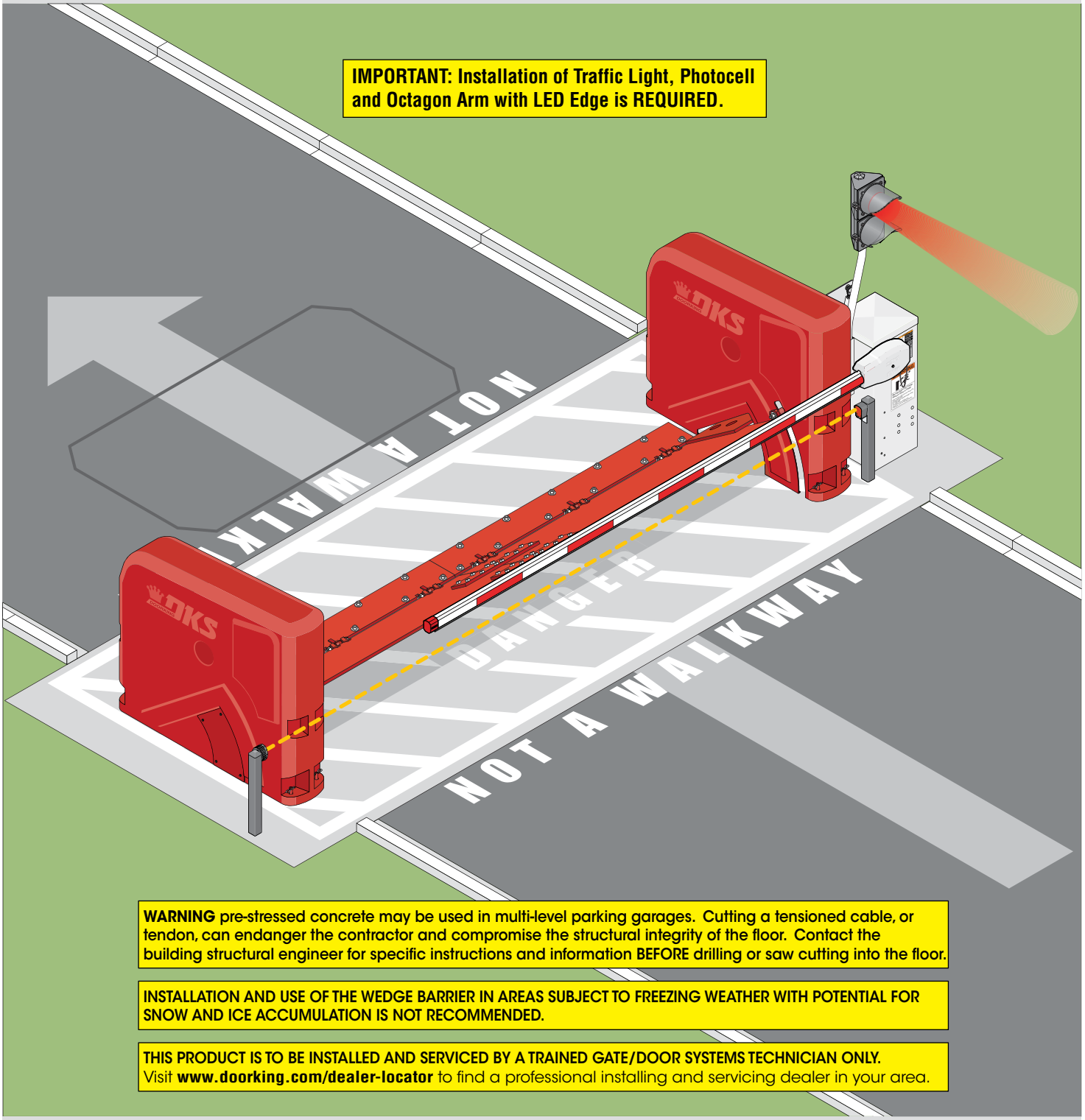
Installation Manual

1625 Wedge Barrier

Surface Mount Vehicular Wedge Barrier Accessory

Use this manual for circuit board 1601-010 Revision W or higher.

1625-065-B-6-23



IMPORTANT: Installation of Traffic Light, Photocell and Octagon Arm with LED Edge is REQUIRED.

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** to find a professional installing and servicing dealer in your area.

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 not crash rated. 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 lightduty trucks.

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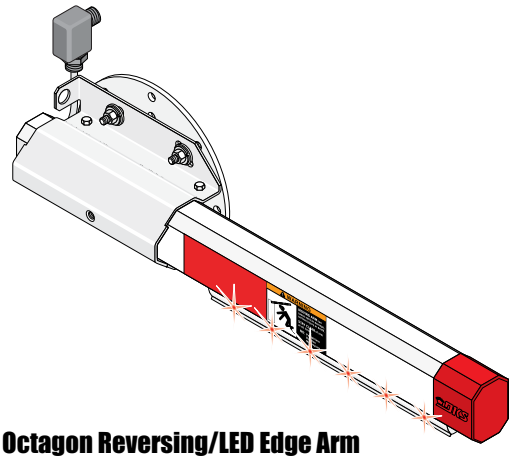
Wedge Components

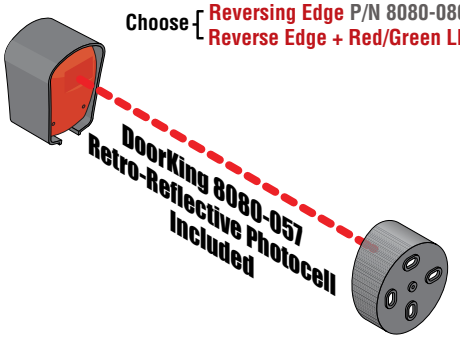


Octagon Reversing/LED Edge Arm

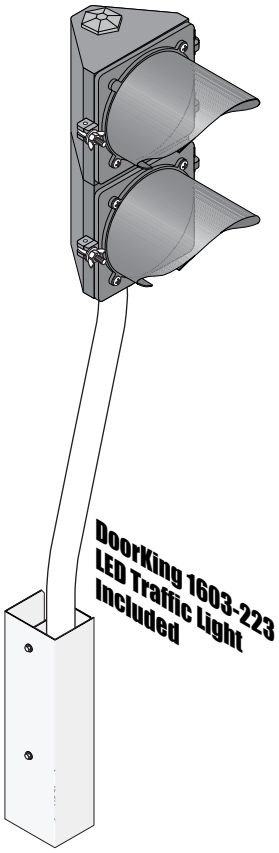
Choose { 14 Ft 1-Piece Octagon Arm Only P/N 1601-555
14 Ft 2-Piece Octagon Arm Only P/N 1601-567

