

**WARNING** pre-stressed concrete may be used in multi-level parking garages. Cutting a tensioned cable, or tendon, can endanger the contractor and compromise the structural integrity of the floor. Contact the building structural engineer for specific instructions and information BEFORE drilling or saw cutting into the floor.

**INSTALLATION AND USE OF THE WEDGE BARRIER IN AREAS SUBJECT TO FREEZING WEATHER WITH POTENTIAL FOR SNOW AND ICE ACCUMULATION IS NOT RECOMMENDED.**

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

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The 1625 wedge barrier is not a stand-alone product. It must be used with a 1602-590 Barrier Gate Operator (sold separately). The 1625 is crash rated (ASTM F2656 PU-30-(P1, P2)). It is intended to provide a more formidable barrier in conjunction with a standard barrier arm operator system. The 1625 is ideally used to control passenger vehicles and light-duty trucks.





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# DoorKing Safety for Wedge Barrier

- DKS Wedge Barrier System is crash rated (ASTM F2656 PU-30-(P1, P2). It is intended to provide a formidable barrier to help prevent **passenger vehicles** and **light-duty trucks** from driving through a controlled traffic lane.
- Wedge barrier **MUST** have reverse/LED edge on arm, traffic light and photoelectric cell **functioning** or **remove wedge barrier from service** until repairs have been made.
- Make sure all warning signs are on operator and arm. They **MUST** be easily visible. 
- **Do not install the operator in such a way that the arms moves within 16 inches of a rigid object or 10 feet from high voltage power wires with arm in the raised position.**
- **Speed limit through barrier area is 5 MPH.** Install speed bumps, warning signs and hazard stripes where visible in the area of the wedge barrier gate, failure to do so may result in injury, damage to operator and vehicle.
- Users should be familiar with proper use of operator, these include; hardware operation, reversing functions and testing, reversing loops, inherent reversing system, electric edges, photoelectric cells related external devices and possible hazards.
- **Keep adults, children and objects away from operator and HAZARD ZONES.**
- **Automotive ONE-WAY traffic only - No bicycles or motorcycles.**

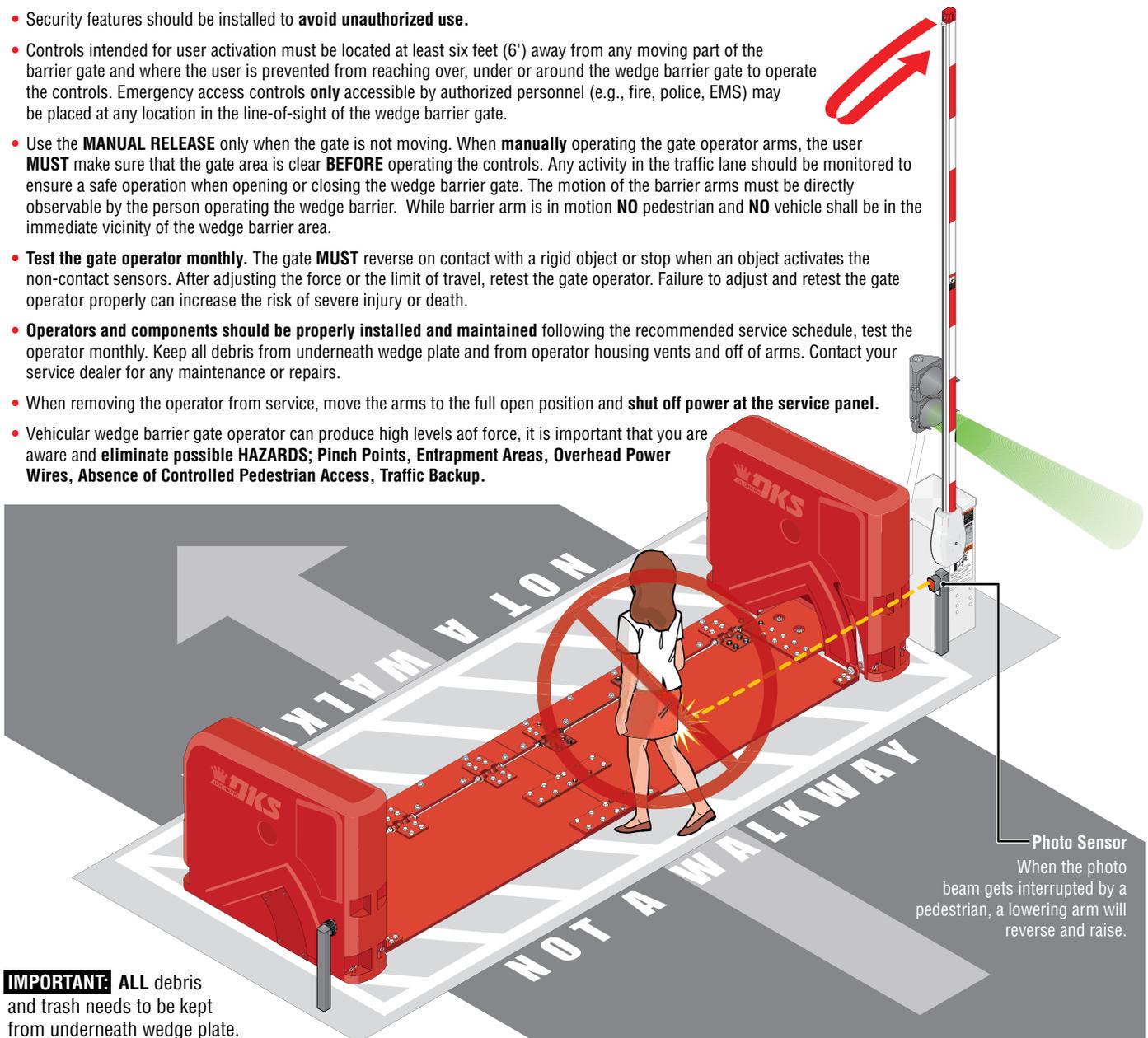
## Pedestrians MUST be provided with separate access.

- All electrical connections should be made in accordance with local electrical codes.
- Security features should be installed to **avoid unauthorized use.**
- Controls intended for user activation must be located at least six feet (6') away from any moving part of the barrier gate and where the user is prevented from reaching over, under or around the wedge barrier gate to operate the controls. 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 wedge barrier gate.
- Use the **MANUAL RELEASE** only when the gate is not moving. When **manually** operating the gate operator arms, the user **MUST** make sure that the gate area is clear **BEFORE** operating the controls. Any activity in the traffic lane should be monitored to ensure a safe operation when opening or closing the wedge barrier gate. The motion of the barrier arms must be directly observable by the person operating the wedge barrier. While barrier arm is in motion **NO** pedestrian and **NO** vehicle shall be in the immediate vicinity of the wedge barrier area.
- **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 severe injury or death.
- **Operators and components should be properly installed and maintained** following the recommended service schedule, test the operator monthly. Keep all debris from underneath wedge plate and from operator housing vents and off of arms. Contact your service dealer for any maintenance or repairs.
- When removing the operator from service, move the arms to the full open position and **shut off power at the service panel.**
- Vehicular wedge barrier gate operator can produce high levels of force, it is important that you are aware and **eliminate possible HAZARDS; Pinch Points, Entrapment Areas, Overhead Power Wires, Absence of Controlled Pedestrian Access, Traffic Backup.**



**IMPORTANT:** A wedge barrier gate operator installed **WITHOUT** any external safety sensors **CANNOT** sense a person under the raised arm and can strike them while the arm is lowering.

**This scenario is VERY DANGEROUS and MUST NEVER OCCUR!!**



**Photo Sensor**  
When the photo beam gets interrupted by a pedestrian, a lowering arm will reverse and raise.

**IMPORTANT:** ALL debris and trash needs to be kept from underneath wedge plate.

# Safety and Traffic Management for Wedge Barrier System

Vehicular wedge barrier gate operator can produce high levels of force. It is important that you are aware and eliminate possible HAZARDS; Pinch Points, Entrapment Areas, Overhead Power Wires, Absence of Controlled Pedestrian Access, and Traffic Management.

## Pedestrians MUST be provided with separate access.

**A Separate Pedestrian Entrance:** Located so pedestrians CANNOT come in contact with the wedge barrier system.

**B Warning Signs:** Permanently mounted on operator and arm and easily visible.

**C Non-Contact Sensor:** (photocell) Minimizes the potential of the arms lowering on vehicular or other traffic that loops cannot sense. Located directly under arm.

**D Hazard Stripes:** NO stopping or standing "Hazard Stripes". Permanently painted WHITE on pavement on both sides of arm.

**E Pedestrian Alert Warning:** "NOT A WALKWAY" pavement marking facing both directions, permanently painted WHITE on pavement.

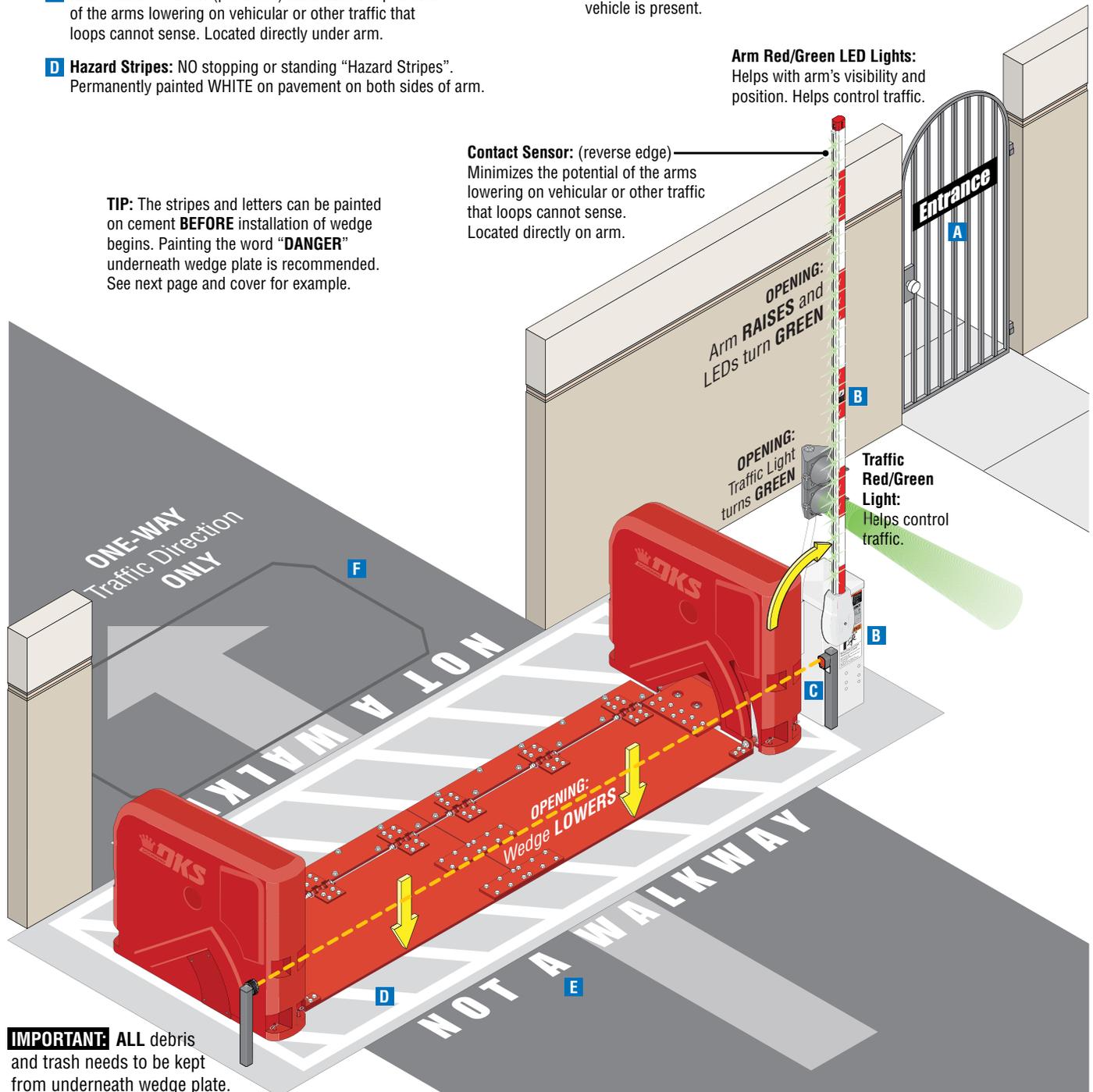
**F In-Ground Loops:** Minimizes the potential of the gate closing when a vehicle is present.

**TIP:** The stripes and letters can be painted on cement BEFORE installation of wedge begins. Painting the word "DANGER" underneath wedge plate is recommended. See next page and cover for example.

**Contact Sensor:** (reverse edge) Minimizes the potential of the arms lowering on vehicular or other traffic that loops cannot sense. Located directly on arm.

