of-sight)



Miller R-Band Wireless

Transmitter P/N 8080-006
Receiver P/N 8080-008
(50-100 ft depending on conditions)



DoorKing

DKS Plug-In Wireless
Available Soon

Accessory items

Plug-In Radio Receiver - Radio receiver plugs directly into radio port on 2100 controller's plug-in rack simplifying wiring.

Programmable 318 MHz RF receiver for 26, 30 or 31-bit wiegand format. P/N 2100-210

Plug-In Loop Detectors - Detectors plug directly into loop ports on 2100 controller's plug-in rack simplifying wiring.

Single channel detector - P/N 2100-221

Dual channel detector - P/N 2100-222

External Loop Detectors

Reno A&E 12/24 VDC or 24 VAC - 9402-045

Reno A&E 120 VAC - 9402-047

Carlo Gavazzi 24 VAC/VDC - 9402-044

Diablo 10-30 VAC/VDC low power draw - 9402-050

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

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

Loop Test Meter - Meg-ohm meter checks the integrity of ground loops. P/N 9401-045

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

115 VAC Heater with Fan Assembly Kit - Thermostatically controlled heater and fan for cold environments.

For 115 VAC input power ONLY. P/N 1601-154

208/230 VAC Heater with Fan Assembly Kit - Thermostatically controlled heater and fan for cold environments.

For 208/230 VAC input power ONLY. P/N 1601-197

Interconnect Cable - Interconnect wire cable contains all the necessary wires to interconnect primary / secondary operators.

Cable length: 30ft-P/N 2600-755 40ft-P/N 2600-756 50ft-P/N 2600-757

Surge Devices - High and low voltage surge suppressors help prevent circuit board failure caused by lightning strikes and power surges.

High Voltage - P/N 1879-010 Low Voltage - P/N 1878-010

Time Clock - 7 day time clock can be used to automatically open gate at pre-set time and days. Compact clock fits inside the operator.

7 day clock - P/N 2600-791

7.2 Amp/Hr Standard Battery - 12 Volt-7.2 Amp/Hr. P/N 1801-003. Two (2) required.

18 Amp/Hr Extended Battery - 12 Volt-18 Amp/Hr. P/N 1801-004. Two (2) required.

Gate Hinges:

Flange Bearing Hinge - 3000 Lb. weight capacity. Designed for use with 2" gate frame. Includes mounting bracket and hardware.

Two required per gate (top, bottom) P/N 1200-009

Sealed Bearing Hinge - 2000 Lb. weight capacity. Designed for use with round or square gate frames. Includes mounting bracket and hardware. Two required per gate (top, bottom) P/N 1200-019

Sealed Bearing Hinge - 3000 Lb. weight capacity. Designed for use with round or square gate frames. Includes mounting bracket and hardware. Two required per gate (top, bottom) P/N 1200-039

Owner of the Gate Operator

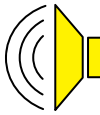
Alarm Sounding OR “Chirping” and Gate WILL NOT Operate

Operator is in a **HARD Shutdown Condition**: The alarm will sound for (5) five minutes. After five minutes the alarm will start “Chirping” every 5 seconds and continue “Chirping” until operator gets reset.



A **KEY** has been supplied that will unlock the control box on this gate operator.

Note: The **owner** of the gate operator is responsible for the **KEY** availability.



When Alarm is Sounding OR “Chirping”

ALWAYS CHECK THE ENTIRE GATE AREA FOR ANY OBSTRUCTIONS OR DAMAGE FIRST.



- If a Fire Dept Access Device has been activated by **emergency personnel**, then operator can be **reset** and put back into normal operation again. Alarm will **always** sound when this access device gets activated.
- If the cause of the alarm **CAN** be identified and **CORRECTED**, then operator can be **reset** and put back into normal operation again.
- If the cause of the alarm **CANNOT** be corrected, shut-off power and **DO NOT** place this operator back into service until the malfunction can be identified and **CORRECTED**.