Octagon Arm Hardware Kit (Required) P/N 1601-235

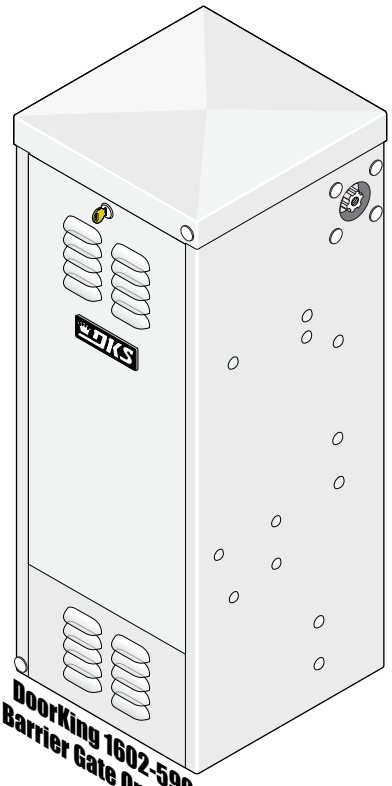
Choose { Reversing Edge P/N 8080-080
Reverse Edge + Red/Green LED P/N 8080-096



DoorKing 8080-057
Retro-Reflective Photocell
Included



DoorKing 1603-223
LED Traffic Light
Included



DoorKing 1602-590
Barrier Gate Operator

DoorKing Safety for Wdge Barrier

- DKS Wedge Barrier System is **NOT** crash rated. 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.**

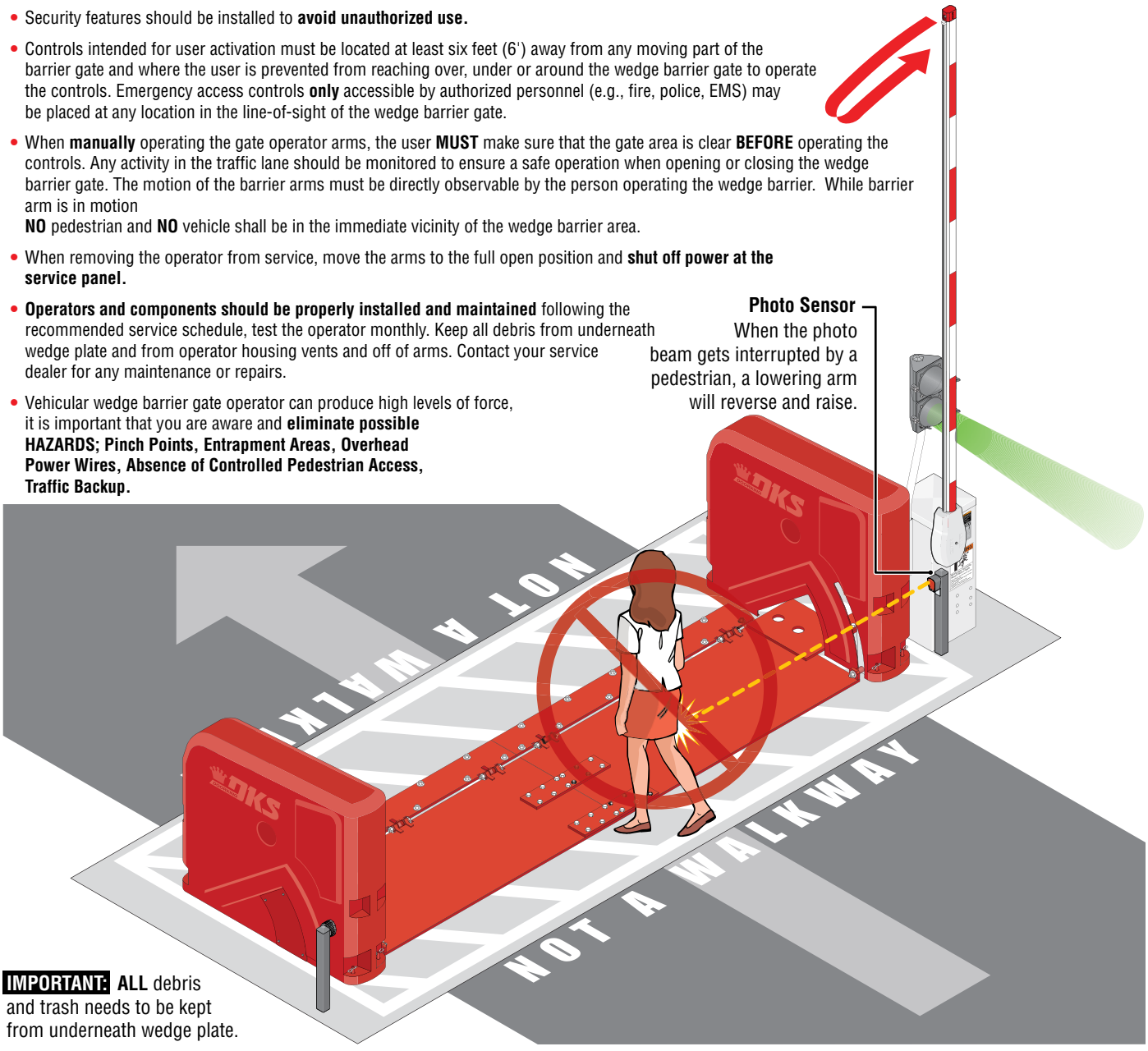
Pedestrians MUST be provided with separate access.

- 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.
- 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.
- When removing the operator from service, move the arms to the full open position and **shut off power at the service panel.**
- **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.
- 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.