**Arm Red/Green LED Lights:** Helps with arm's visibility and position. Helps control traffic.

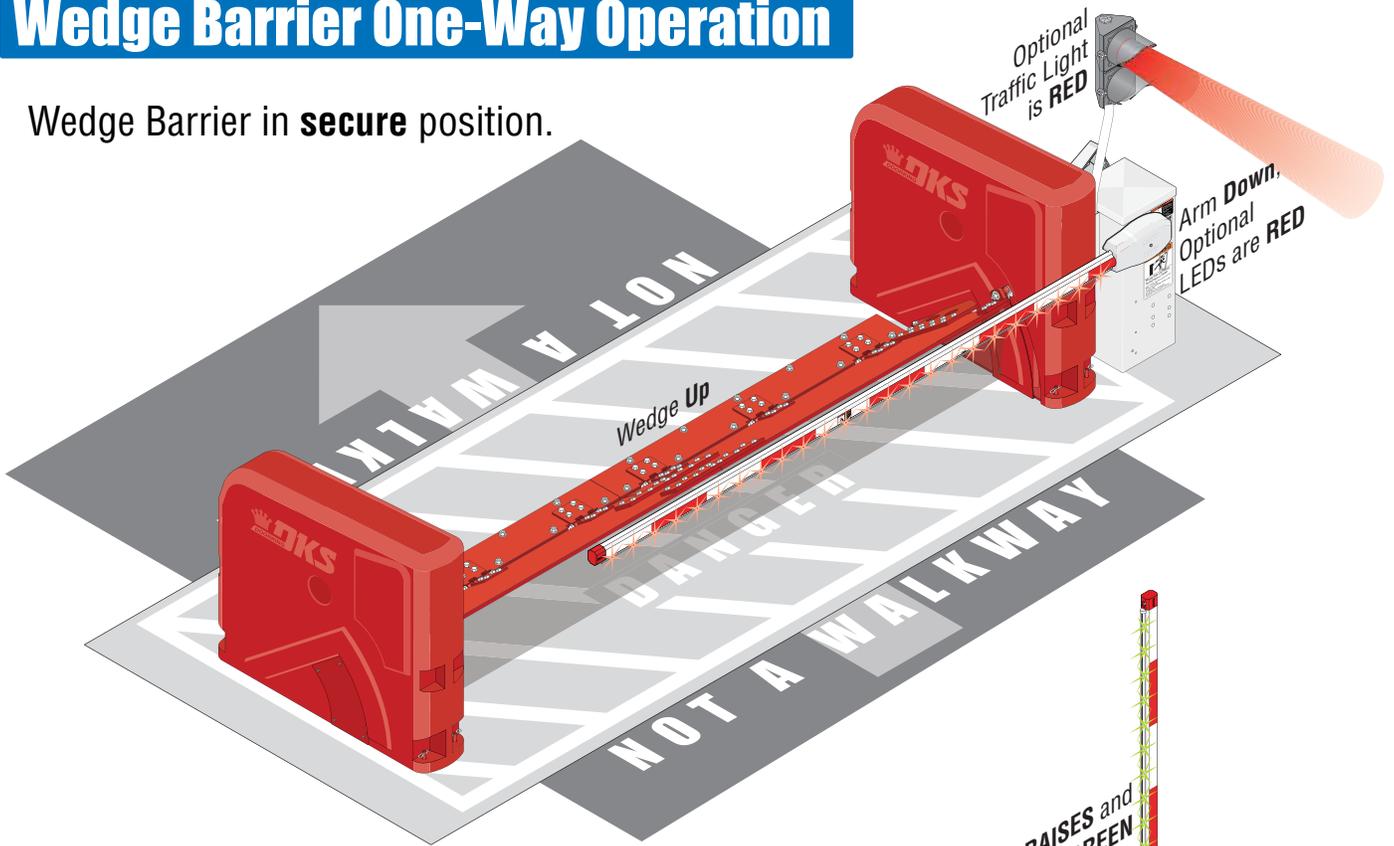
**Traffic Red/Green Light:** Helps control traffic.



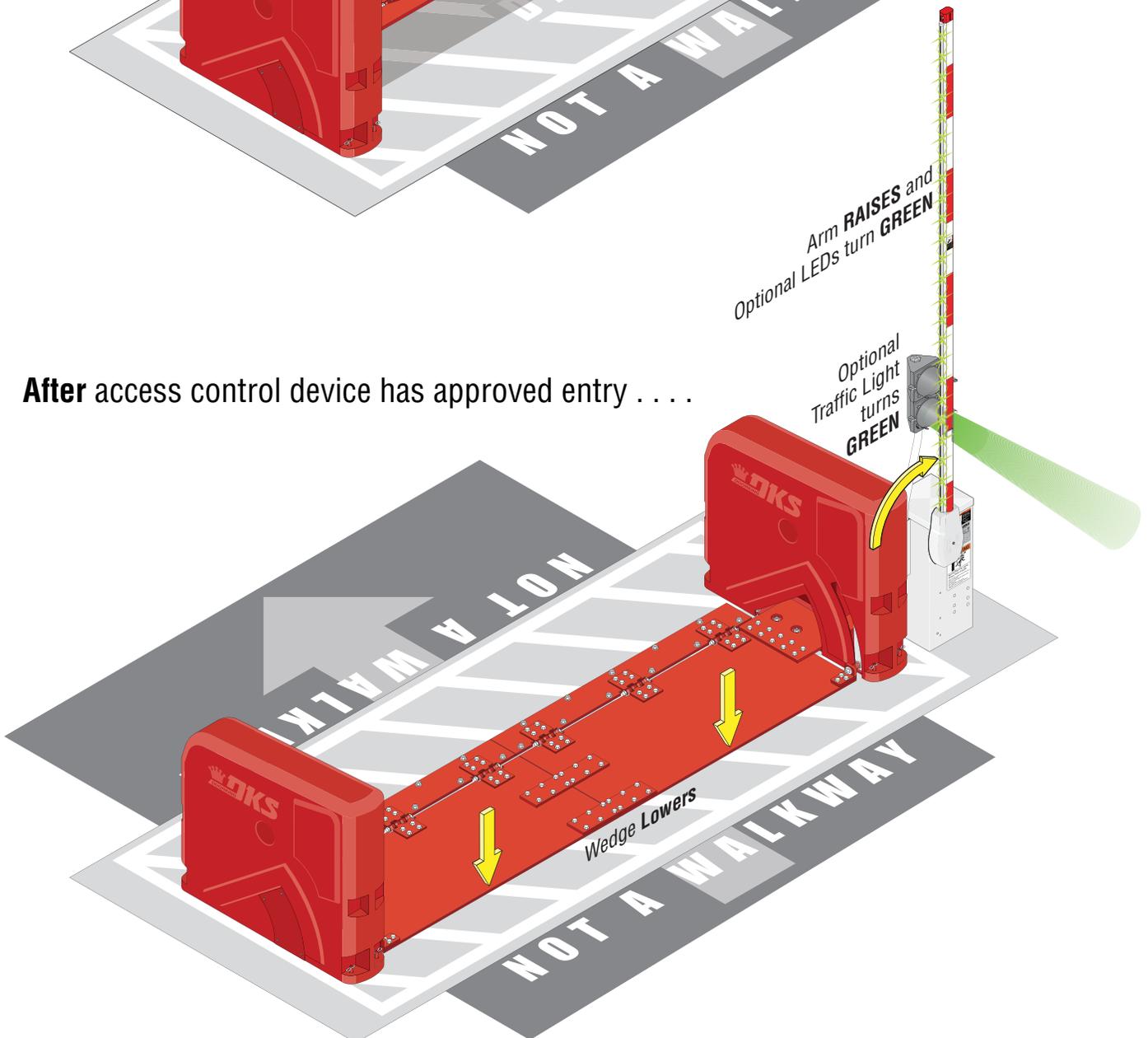
**IMPORTANT:** ALL debris and trash needs to be kept from underneath wedge plate.

# Wedge Barrier One-Way Operation

Wedge Barrier in **secure** position.

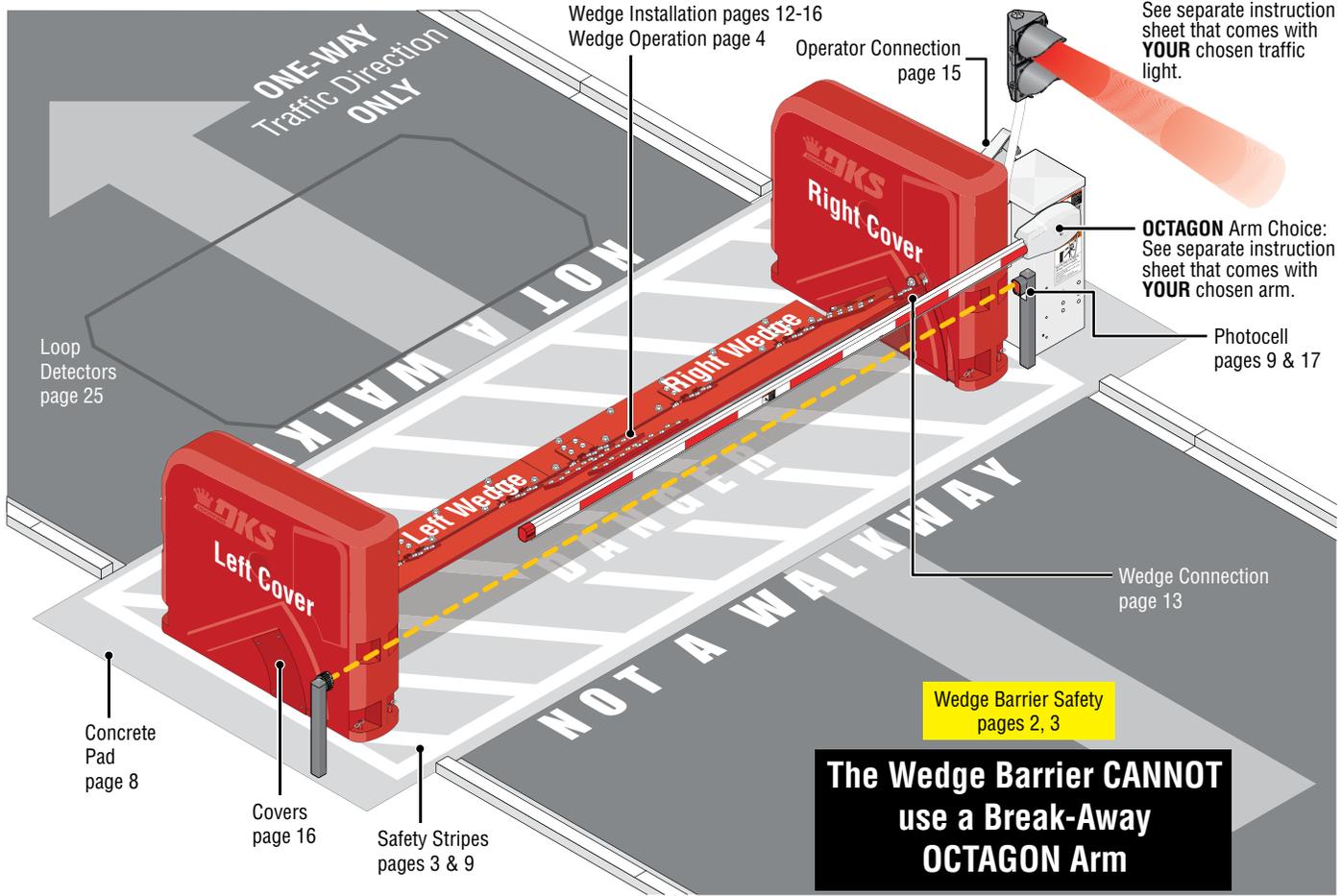


**After** access control device has approved entry . . . .



# Wedge Barrier and 1602-590 Operator Overview

**OPTIONAL** Traffic Light: **HIGHLY recommended**  
See separate instruction sheet that comes with **YOUR** chosen traffic light.



**Refer to the 1601-065 PDF for OCTAGON Arm choices ONLY, NO other type arms can be used.**

Use this manual for the Model 1602-590 wedge barrier operators with circuit board 1601-010 Rev AK or higher ONLY.