IMPORTANT: Putting this gate operator back into service **WITHOUT** **CORRECTING** the cause of the alarm could result in severe injury or **DEATH!**

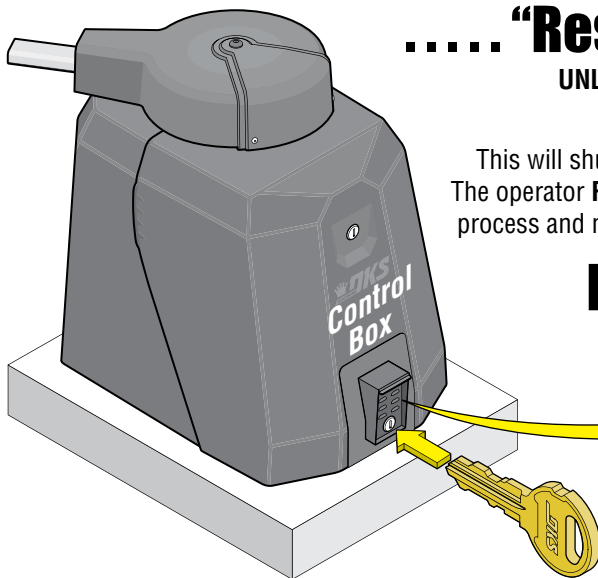
..... “Reset” Operator:

UNLOCK the control box with **KEY**.

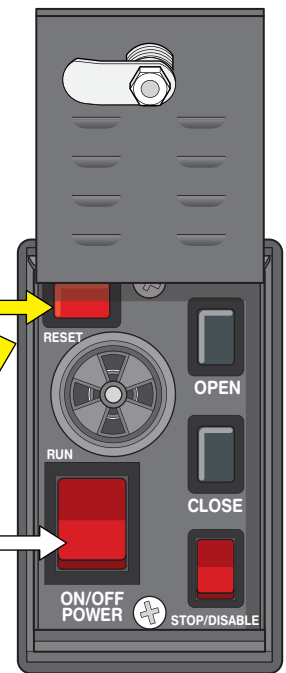
Press **RESET** Button.

This will shut-off the alarm and **reset** the operator. The operator **REMAINS** powered up through this entire process and normal gate operation can then continue.

Press RESET Button



Shutting-Off Power Note: ANYTIME operator is powered down, it has to re-load **YOUR** specific programmed settings back into its memory after **powering UP** again **BEFORE** normal operation can resume. Just using the **RESET** button avoids this slow start-up process.



Operator **HARD** Shutdown Condition occurs when:



1. **Fire Department** (Emergency Access) input has been activated by Police, Fire Department, EMT, Ambulance etc.
2. The **inherent reverse sensors** (Type A) gets activated **TWO consecutive times** before the gate completes the open cycle OR the close cycle.
3. The **reversing edge** contact device (Type B2) gets activated and reverses, but before the gate completes the reverse cycle the **inherent reverse sensors** (Type A) gets activated.

Please read - **OPERATING INSTRUCTIONS** for more information about operating this gate operator.

Manual Gate Operation OPTIONS

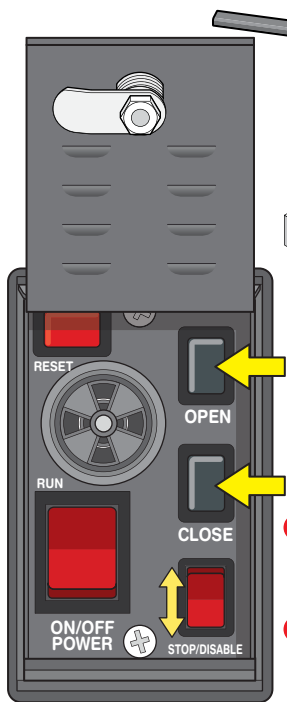
You CANNOT just PUSH gate open!!!

Gate CANNOT be manually PUSHED open UNTIL the STOP/DISABLE toggle switch has been set for "DISABLE ON" and the MANUAL RELEASE HANDLE has been UNLOCKED.



A KEY has been supplied that will unlock the control box AND arm cover on this gate operator.

Note: The owner of the gate operator is responsible for the KEY availability.