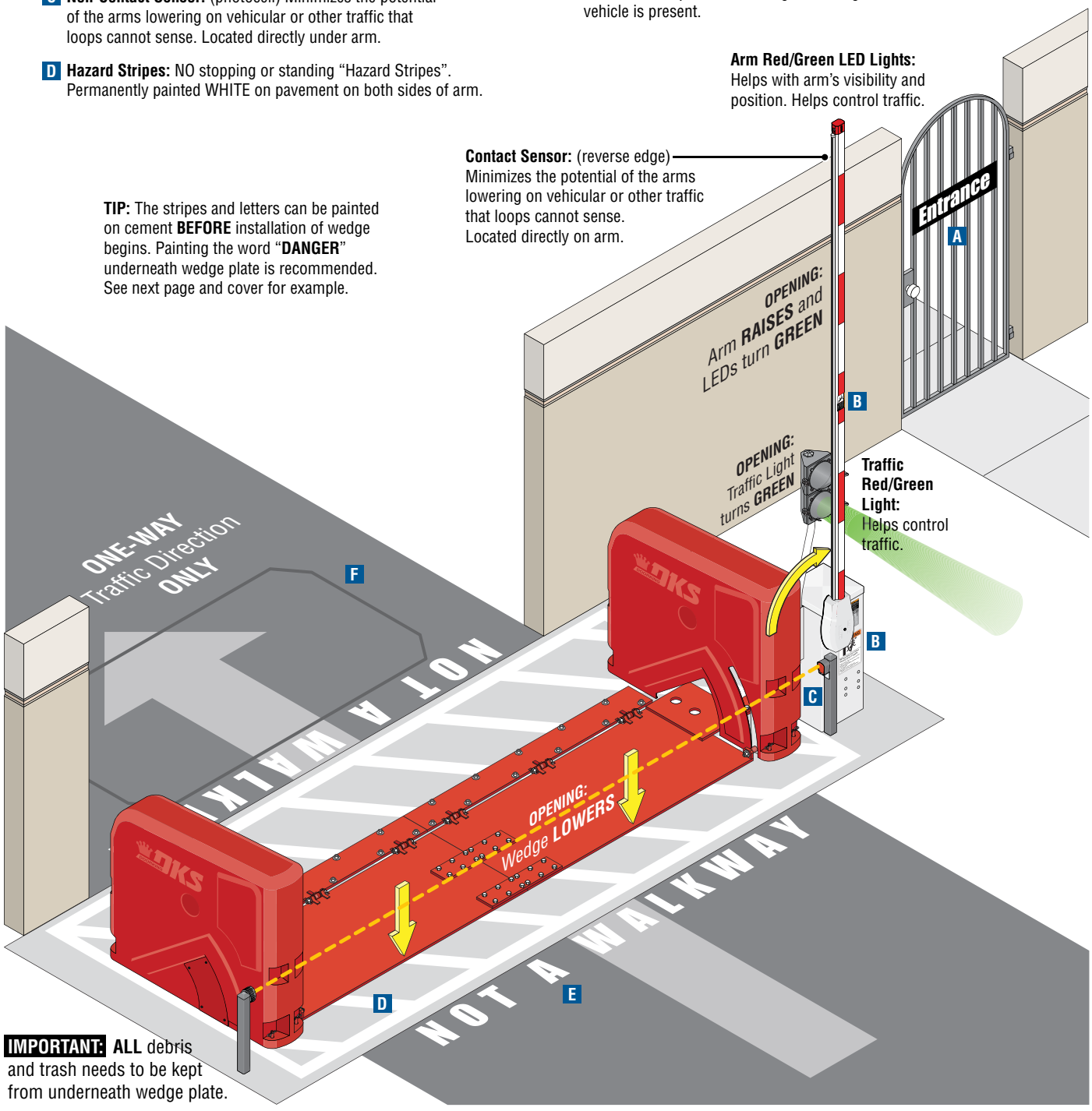
C **Non-Contact Sensor:** (photocell) Minimizes the potential of the arms lowering on vehicular or other traffic that loops cannot sense. Located directly under arm.

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.