## 1602-590 Wedge Barrier Operator

**Class of Operation** UL 325 Class II, III, IV – ETL Listed

**Type of Gate** - Use with 1625 Series Wedge Barriers Only

**Gate Cycles** - Low Cycle

**Pedestrian Protection** -

Inherent entrapment sensing system (Type A)

Provision for connection of a non-contact sensor (Type B1) and/or contact sensor (Type B2)

Model #	Convenience Open	Manual Release	Horsepower - Volts	Amp	Max Arm Length	Speed 90°
1602-590	No	Yes	1 HP - 115 VAC	9.7	17 Ft.	3.5 Sec

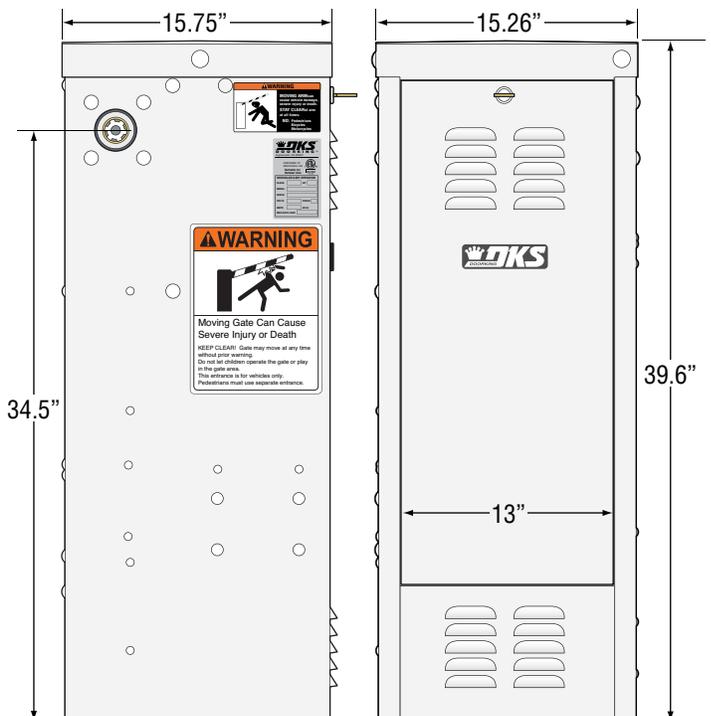
**Note:** 208/230/460/575 VAC input voltage can be connected to the operator by installing an "Optional" High Voltage Kit (P/N 2600-266).

**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.

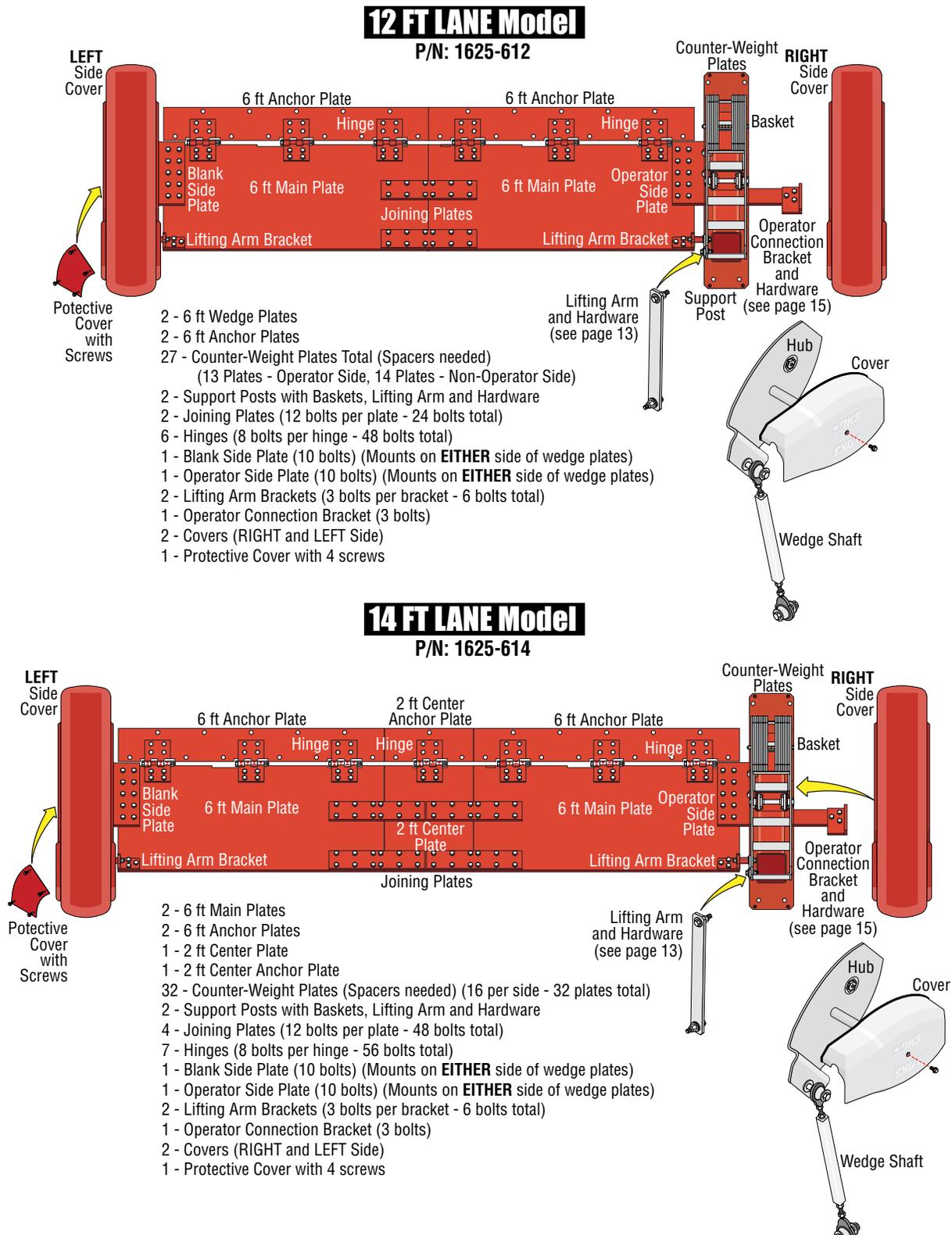
**Refer to the 1601-065 PDF for ALL information about the 1602-590 Operator**



# Wedge Barrier Model Parts Configuration

Prior to beginning the installation of the wedge barrier, we suggest that you become familiar with the instructions, illustrations, and wiring guide-lines in this manual. This will help insure that your installation is performed in an efficient and professional manner.

## Barrier operator 1602-590 can be installed on either side of wedge plates



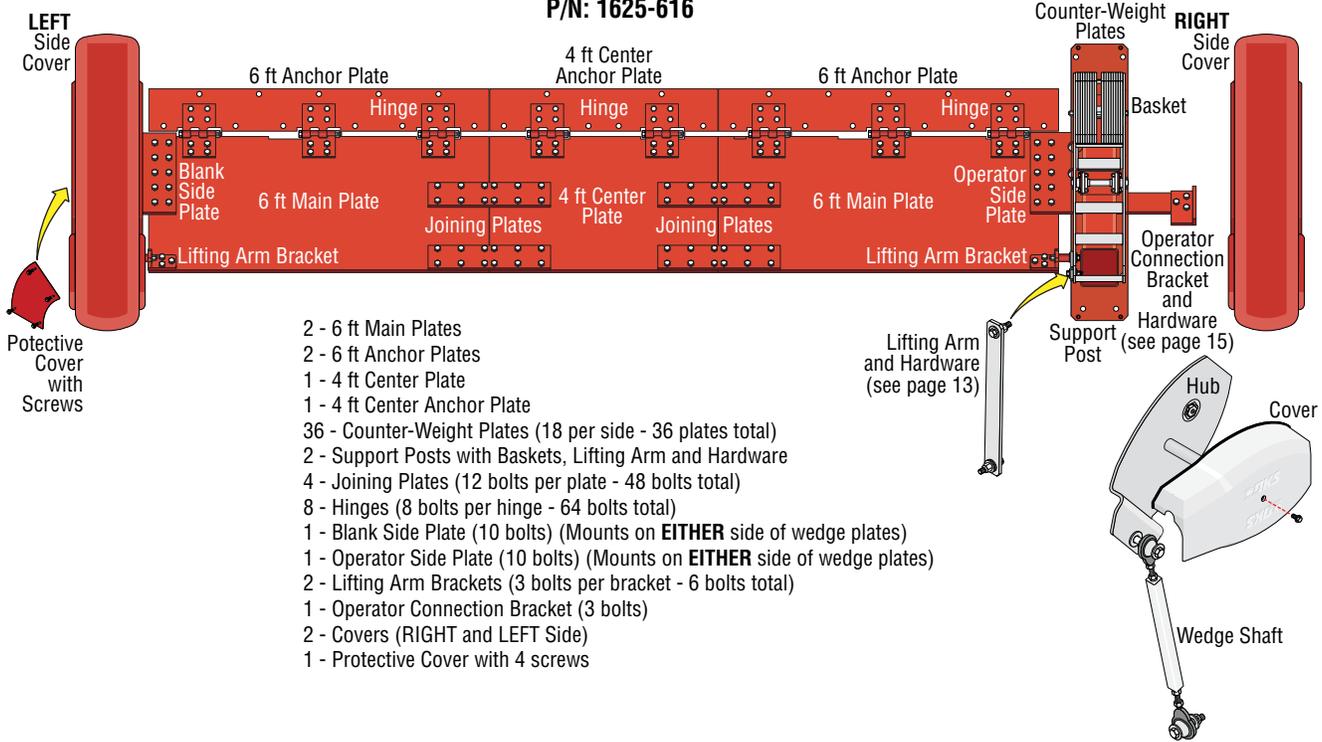
# Wedge Barrier Model Parts Configuration Continued

Prior to beginning the installation of the wedge barrier, we suggest that you become familiar with the instructions, illustrations, and wiring guide-lines in this manual. This will help insure that your installation is performed in an efficient and professional manner.