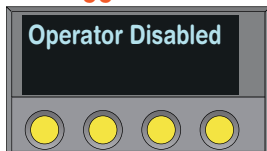
STOP/DISABLE Toggle Switch:

- DOWN "Disable ON"
- UP "Disable OFF"

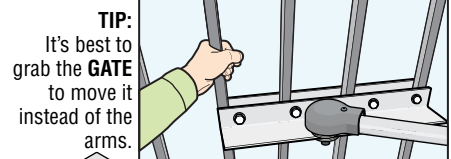
Different Situations for Manual Gate Operations

- **Both AC and DC Power are available. UL device(s) NOT functional:** STOP/DISABLE toggle switch **MUST** be set "UP" (Disable OFF). Press and **HOLD** the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **AC Power is OUT, DC power available. UL devices are functional:** STOP/DISABLE toggle switch **MUST** be set for "UP" (Disable OFF). **MOMENTARILY** press the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **AC Power is OUT, DC power available. UL device(s) NOT functional:** STOP/DISABLE toggle switch **MUST** be set for "UP" (Disable OFF). Press and **HOLD** the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **Both AC and DC power are NOT available: IMPORTANT!** Set the STOP/DISABLE toggle switch to "DOWN" (Disable ON) operator is disabled, then manually release operator (see below) and "Physically" push the gate to the desired position. STOP/DISABLE switch set to "DISABLE ON" ensures that if power is re-established when a manual release is engaged, the operator **CAN NOT** be cycled.

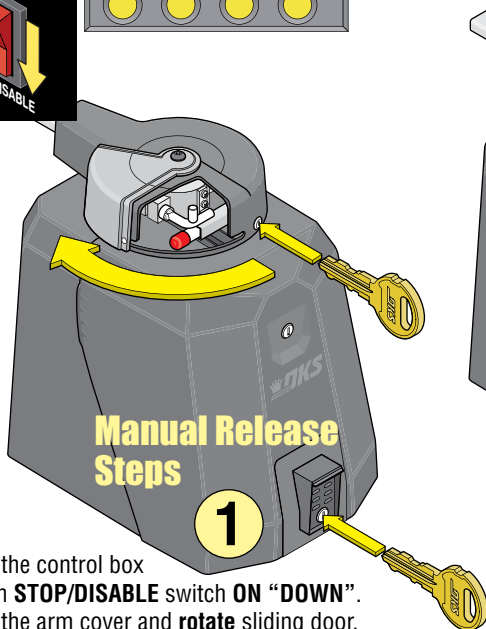
STOP/DISABLE Toggle Switch



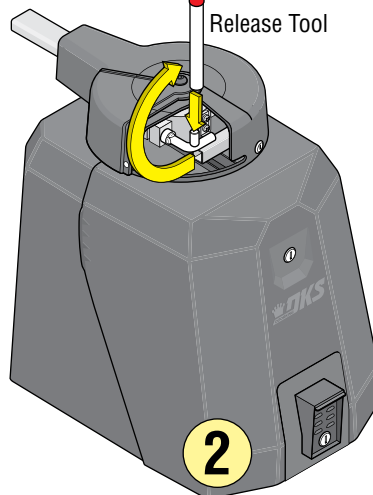
Operator's 2100 controller screen will show "Operator Disabled" when STOP/DISABLE toggle switch is set "DOWN" "DISABLE ON". 2100 controller will **REMAIN** powered up.



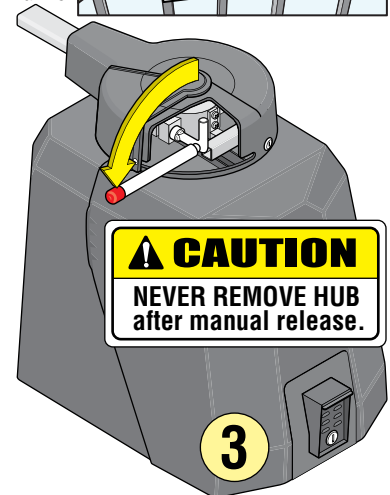
TIP:
It's best to grab the **GATE** to move it instead of the arms.



Unlock the control box and turn STOP/DISABLE switch ON "DOWN".
Unlock the arm cover and rotate sliding door.



Remove release tool and place where shown.



CAUTION
NEVER REMOVE HUB after manual release.

Release hub. Gate can now be manually operated.

Never attempt to manually push open any gate with an operator attached to it until you have verified that power to the operator has been SHUT-OFF.

Gate Operator's Monthly Checkup

Caution: Make SURE gate area is clear BEFORE testing the gate operator!

DO NOT repair or adjust gate systems yourself. Contact a trained gate systems technician with any questions or to make any repairs or adjustments. If you feel uncomfortable performing any of these inspections or testing, a qualified service technician will perform the visual inspections and testing for you. You can find a trained service technician at DoorKing's "Dealer Locator" at www.doorking.com

Visual Inspection

Visually inspect the rollers, fasteners, brackets and other gate hardware for proper alignment, proper tightness, and signs of damage, breakage, looseness, rust or wear. Moving parts should be lubricated and should not be squeaking. Visually inspect wiring for fraying or exposure. If a malfunction is found, contact a trained service technician to make adjustments or repairs.