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

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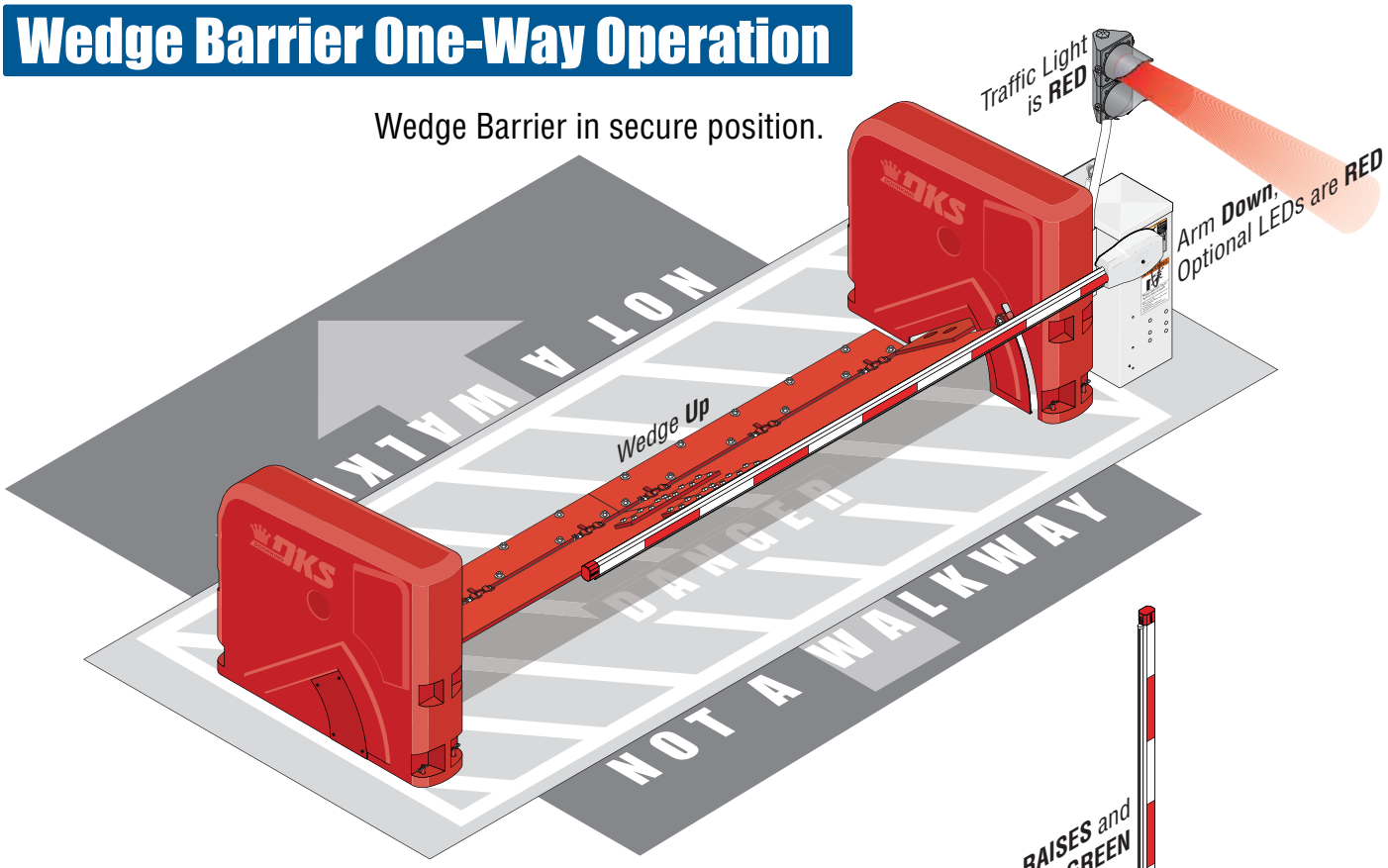
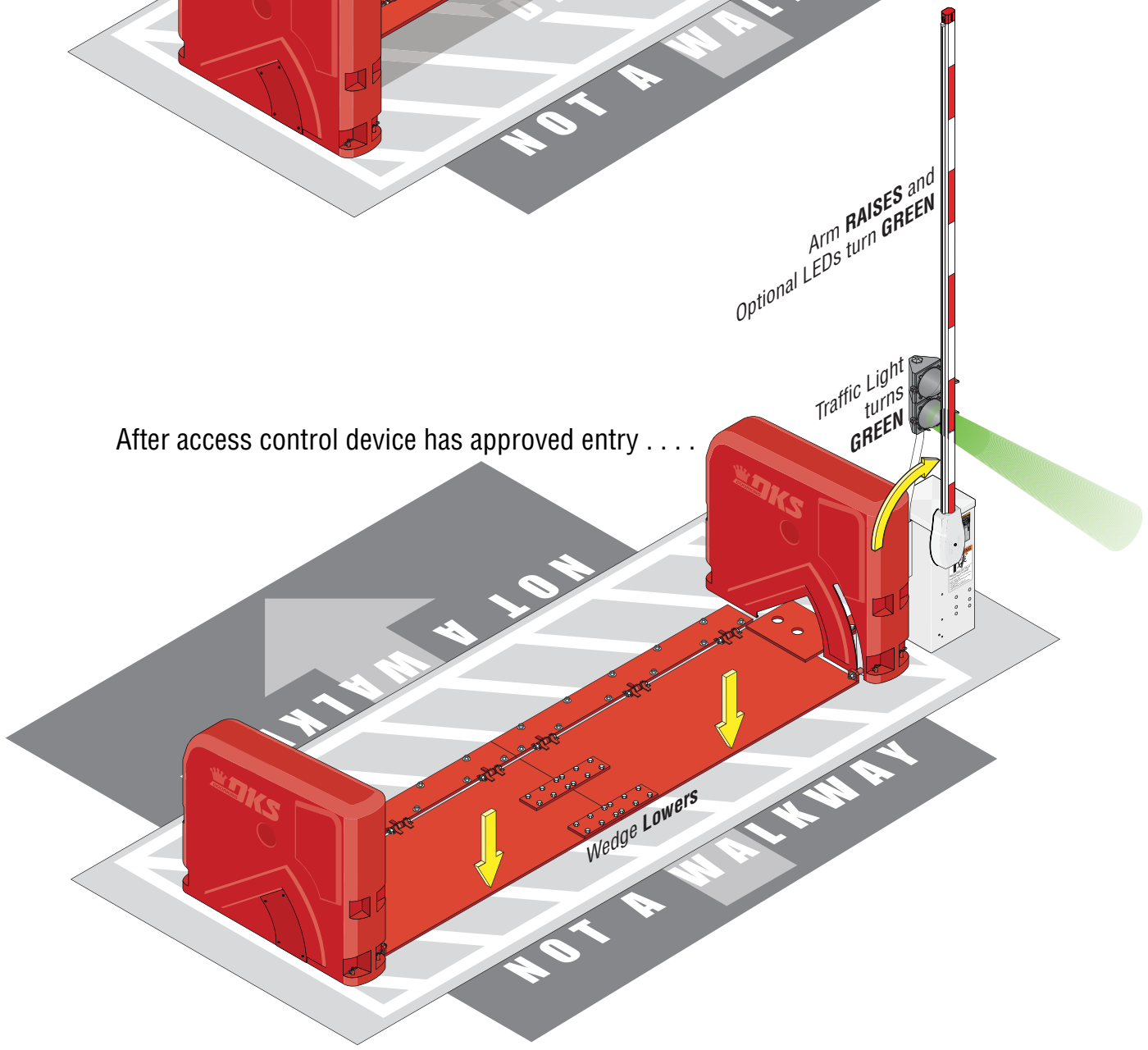
Wedge Barrier One-Way Operation