## Barrier operator 1602-590 can be installed on either side of wedge plates

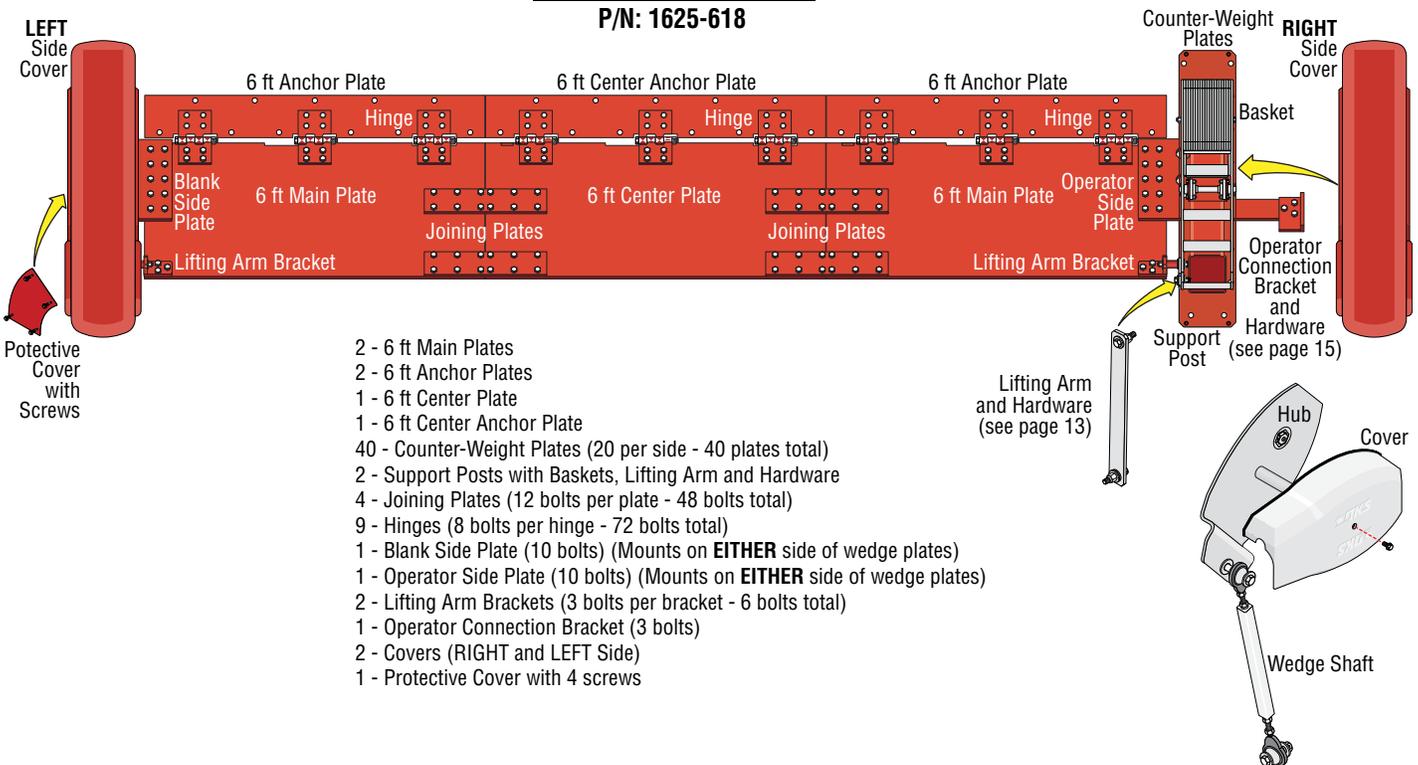
### 16 FT LANE Model

P/N: 1625-616



### 18 FT LANE Model

P/N: 1625-618



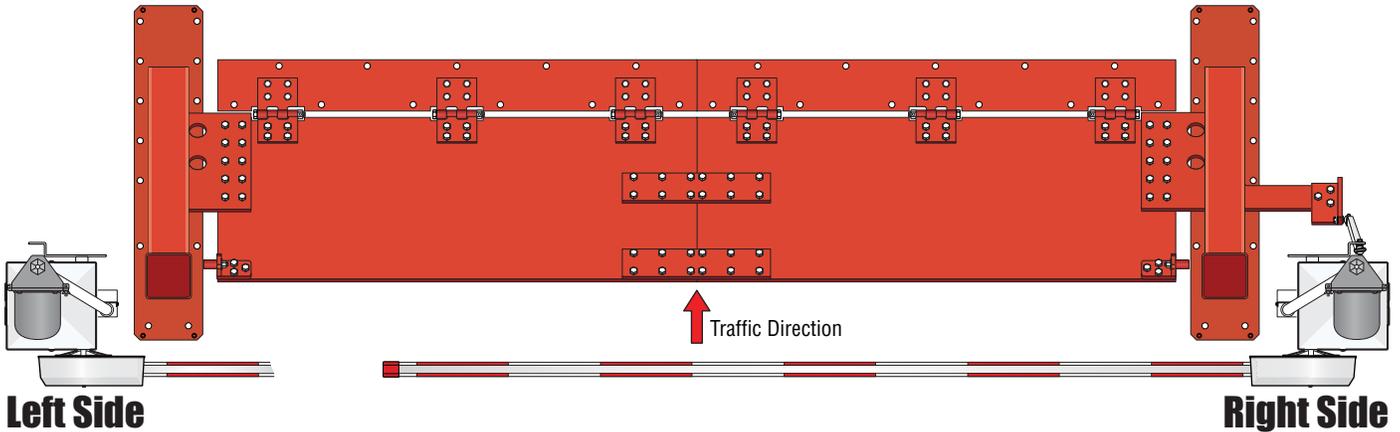
# Concrete Pad Setup

## EXISTING Concrete

**WARNING** for Precast Concrete: Drilling into precast concrete is **NOT recommended** without professional advice or assistance. If you don't know where the prestressed wire strands are located, **you risk damaging the structural integrity of the precast concrete** and the drilling equipment you use. If you need to drill into precast concrete to anchor the wedge barrier to it, you must contact the building engineer before proceeding.

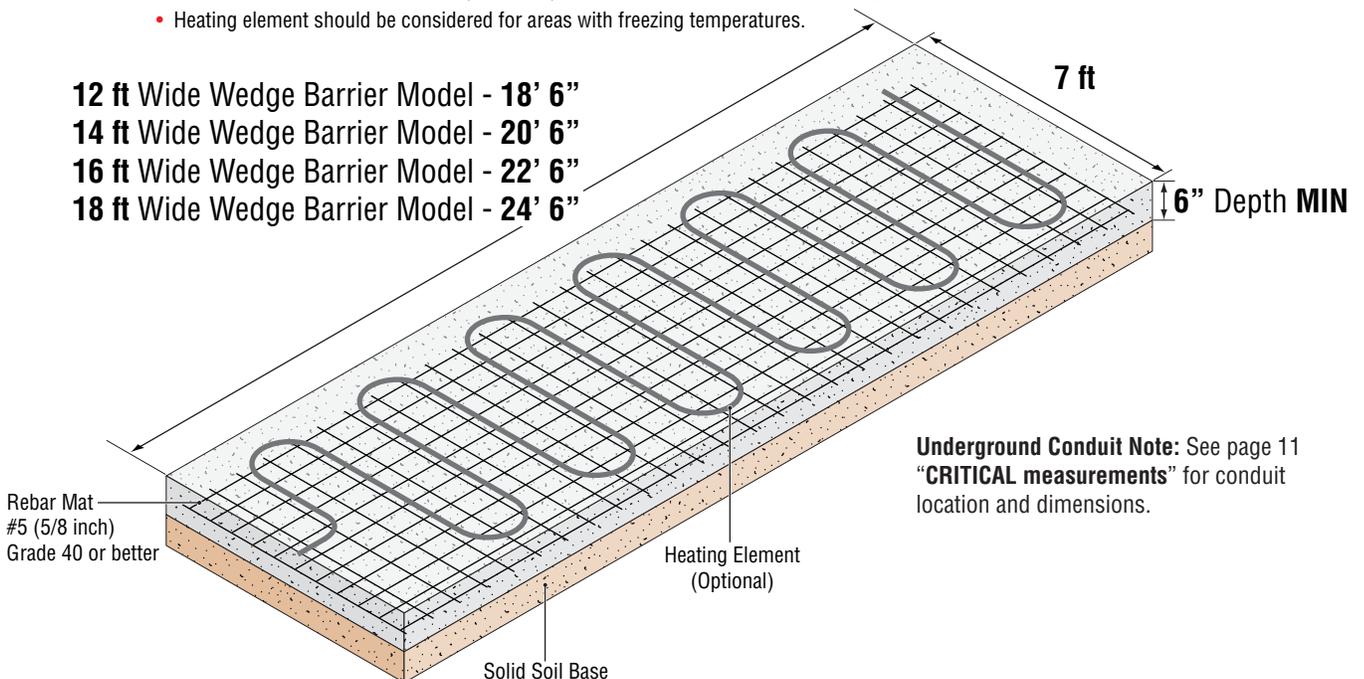
## NEW Concrete Pad

Select which side of wedge barrier the operator will be installed on (manual shows installation on the **RIGHT side** of wedge. To install operator on **LEFT side** of wedge, simply flip measurements to the opposite side of concrete pad throughout manual.

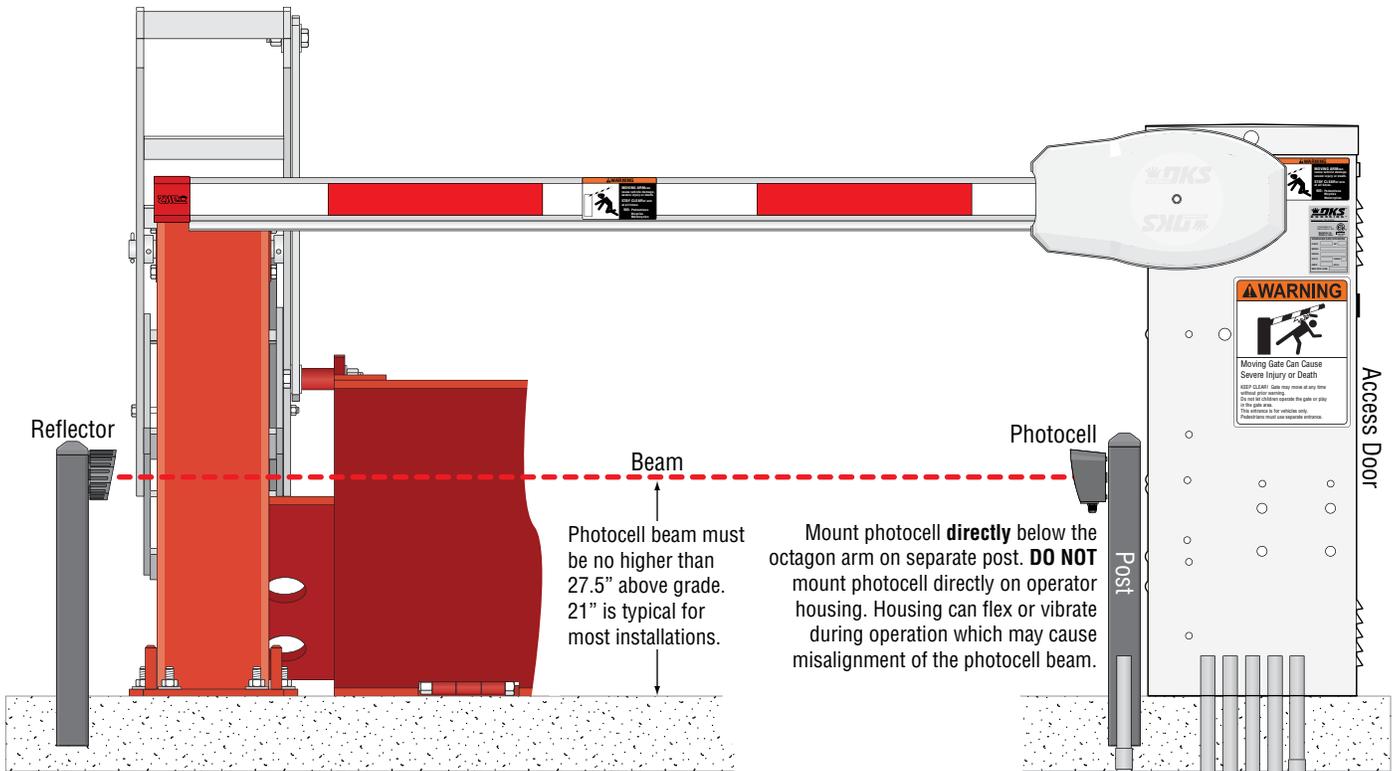


## Concrete Requirements and Dimensions

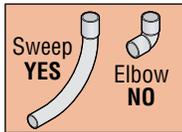
- Concrete Pad 4,000 PSI. At least 6" deep.
- Soil compression under and around the foundation shall be compacted to a soil density of 95% of standard ASTM-698.
- Add gravel where necessary to insure a solid base. Soil must be stable and able to support the weight of the concrete pad.
- The 1625 Wedge Barrier must be installed on a **flat and level concrete surface on grade with the roadway surface.**
- Place one layer **rebar mat** at eight (8) inch on-center. Use #5 (5/8 inch) Grade 40 or better.
- Cure concrete properties 4000 psi (minimum) with smooth finish and proper drainage.
- Heating element should be considered for areas with freezing temperatures.



# Underground Conduit and Photocell Position



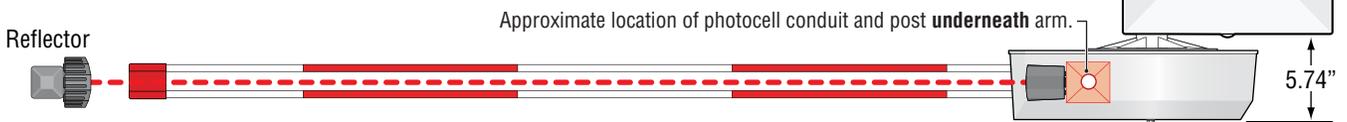
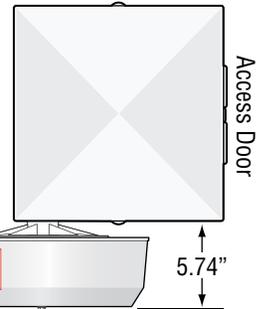
- The conduit requirements are for a typical barrier gate operator installation. The conduit requirements for your application may vary from this depending on your specific needs.
- Use only sweeps for conduit bends. **Do not use 90° elbows as this will make wire pulls very difficult and can cause damage to wire insulation.**
- DoorKing recommends using 3/4-inch conduit.
- Be sure that all conduits are installed in accordance with local codes.
- **Never** run low voltage rated wire insulation in the same conduit as high voltage rated wire insulation.



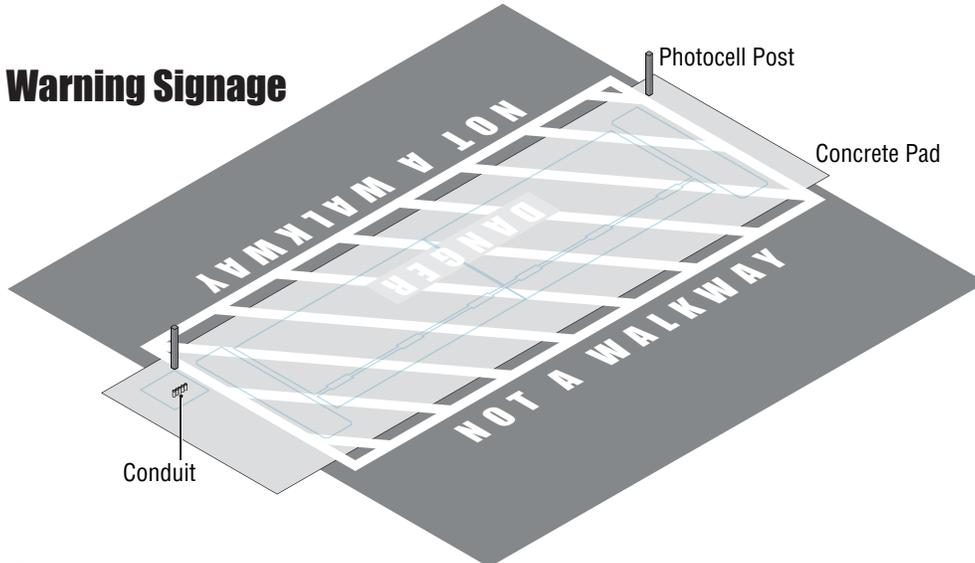
**Operator Conduit Note:** See page 11 for operator conduit locations.

### Conduit Options:

- AC Power
- Low Voltage Accessories
- Earth Ground
- Vehicle Loops
- Photocell



# Warning Signage



**AFTER** concrete pad has been poured but **BEFORE** wedge and operator have been installed, warning stripes and verbage can be painted on the surface to discourage pedestrians from walking in the general area. It's much easier to paint now rather than after the installation. "DANGER" can be painted underneath the wedge plates that only shows when wedge plates are raised for better safety awareness. Chalk lines can be snapped on the concrete to layout where all components will be located to help when striping. See **CRITICAL measurements** on page 11 to help layout chalk lines.