Inherent Reverse Sensors

Begin with the gate in the fully **OPEN** position. Stand just outside the path of the gate and close the gate (typically auto-timer will time-out and close gate automatically). As the gate is **closing**, firmly press a solid object against the end of the gate frame in the direction opposing the travel of the gate. The gate should **stop** within 2 sec. and **reverse** to the **OPEN** position. Another input command is needed before the gate will reset and close again. Repeat this test while **opening** the gate. Start from the fully **CLOSED** position. While **opening**, gate should **stop** and **reverse** to the **CLOSE** position. If gate does **NOT** respond like it should in **either** direction of gate travel, contact a trained service technician to make adjustments or repairs.

Test Photocells

If the gate has a photo sensing device protecting the path of a **closing gate**, perform the following test. Begin with the gate in the fully **OPEN** position. Stand just outside the path of the gate and close the gate (typically auto-timer will time-out and close gate automatically). Pass an object across the path of the closing photo sensing beam. The gate should **stop** within 2 sec. and **reverse** to the **OPEN** position. Typically the auto-timer times out and gate closes again.

If the gate has a photo sensing device protecting the path of a **opening gate**, start from the fully **CLOSED** position. **OPEN** gate. Pass an object across the path of the opening photo sensing beam. The gate should **stop**, the gate will resume opening when the beam is clear. If gate does **NOT** respond like it should in **either** direction of gate travel, contact a trained service technician to make adjustments or repairs.

Test Reversing Edges

If the gate has a reversing edge(s) protecting the path of a **closing gate**, perform the following test. Begin with the gate in the fully **OPEN** position. Stand just outside the path of the gate and close the gate. As the gate is closing, firmly press a solid object against the reversing edge in the direction opposing the travel of the gate. The gate should **stop** within 2 sec. and **reverse** to the **OPEN** position (typically auto-timer will time-out and close gate automatically). If the gate encounters **another** obstruction before it is closed, the gate will **stop** and reverse to the **OPEN** position **again**. A input command is needed before the gate will reset and close again, auto-timer will **NOT** close gate (Typically, press your remote button for input command).

If the gate has a reversing edge(s) protecting the path of a **opening gate**, starting from the fully **CLOSED** position. Stand just outside the path of the gate and open the gate. **OPEN** gate. As the gate is opening, firmly press a solid object against the reversing edge in the direction opposing the travel of the gate. gate should **stop** and **reverse** to the **CLOSE** position. If gate does **NOT** respond like it should in **either** direction of gate travel, contact a trained service technician to make adjustments or repairs.

Note: This gate operator uses high levels of force to move the gate and most people underestimate the power of these systems and **DO NOT** realize the **potential hazards** associated with this system if **NOT** maintained properly.

Scheduled maintenance visits are offered by most qualified service technicians to MAINTAIN your gate operator system.