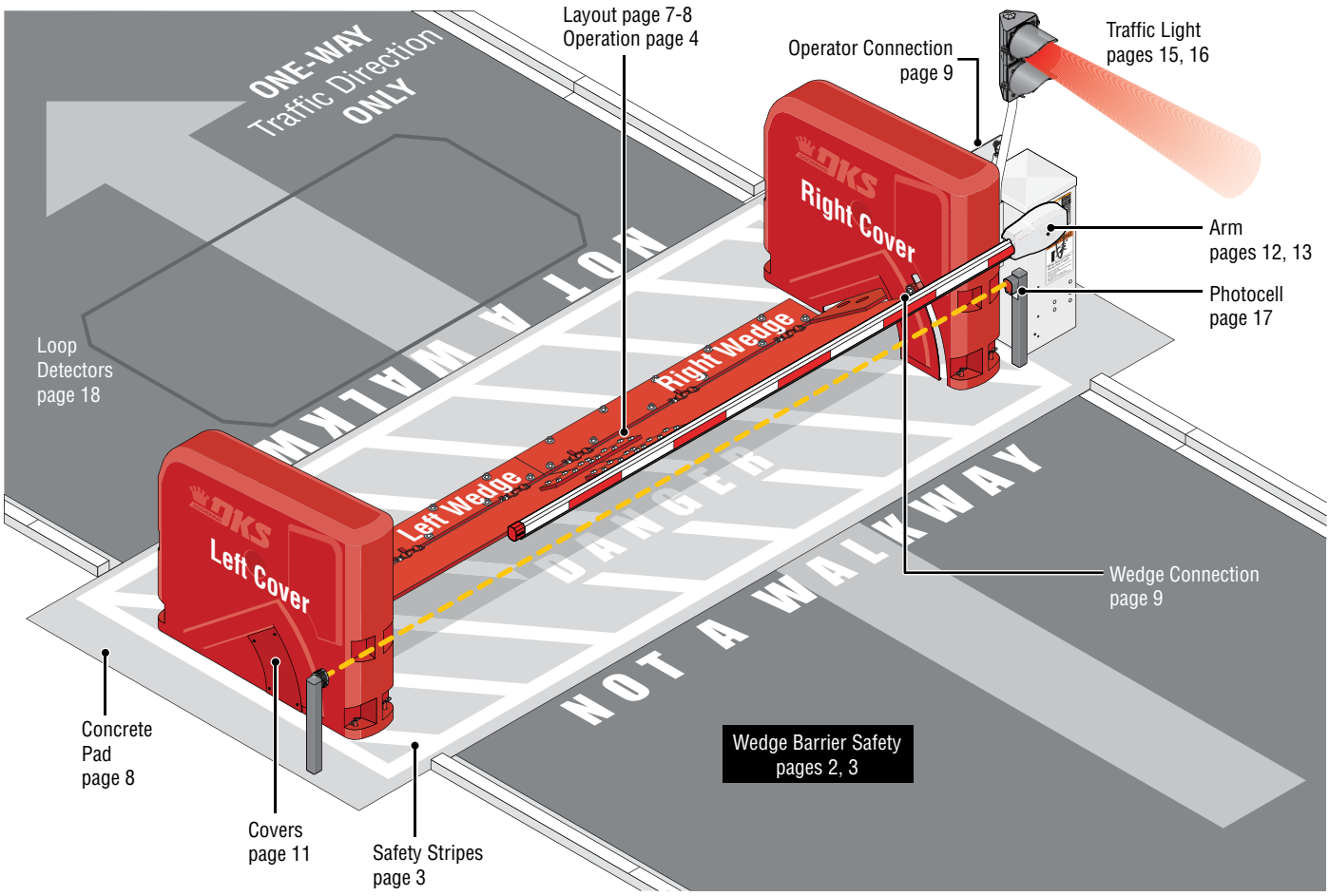
Wedge Barrier in secure position.



After access control device has approved entry . . . .



Wedge Barrier and 1602-590 Operator Overview



Use this manual for the Model 1602 operators with circuit board 1601-010 Rev W or higher ONLY.

Class of Operation

Model 1602 - UL 325 Class II, III, IV – ETL Listed

Type of Gate

Traffic Lane Vehicular Barrier Gate Only

Arm Types

Octagon Aluminum with reverse edge

Gate Cycles

Low Cycle

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.

Pedestrian Protection

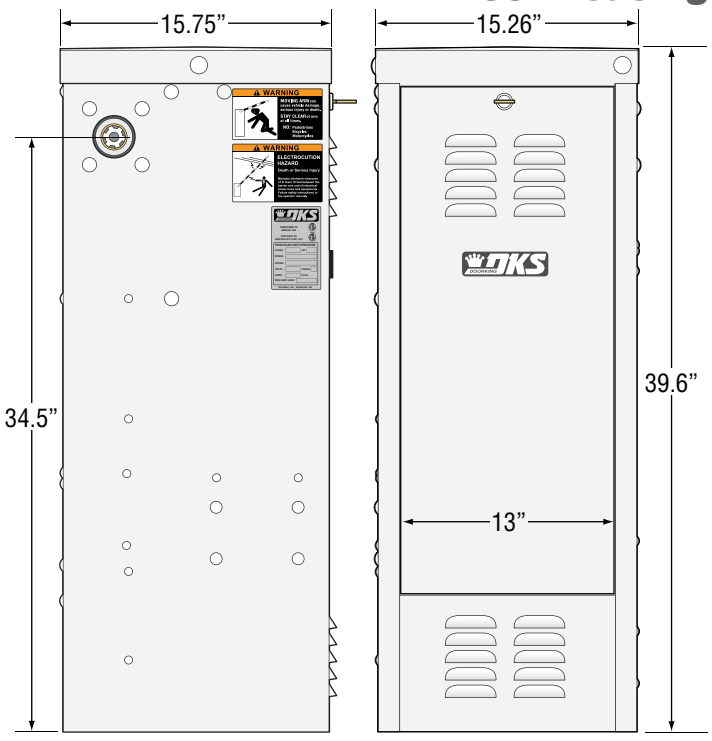
Inherent entrapment sensing system (Type A)
Provision for connection of a non-contact sensor (Type B1) and/or contact sensor (Type B2)

Model #	Convenience Open	Horsepower - Volts	Amp	Max Arm Length	Speed 90°
1602-590	No	1 HP - 115 VAC	9.7	14 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).