# Anchoring Wedge Barrier to Concrete Pad Detail

## Wedge Barrier Model's Anchor Requirements

Total number of threaded rods needed for each wedge barrier model's anchor plates and support posts to secure them to the concrete pad.

**12 ft Wide Wedge Barrier Model - Threaded Steel Rods Needed: 54**

**14 ft Wide Wedge Barrier Model - Threaded Steel Rods Needed: 57**

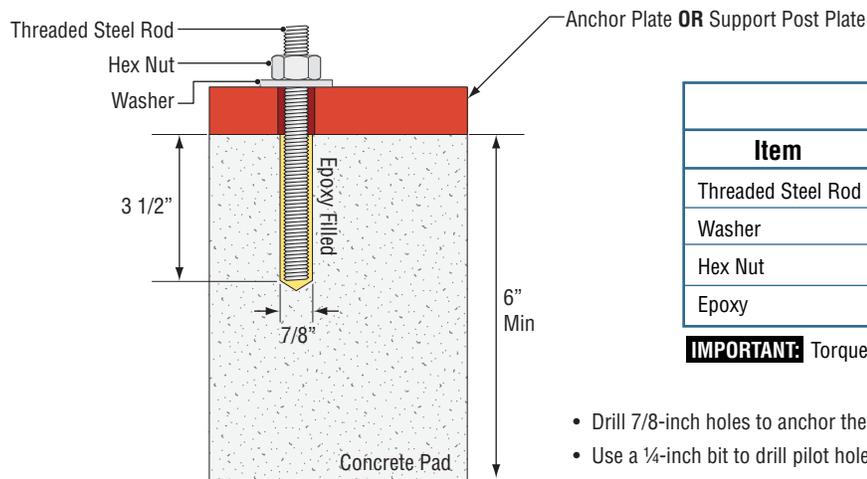
**16 ft Wide Wedge Barrier Model - Threaded Steel Rods Needed: 61**

**18 ft Wide Wedge Barrier Model - Threaded Steel Rods Needed: 65**

**NOTE:** An **additional 6 anchors** are needed to secure the operator to the concrete pad. However, these can be **simple sleeve anchors** if desired as the barrier operator offers **NO crash resistance** for the wedge system, see page 12.

## IMPORTANT: Anchor Specifications

Certification to ASTM F2656-23, PU-30 (P1,P2). A vehicle weighing 5,070 lbs. traveling at 30 mph will not shear or budge the 1625 Wedge on direct impact when **using these specifications** to anchor wedge barrier.



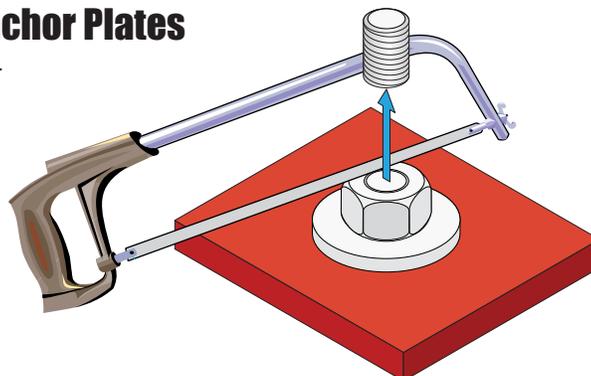
Anchor Specifications		
Item	Description	McMaster-Carr P/N
Threaded Steel Rod	Grade B7 Steel- 3/4"-10 x 5 1/2"	98750A315
Washer	Grade 8 Steel - 2" O.D.	98026A036
Hex Nut	Grade 5 Steel - 3/4"-10	95505A608
Epoxy	HIT-RE500 Epoxy Adhesive	

**IMPORTANT:** Torque hex nuts to 100 Ft Lbs.

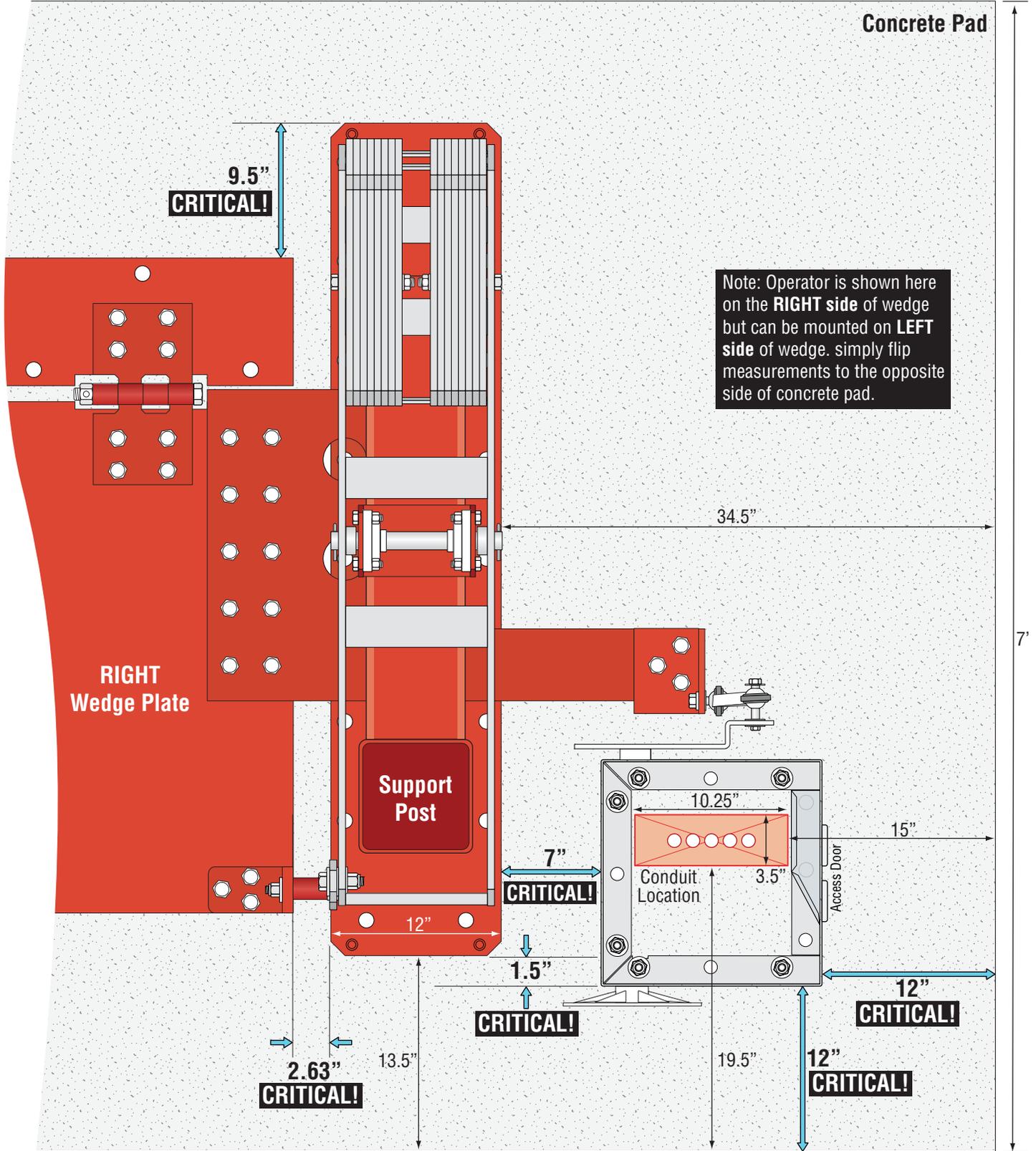
- Drill 7/8-inch holes to anchor the **support posts** and **anchor plates** to a depth of 3-1/2 inches.
- Use a 1/4-inch bit to drill pilot holes if necessary.
- Use **Grade B7 3/4-inch threaded steel rod (5.5 inch length)** and **HIT-RE500 Epoxy adhesive**. Follow epoxy manufacturer's instructions. Epoxy requires minimum 12 hours to cure.
- After the required cure time, install **washers** and **nuts** onto the threaded steel rods and torque to 100 Ft Lbs.

## Cut Off Excess Threaded Rod on the Anchor Plates

To protect vehicle tires, grind or cut any steel rod extending past the nuts.



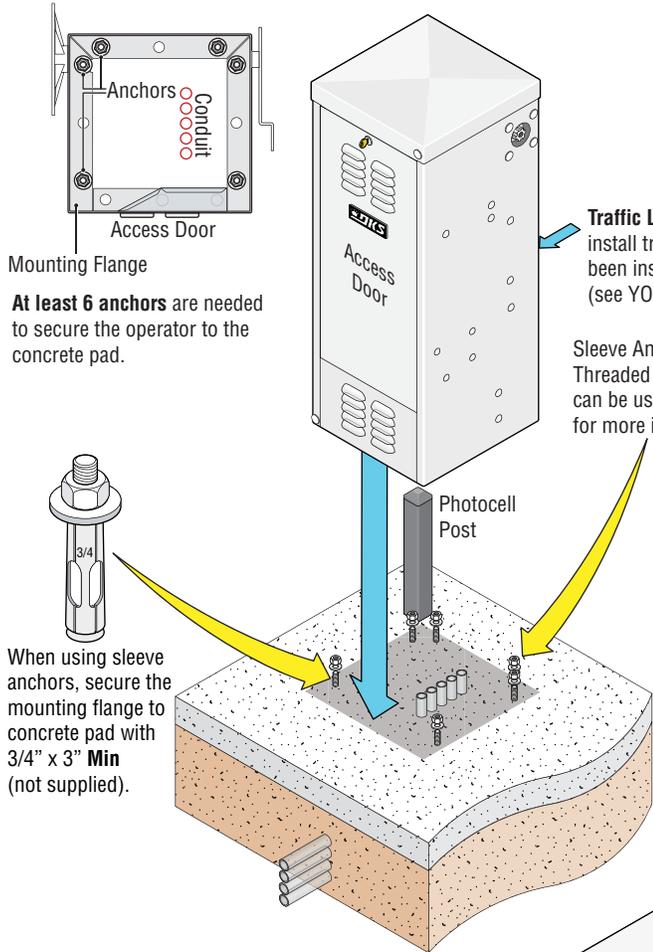
# Critical Measurements



# Mounting Operator and Wedge on Concrete Pad Steps

## 1 Permanently Mount Operator

Permanently mount operator to concrete pad using the **CRITICAL** measurements on page 11.



At least 6 anchors are needed to secure the operator to the concrete pad.

When using sleeve anchors, secure the mounting flange to concrete pad with 3/4" x 3" Min (not supplied).

**Traffic Light Installation Note:** A hole **MUST** be drilled into operator housing to install traffic light. Access will be limited to drill hole **AFTER** support post has been installed next to operator. (see YOUR chosen traffic light kit instruction sheet for hole location)

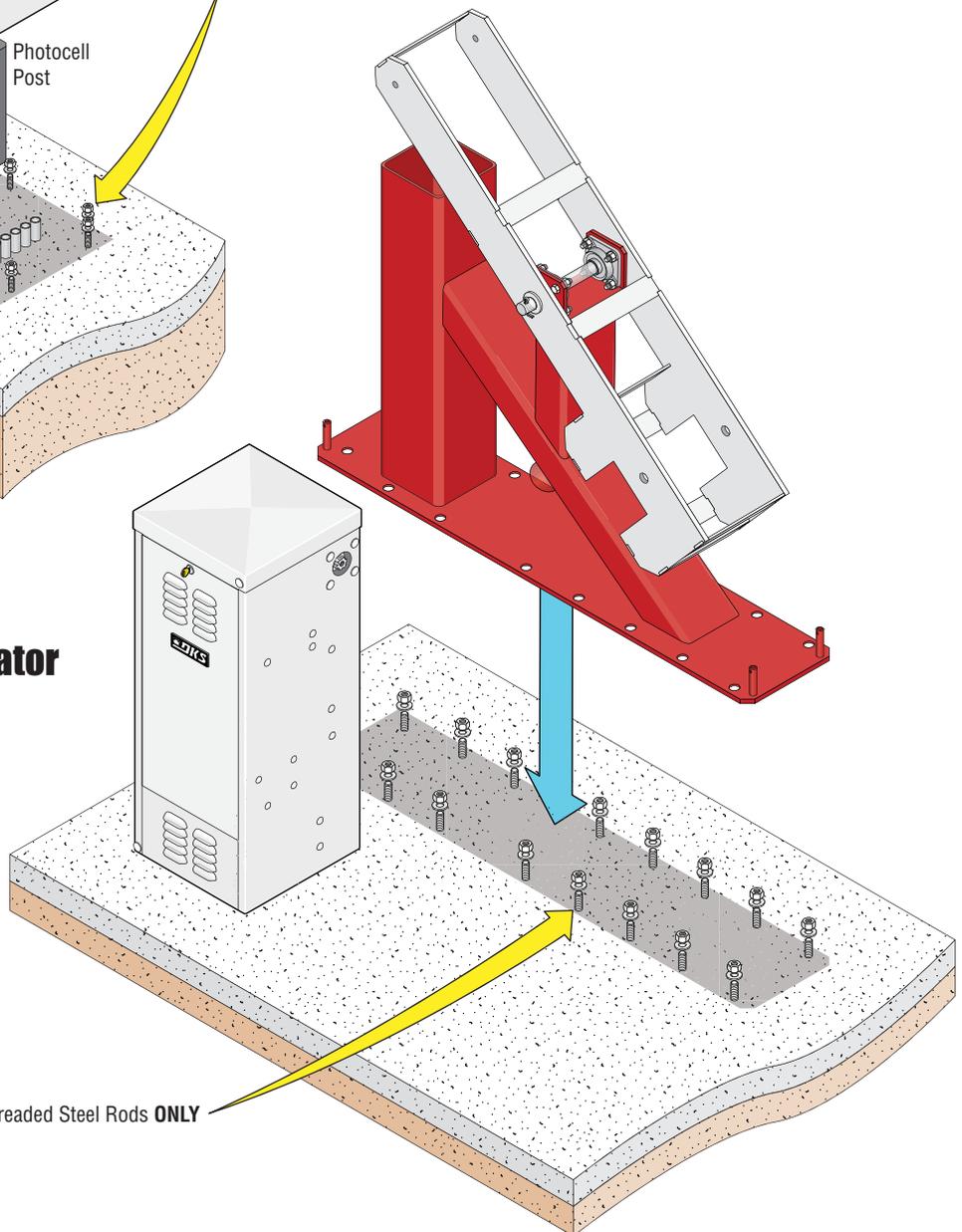
Sleeve Anchors **OR** Threaded Steel Rods can be used, see page 10 for more information.