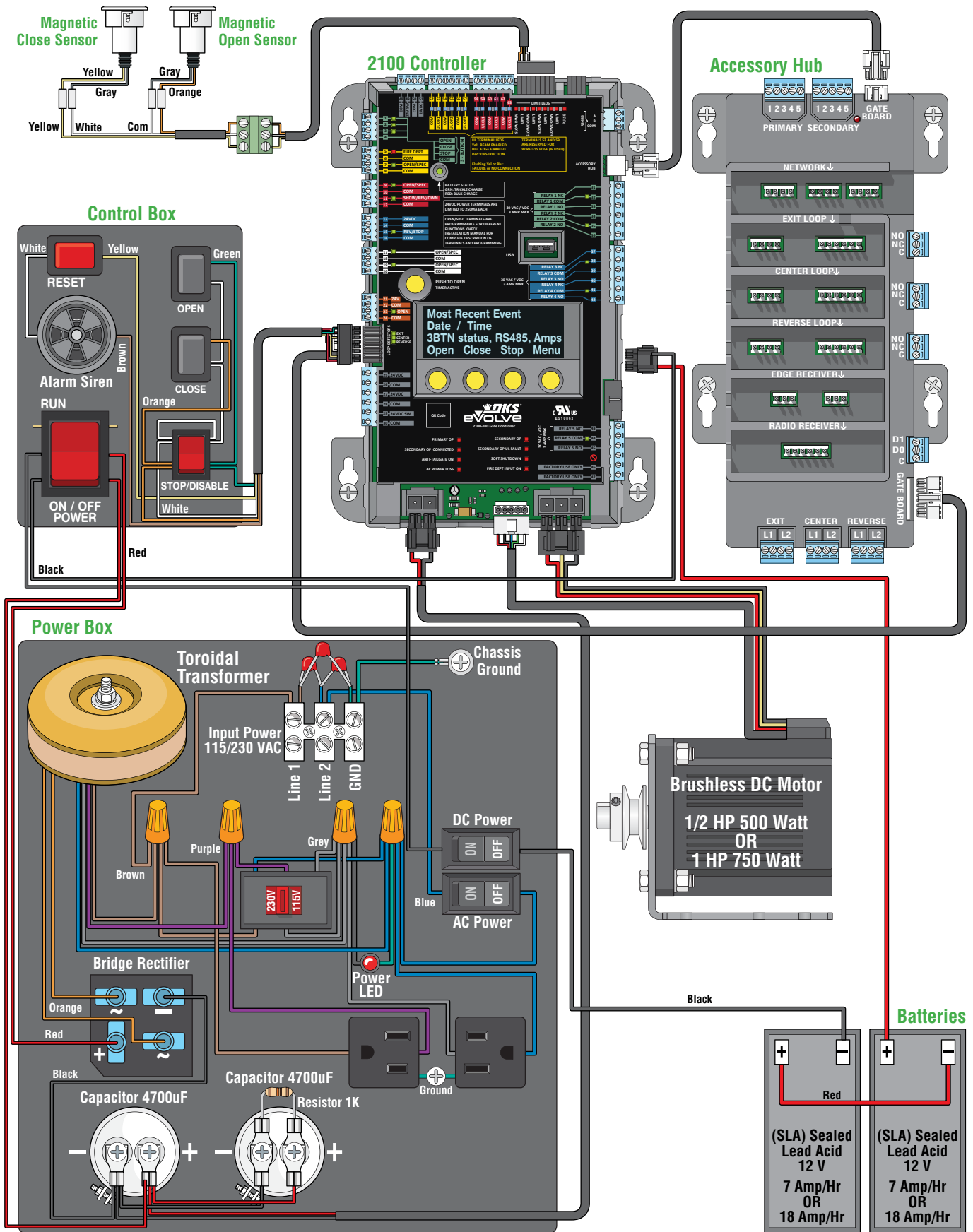
New Installation Checklist for Installer and Property Owner

Instructions: Check the space next to each item (“✓”) to indicate that it has been addressed by installer **AND** property owner. If it is not applicable, enter N/A. Please note that the checklist is intended to be a summary of many **important** automated vehicular gate aspects, **But may not inclusively identify all potential hazards of every specific gate system installation.** Photos can be taken of the finished installation for future reference if desired.

Each item listed and checked has been examined by the Installer and is CLEARLY understood by the Property Owner.

Installer	Property Owner	Description
		The operator is installed on a gate used for vehicles only. Verify that separate pedestrian access is provided or available, and the access is such that pedestrians cannot come in contact with the moving vehicular access gate during its entire length of travel.
		Gate/Hardware: Insure that there is a means to prevent the gate from falling over in the event of a roller or hinge failure. Insure the gate has physical limit stops and that gravity will not initiate motion of the gate. Insure that all rollers are guarded or covered to eliminate the possibility of a finger being inserted between the roller and gate.
		The gate operator system is in compliance with the entrapment protection requirements of UL 325 . Identify all potential entrapment zones and ensure they are protected. Potential pinch areas have been guarded so as to be inaccessible OR have a contact (reverse edge) and/or non-contact (photocell) obstruction sensing devices installed. Verify that the system has in place external entrapment protection, independent from the inherent reverse sensors. Reversing edges or photocells are typical, other means are possible. For more information see your specific installation/owners manual for entrapment protection installation and locations.
		The installer has properly adjusted the inherent reverse sensors on the gate operator, and has tested the gate to make sure that the gate stops and reverses a short distance upon striking an immovable object.
		Check that placement of user operational controls are six (6) or more feet away from the gate. If any operational control is closer than six (6) feet to the gate, DO NOT place the automated vehicular gate into service.
		Warning signs are to be permanently installed in the area of the gate in such a manner that at least one warning sign is visible by persons located on each side of the gate, for both the secure and unsecure sides of the gate.
		The installer has instructed the property owner in the proper use of the gate operator and has reviewed the operational functions, obstruction-sensing devices, alarm, and reset as outlined in your specific installation/owners manual.
		The installer has instructed the property owner in the proper use of the operator's manual release OPTIONS as outlined in your specific installation/owners manual.
		The installer has reviewed all safety instructions with the property owner , including the need to never let children operate or play with gate controls, to keep the remote control away from children, and to always keep people and objects away from the gate.
		The installer has explained to the property owner that a regular maintenance schedule for both the gate and the gate operator is recommended, including regular testing of entrapment protection as outlined in the manufacturer's instructions.
		The installer has left the installation/owners manual with the property owner for future reference.