2 Warning Signs (Included) MUST be mounted on **EACH** side of gated area and easily visible.

1602 Housing

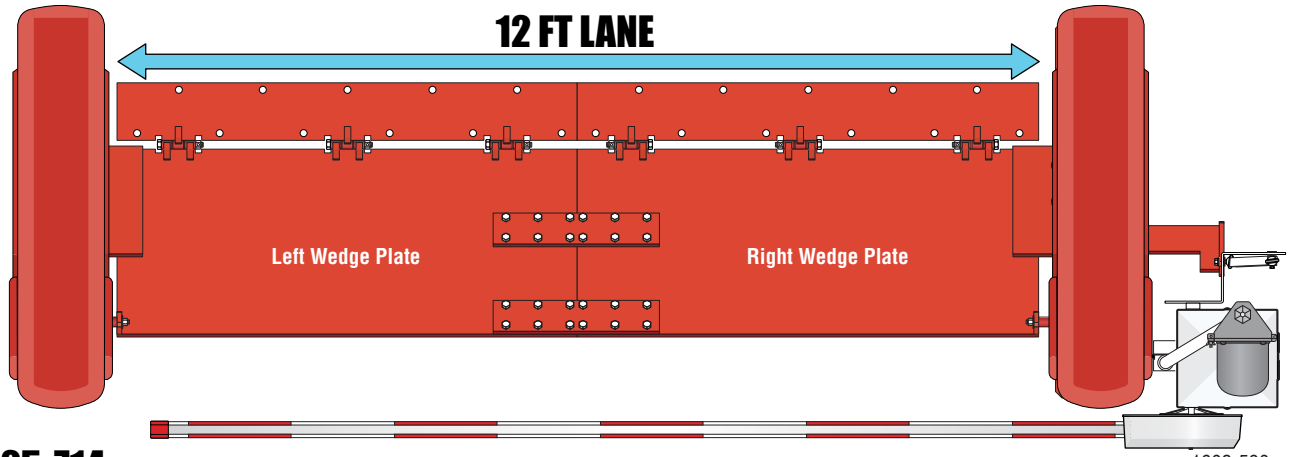


Wedge Barrier Models

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.

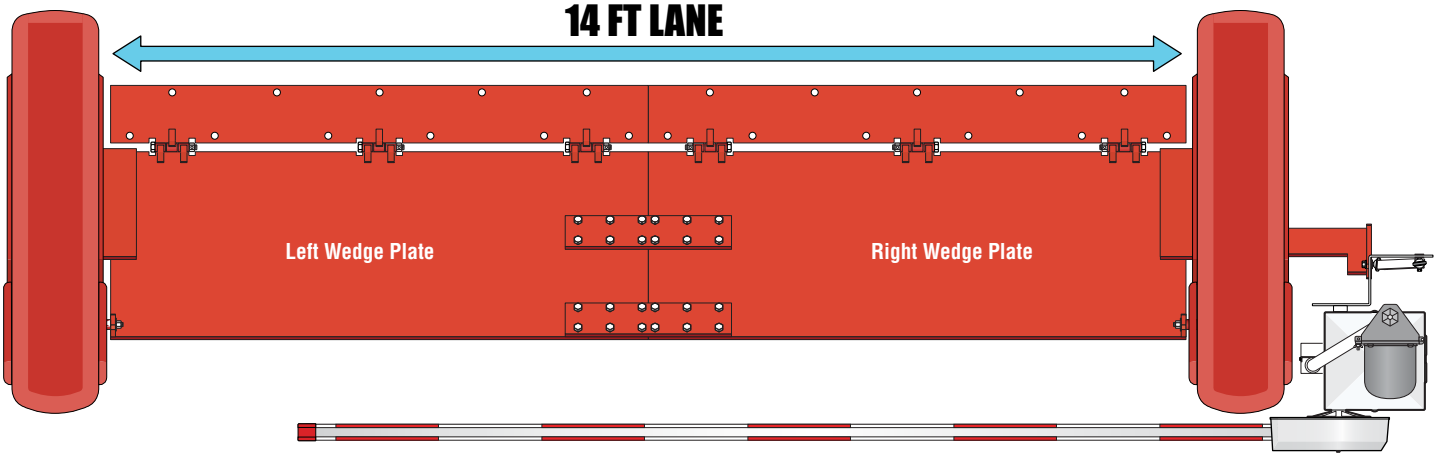
Barrier operator 1602-590 can be located on either end of wedge plates

P/N: 1625-612



1602-590

P/N: 1625-714



1602-590

CONCRETE PAD
- **4000 psi reinforced concrete** - minimum depth five (5) inches.

GENERAL NOTES
- Automated vehicular gates shall be designed and installed to be in strict compliance with the UL 325 Safety Standard and the ASTM F2200 Construction Standard.
- Automated vehicular gates that do not meet the requirements of these standards shall not be allowed.
- This drawing is for the sole purpose of general gate operator foot-print and location, photo beam coverage and placement, and vehicular loop dimensions and placement. Drawings are not all inclusive or guaranteed to scale.
- No considerations have been made for grade, existing public utilities, landscape, drainage, site peculiarities, or requirements by the authority having jurisdiction, ie; Fire Marshall, Building Inspector, Street and Alley Departments.
- Warning Signs must be installed and must be highly visible upon both entry and exit of the property, and must remain in place for the life of the gate operating system.
- Proper lane identification and vehicular direction signs should be highly visible upon entry onto the property.
- Gate dimensions, posts, guide rollers, photo beams, reversing edges, hinges, and other gate hardware may vary in size, dimension, and placement and should not be used as an exact reference.
- All loop sizing and placement dimensions indicated are solely intended for reference only, and not intended to be the final criterion for determining the loop sizing and placement on any automated vehicular gate project.

DoorKing, Inc does not assume responsibility or liability for any installation with regard to equipment/system malfunction, vehicle detector loop sizing and placement, or consequent damages or injuries caused thereby.
- DoorKing, Inc. does not assume responsibility or liability for the installation and unauthorized changes to the design and operation of equipment, or alterations to the final site plan.