The installation shown has the operator mounted on the **RIGHT SIDE** of the wedge but the operator can be mounted on **either side** of the wedge depending on the Side Plates position. See "**Bolt plates Together**" on next page.

## 2 Permanently Mount Support Post Next to Operator

Use the **CRITICAL** measurements on page 11 for support post location.

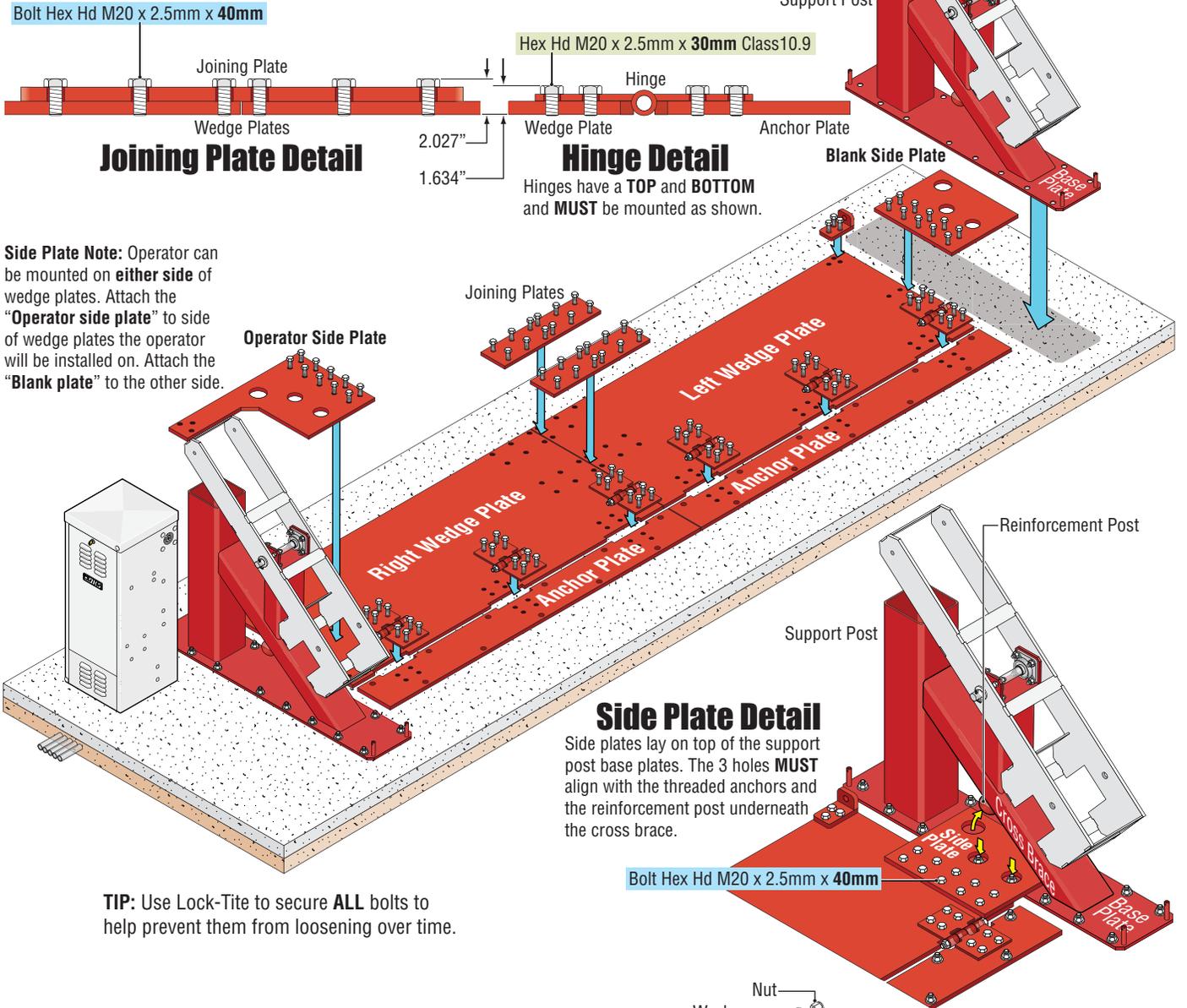
**ONLY** use threaded steel rods to attach support post to concrete pad, see page 10 for more information.



**IMPORTANT:** Threaded Steel Rods **ONLY**  
See page 10.

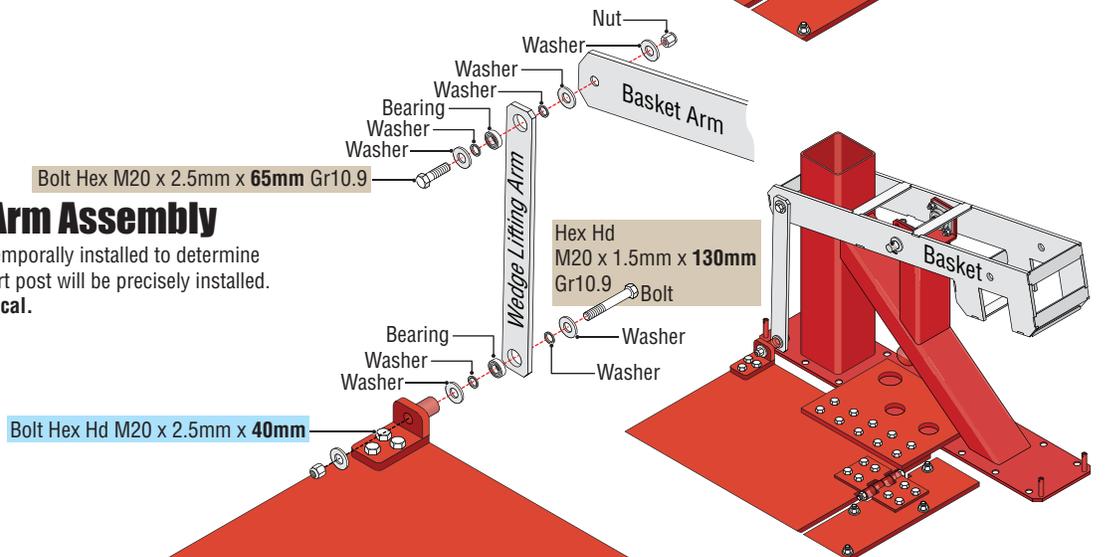
### 3 Bolt Plates Together

Position wedge plates and the other support post approximately where they will be located on concrete pad. Bolt the hinges, bar connectors, side plates etc. to the wedge plates depending on the model wedge barrier you have selected (see pages 6-7 for specific part configurations). The side plates lay on top of the support post base plate.



### 4 Wedge Lifting Arm Assembly

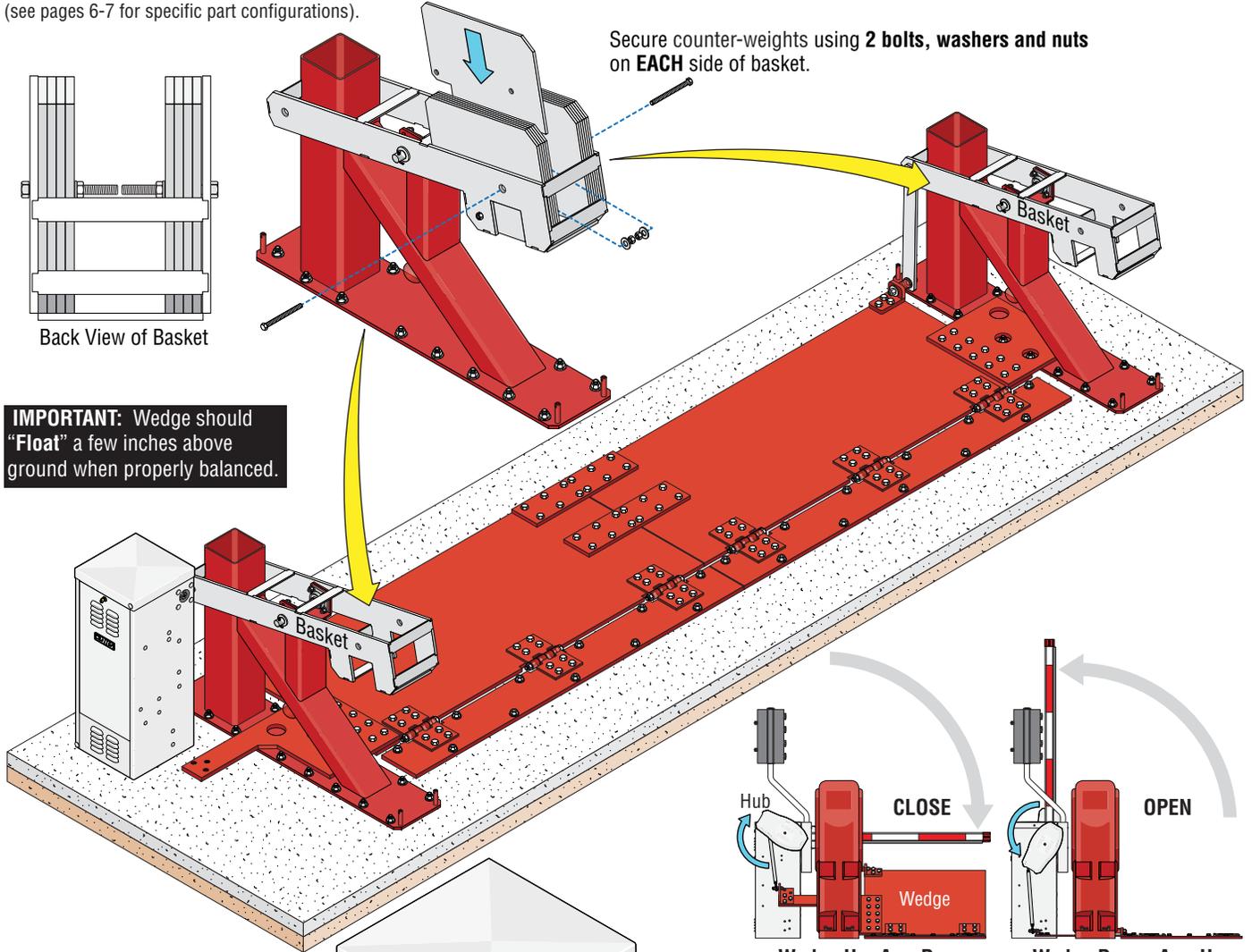
The wedge lifting arms **MUST** be temporarily installed to determine where the wedge plates and support post will be precisely installed. **Wedge lifting arms MUST be vertical.**





## 7 Add Counter-Weights

Add counter-weights to baskets to counter-balance wedge. There are a different number of plates installed depending on the model wedge barrier you have selected (see pages 6-7 for specific part configurations).