Model 2160 Swing Gate Operator Schematic



Alarm Sounding OR "Chirping" and Gate Will NOT Operate

Operator is in a HARD Shutdown Condition: The alarm will sound for (5) five minutes. After five minutes the alarm will start "Chirping" every 5 seconds and continue "Chirping" until operator gets reset.



A KEY has been supplied that will unlock the control box on this gate operator.

To obtain key to unlock gate operator, contact:

Name _____

Phone # _____

Note: The owner of the gate operator is responsible for the **KEY** availability.



When Alarm is Sounding OR "Chirping"

ALWAYS CHECK THE ENTIRE GATE AREA FOR ANY OBSTRUCTIONS OR DAMAGE FIRST.

- If a Fire Dept Access Device has been activated by **emergency personnel**, then operator can be **reset** and put back into normal operation again. Alarm will **always** sound when this access device gets activated.
- If the cause of the alarm **CAN** be identified and **CORRECTED**, then operator can be **reset** and put back into normal operation again.
- If the cause of the alarm **CANNOT** be **corrected**, shut-off power and **DO NOT** place this operator back into service until the malfunction can be identified and **CORRECTED**.

IMPORTANT! Putting this gate operator back into service **WITHOUT** **CORRECTING** the cause of the alarm could result in severe injury or DEATH!

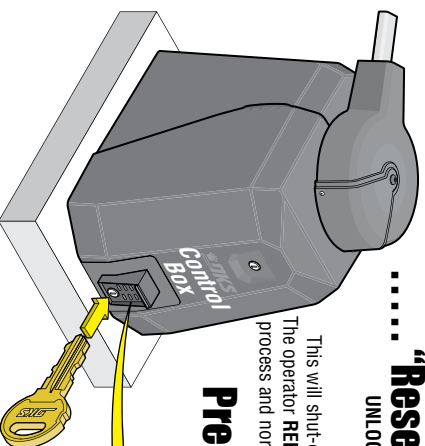
"Reset" Operator:

UNLOCK the control box with **KEY**.

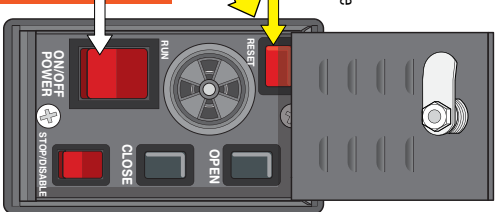
Press **RESET** Button.

This will shut-off the alarm and **reset** the operator. The operator **REMAINS** powered up through this entire process and normal gate operation can then continue.

Press RESET Button



Shutting-OFF Power Note:
ANYTIME operator is powered down, it has to re-load YOUR specific programmed settings back into its memory after powering UP again **BEFORE** normal operation can resume. Just using the **RESET** button avoids this slow start-up process.



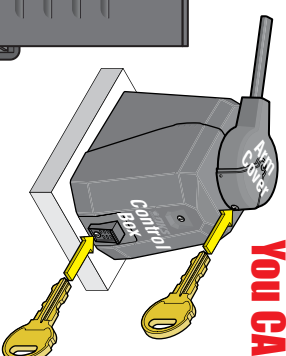
Operator HARD Shutdown Condition occurs when:

1. **Fire Department** (Emergency Access) **input** has been activated by Police, Fire Department, EMT, Ambulance etc.
 2. The **inherent reverse sensors** (Type A) gets activated **TWO consecutive times** before the gate completes the open cycle **OR** the close cycle.
 3. The **reversing edge contact device** (Type B2) gets activated and reverses, but before the gate completes the reverse cycle the **inherent reverse sensors** (Type A) gets activated.
- Please read - **OPERATING INSTRUCTIONS** for more information about operating this gate operator.