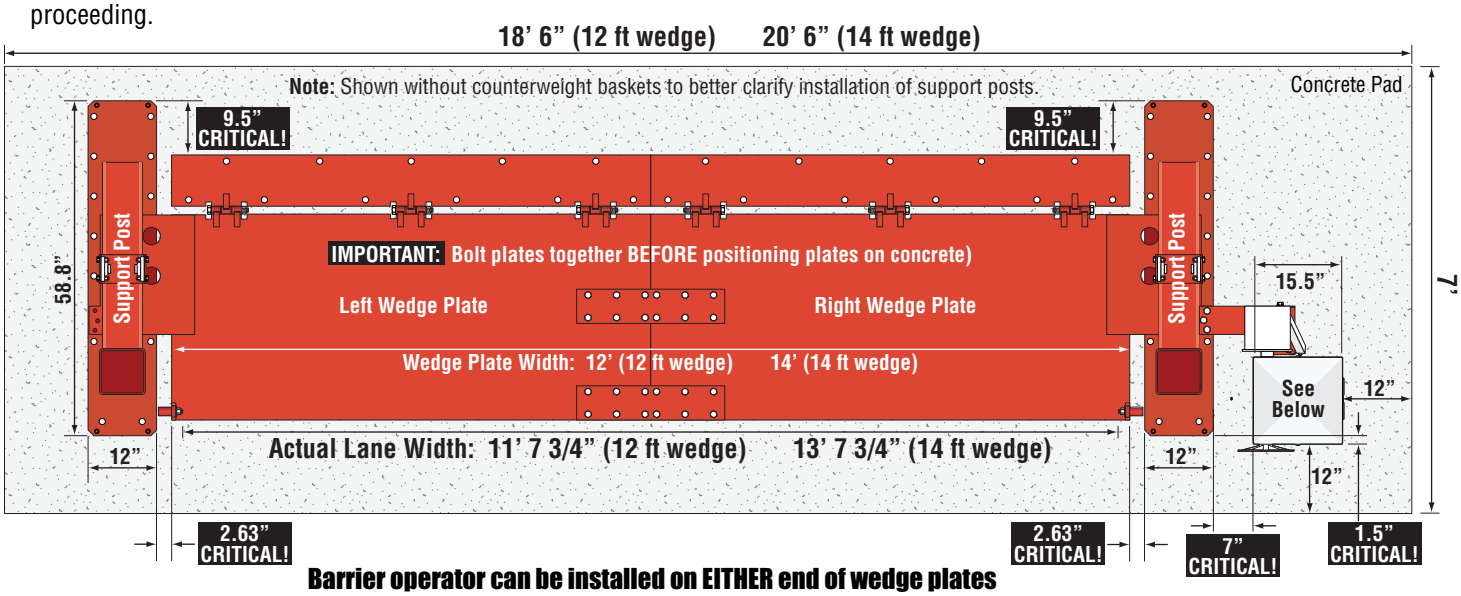
WARNING for **Precast Concrete**

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.