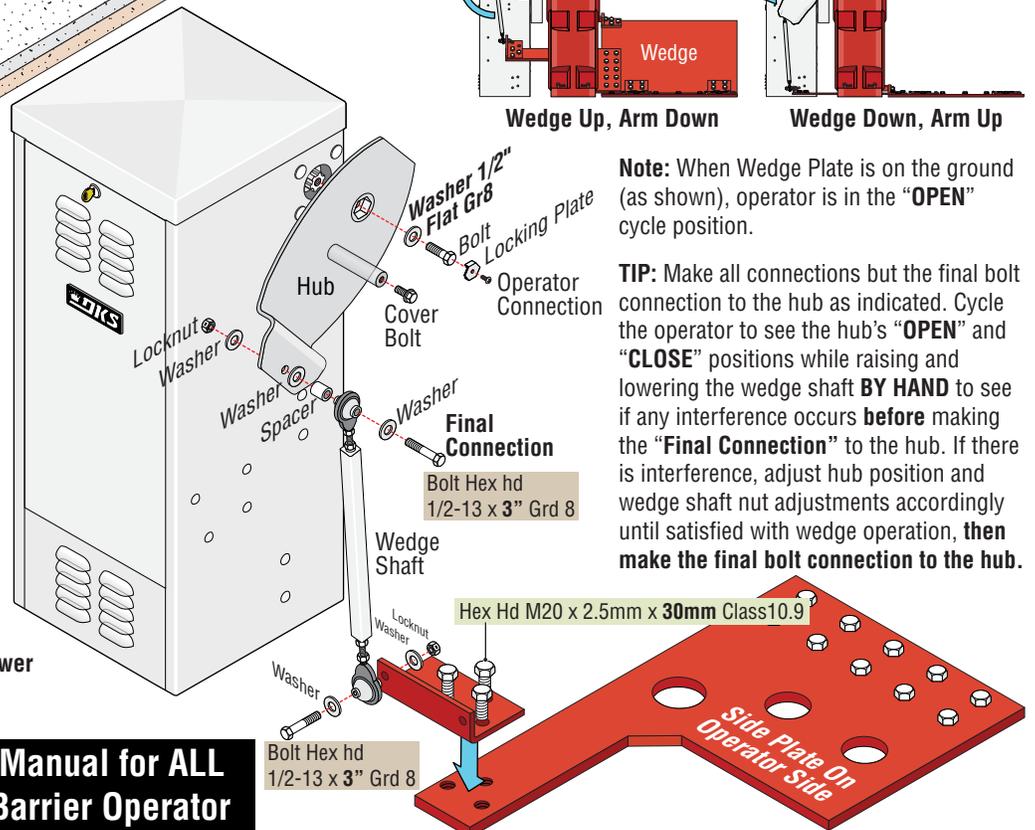


## 8 Connect Operator to Wedge Plates

**DO NOT** operate wedge **WITHOUT** counter-balance weights installed. Make sure hub is installed on operator in the correct **Open** and **Close** positions. Test these positions **BEFORE** making the "Final Connection".

**Note:** Operator will require power when performing this step.

**Refer to the 1601-065 Manual for ALL information about the Barrier Operator**

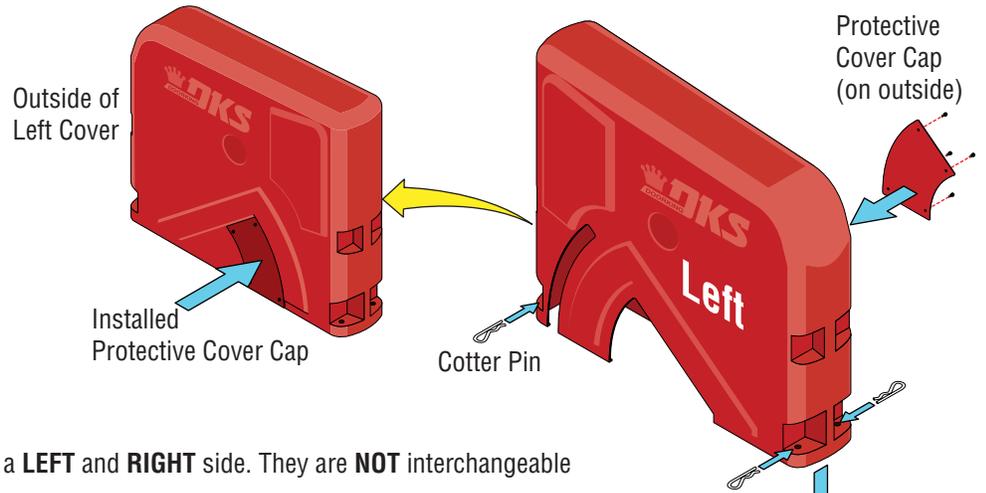


**Note:** When Wedge Plate is on the ground (as shown), operator is in the "OPEN" cycle position.

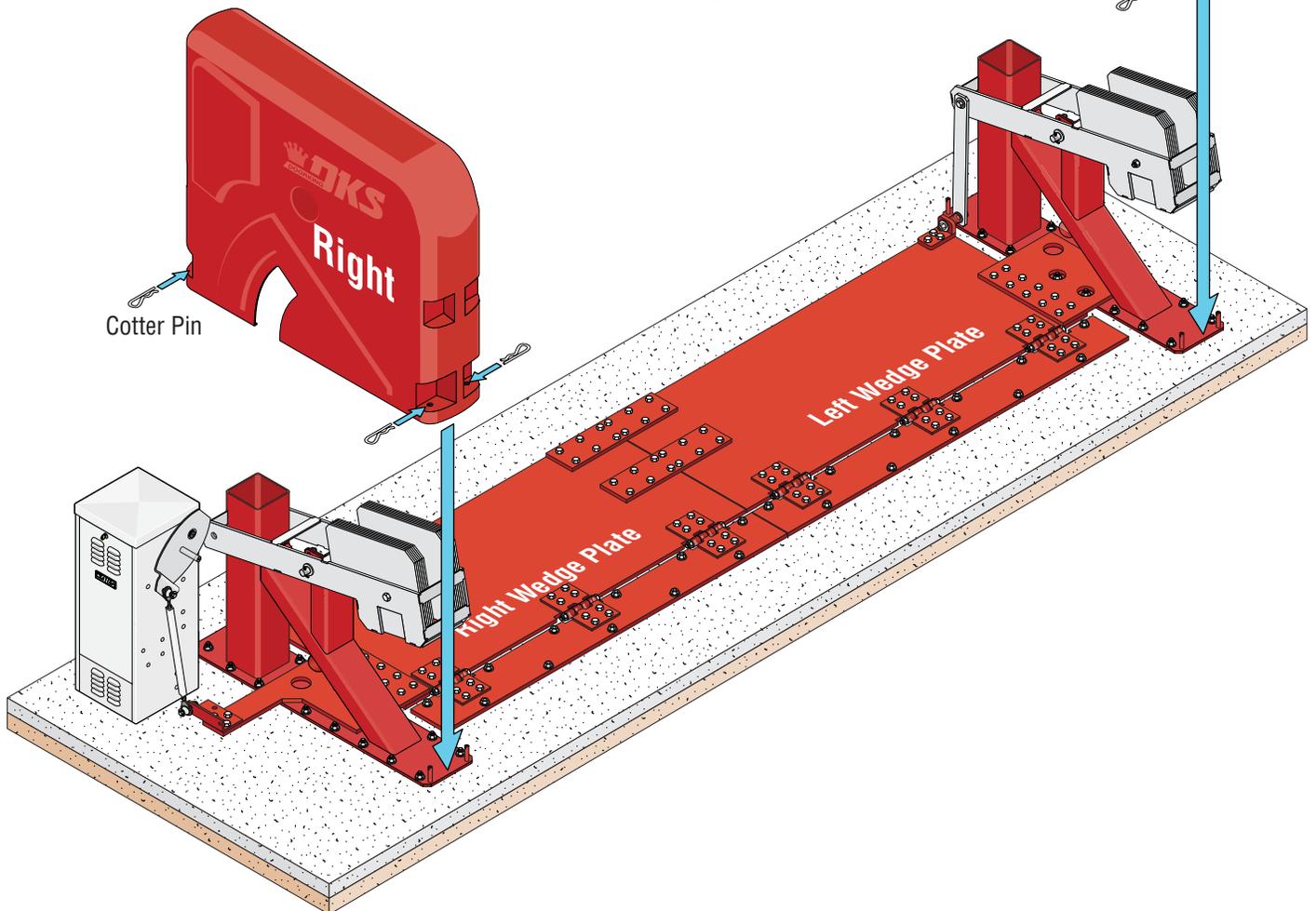
**TIP:** Make all connections but the final bolt connection to the hub as indicated. Cycle the operator to see the hub's "OPEN" and "CLOSE" positions while raising and lowering the wedge shaft **BY HAND** to see if any interference occurs **before** making the "Final Connection" to the hub. If there is interference, adjust hub position and wedge shaft nut adjustments accordingly until satisfied with wedge operation, **then** make the final bolt connection to the hub.

## 9 Install Covers

**Protective Cover Cap:** Only one. Install on the outside of the cover as shown, on the opposite cover from the operator side. Use 4 self-tapping screws. Helps protect against debris and trash getting inside the cover and interfering with the moving parts of the wedge.



Note: Covers have a **LEFT** and **RIGHT** side. They are **NOT** interchangeable



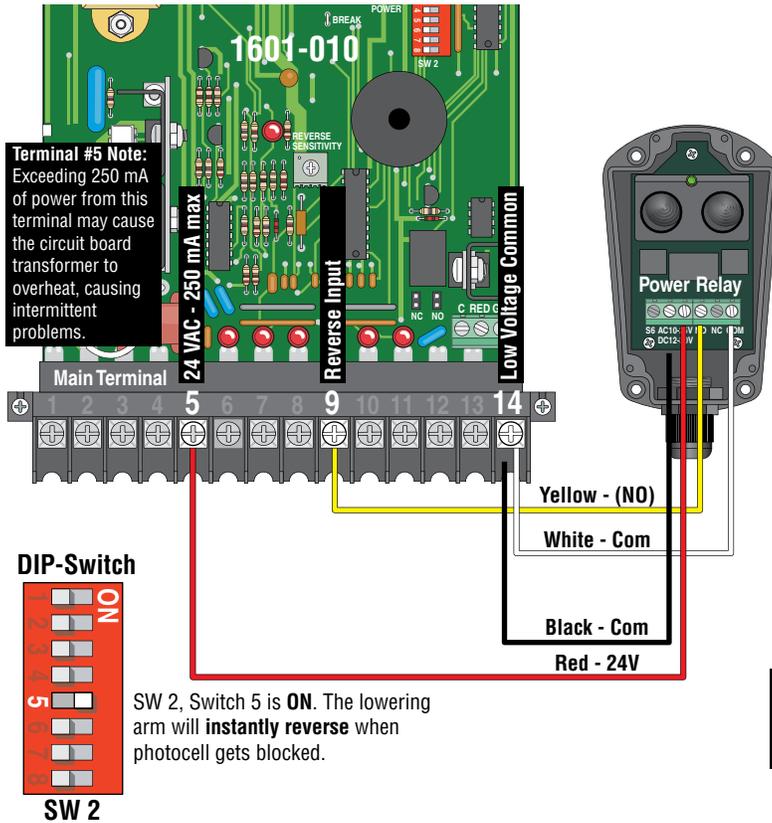
## Regular Maintenance of Wedge System

Regular inspection and removal of trash, debris, gravel, and rock is required in order to keep wedge barrier functioning properly. Neglecting to regularly clean trash and debris **UNDERNEATH WEDGE PLATE** is the number one cause of breakage and malfunctions. Check all bolts for tightness which can loosen over time from normal operation.

Make sure all moving parts are functioning normally. If they are **NOT**, remove wedge barrier from service immediately until it can be repaired.

# Install Photocell (Included with Operator)

Mount photocell **directly** below the octagon arm on separate posts as shown (see page 9), mounting brackets and mounting posts not supplied.