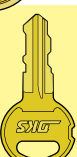
www.doorking.com to get a PDF of this manual - Remove this page OR

Manual Gate Operation OPTIONS

You CANNOT just PUSH gate open!!!



Gate **CANNOT** be manually **PUSHED** open UNTIL the **STOP/DISABLE** toggle switch has been set for "**DISABLE ON**" and the **MANUAL RELEASE HANDLE** has been **UNLOCKED**.



A KEY has been supplied that will unlock the control box AND arm cover on this gate operator.

Note: The owner of the gate operator is responsible for the **KEY** availability.

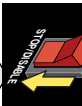
Different Situations for Manual Gate Operations

- **Both AC and DC Power are available, UL device(s) NOT functional:**
STOP/DISABLE toggle switch **MUST** be set "UP" (Disable Off). Press and **HOLD** the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **AC Power is OUT, DC power available, UL devices are functional:**
STOP/DISABLE toggle switch **MUST** be set for "UP" (Disable Off). **MOMENTARILY** press the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **AC Power is OUT, DC power available, UL device(s) NOT functional:**
STOP/DISABLE toggle switch **MUST** be set for "UP" (Disable Off). Press and **HOLD** the **OPEN** or **CLOSE** button (whichever is applicable) to have the **OPERATOR** move the gate using its battery power.
- **Both AC and DC power are NOT available: IMPORTANT!** Set the **STOP/DISABLE** toggle switch to "DOWN" (Disable ON) operator is disabled, then manually release operator (see below) and "**Physically**" push the gate to the desired position. **STOP/DISABLE** switch set to "**DISABLE ON**" ensures that if power is re-established when a manual release is engaged, the operator **CAN NOT** be cycled.

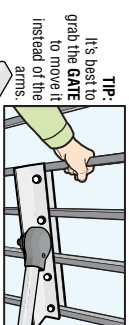
STOP/DISABLE Toggle Switch



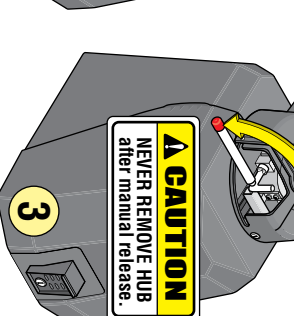
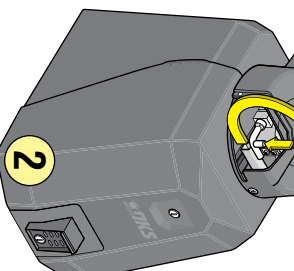
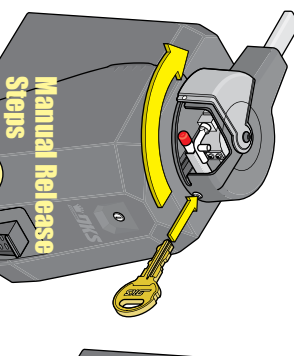
Operator's 2100 controller screen will show "Operator Disabled" when **STOP/DISABLE** toggle switch is set "DOWN" "DISABLE ON". 2100 controller will **REMAIN** powered up.



STOP/Disable switch MUST be "DISABLE ON!"



TIP: It's best to grab the **GATE** to move it instead of the arms.



Manual Release Steps

Remove release tool and place where shown.

Release hub. Gate can now be manually operated.

Unlock the control box and turn **STOP/DISABLE** switch ON "DOWN".
Unlock the arm cover and rotate sliding door.

NEVER REMOVE HUB after manual release.
Never attempt to manually push open any gate with an operator attached to it until you have verified that power to the operator has been SHUT-OFF.

print this page in color, fold and laminate - Place at the gate operator



THIS PRODUCT IS TO BE INSTALLED AND SERVICED BY A TRAINED GATE/DOOR SYSTEMS TECHNICIAN ONLY.
Visit www.doorking.com/dealer-locator to find a professional installing and servicing dealer in your area.

Entrapment Protection must be provided for the gate system where the risk of entrapment or obstruction exists. The operator will NOT run without one or more monitored type B1 or B2 entrapment protection devices in EACH direction of gate travel.

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