**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.**

## DoorKing Retro-Reflective Photocell (P/N 8080-057)

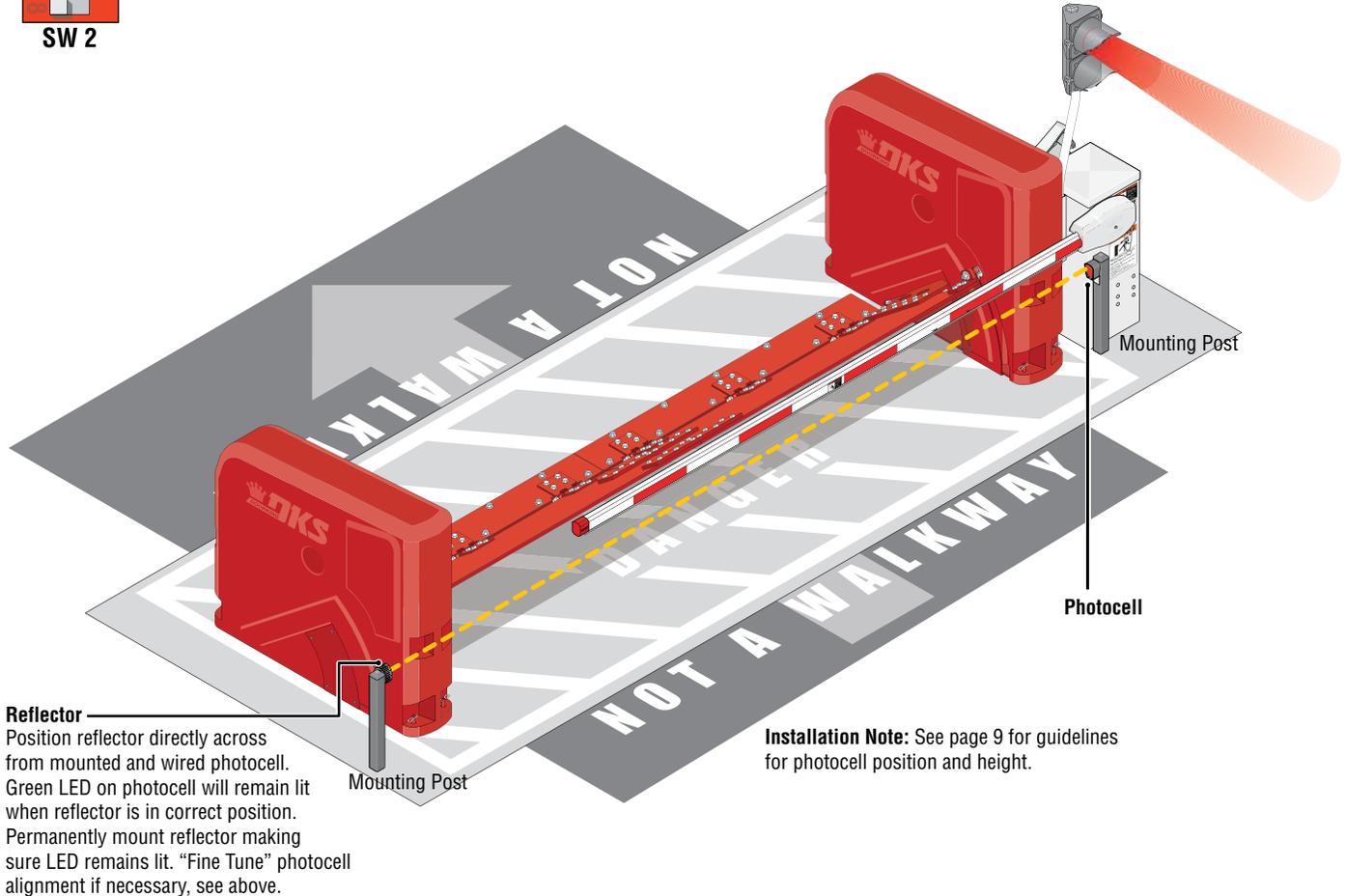
If using **other** photocells refer to the manufacturer's manual for wiring installation.

## Fine Tune Photocell

After photocell has been mounted, spring mounted beam sensors can be precisely adjusted "Fine tuned" using the 3 screws to help keep the **GREEN LED ON** if necessary.



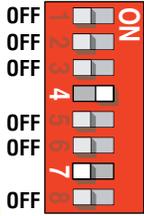
**IMPORTANT: DO NOT** mount photocell to the operator cabinet. The cabinet can flex or vibrate during operation which may cause misalignment of the photocell beam.



# Entry Lane Only In-Ground Loop Options

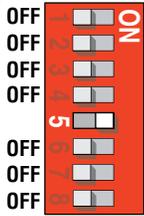
Before attempting to connect any wiring to the operator, be sure that the circuit breaker in the electrical panel is in the OFF position. Permanent wiring must be installed to the operator as required by local electrical codes. It is recommended that a licensed electrical contractor perform this work.

## Typical DIP-Switch Settings



Switch 4 is ON.

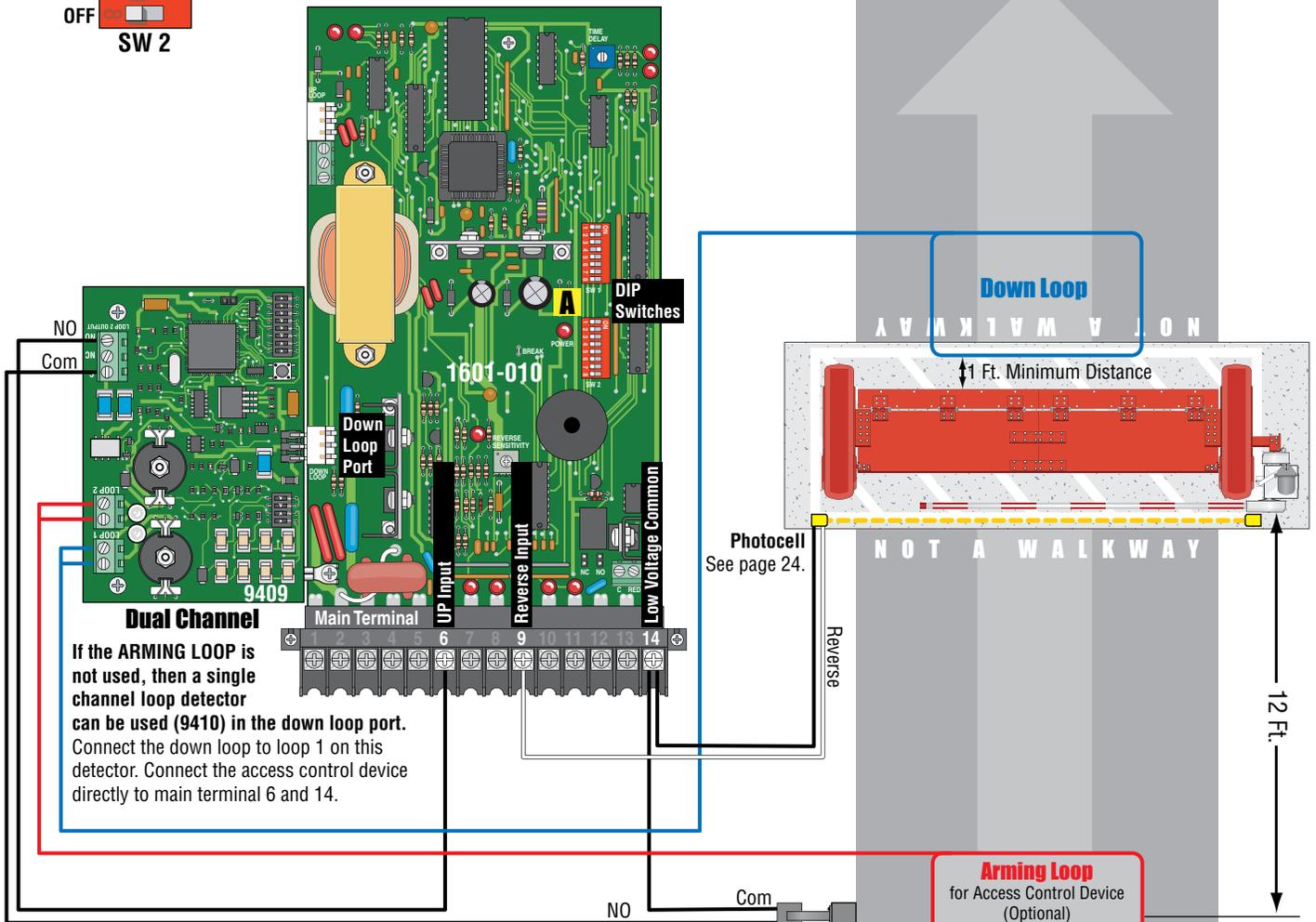
Switch 7 is OFF (Timer). The arm will rotate down after the vehicle clears the down loop. See timer note below.



Switch 5 is ON. The lowering arm will instantly reverse when photo sensor gets blocked.

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.

DoorKing offers a free "Loop and Loop-Detectors Information Manual" PDF located at DoorKing's web site for more information. [www.doorking.com](http://www.doorking.com)



**Arming Loop Note:** The arming loop only allows the access control device to function when a vehicle is on the loop, otherwise it will not function. This prevents pedestrians from gaining access through the vehicular gate.

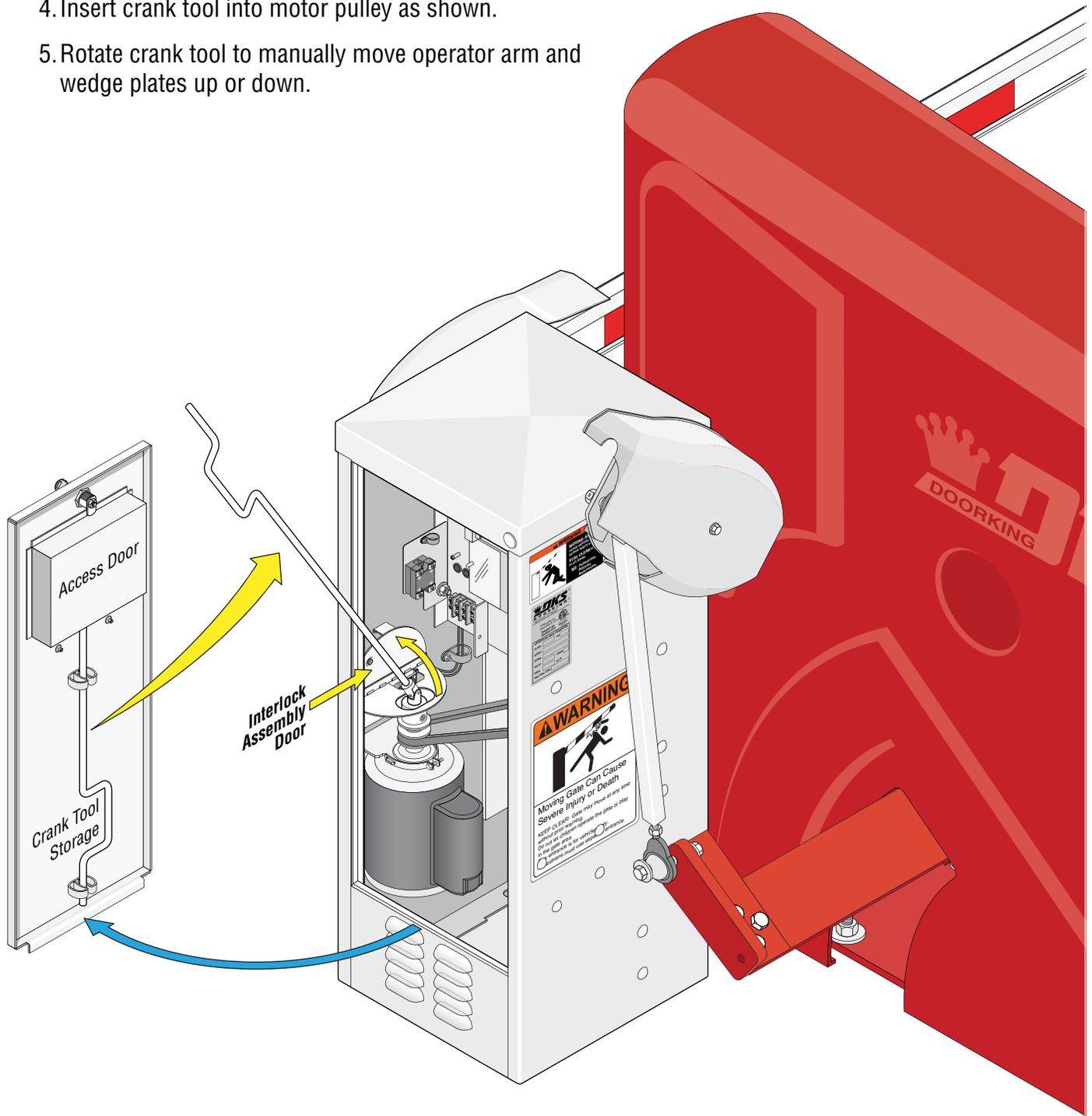
**Timer Note:** The timer can be used with a down loop. When timer is ON with a down loop, it will start countdown when the arm has fully raised. Activation of the down loop will cancel timer countdown. Useful when an access control device OR ticket spitter has been activated but vehicle does not move forward to activate the down loop.

**The arm will remain UP.** Timer will time out and lower the arm without the down loop being activated.

**Access Control Device OR Ticket Spitter**

# Manual Release Operation

1. Unlock and remove access door.
2. Remove crank tool from inside access door.
3. Flip interlock assembly door up, power will be disabled from operator.
4. Insert crank tool into motor pulley as shown.
5. Rotate crank tool to manually move operator arm and wedge plates up or down.





**WARNING** pre-stressed concrete may be used in multi-level parking garages. Cutting a tensioned cable, or tendon, can endanger the contractor and compromise the structural integrity of the floor. Contact the building structural engineer for specific instructions and information BEFORE drilling or saw cutting into the floor.

**INSTALLATION AND USE OF THE WEDGE BARRIER IN AREAS SUBJECT TO FREEZING WEATHER WITH POTENTIAL FOR SNOW AND ICE ACCUMULATION IS NOT RECOMMENDED.**

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

[www.doorking.com](http://www.doorking.com)

The 1625 wedge barrier is not a stand-alone product. It must be used with a 1602-590 Barrier Gate Operator (sold separately). The 1625 is crash rated (ASTM F2656 PU-30-(P1, P2)). It is intended to provide a more formidable barrier in conjunction with a standard barrier arm operator system. The 1625 is ideally used to control passenger vehicles and light duty trucks.