Layout

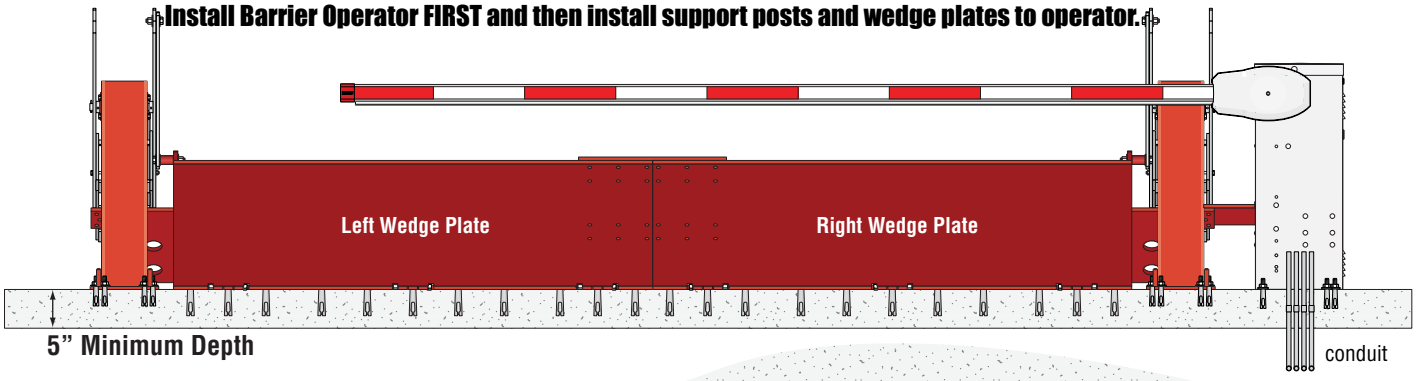
WARNING for **Precast Concrete**

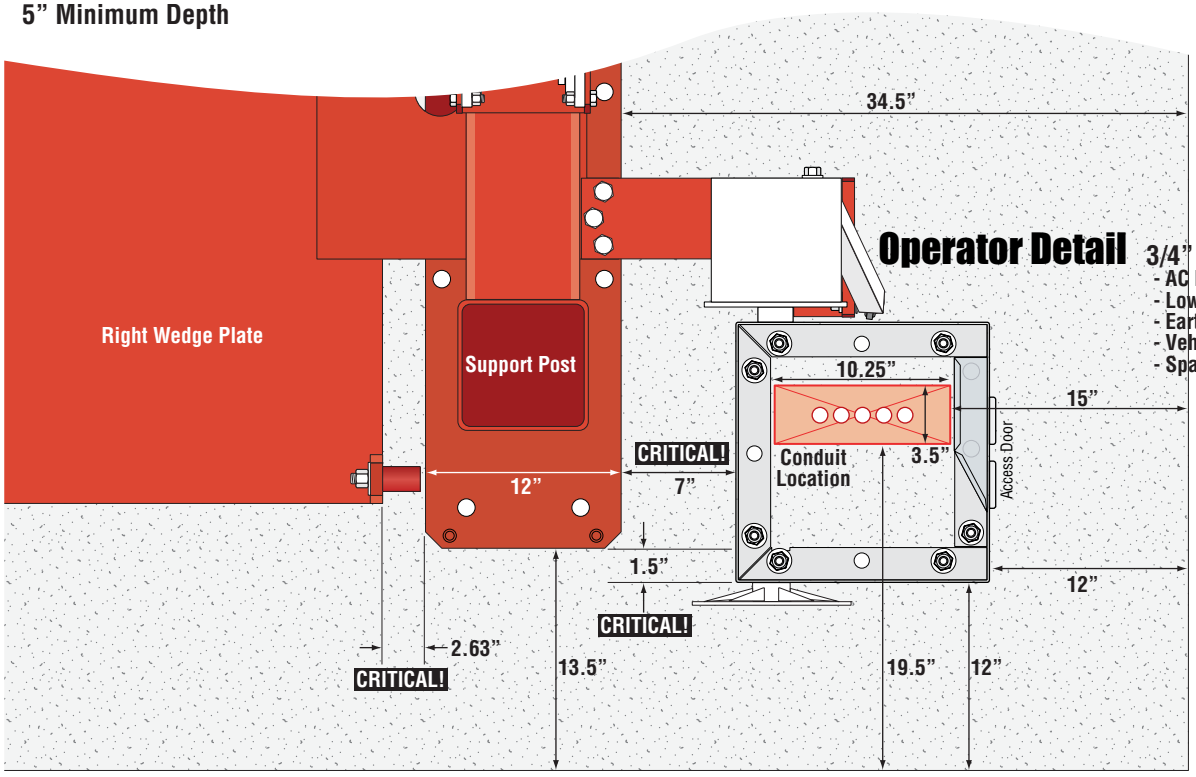
Drilling into precast concrete is **NOT recommended without professional advice or assistance.** If you don't know where the prestressed wire strands are located, you risk damaging the structural integrity of the precast concrete and the drilling equipment you use. If you need to drill into precast concrete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



Barrier operator can be installed on EITHER end of wedge plates

Install Barrier Operator FIRST and then install support posts and wedge plates to operator.

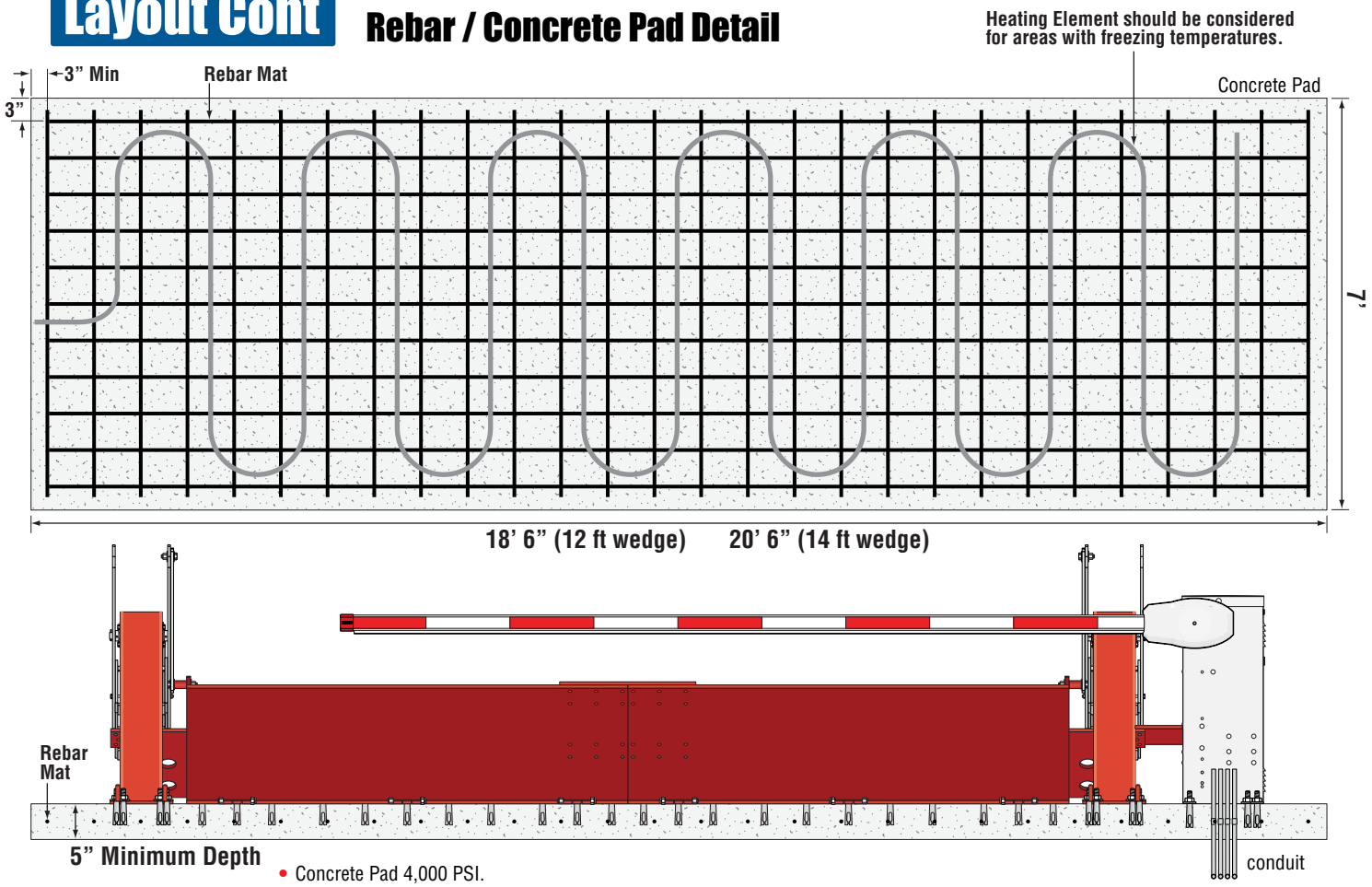




3/4" Conduit Options:
- AC Power
- Low Voltage Accessories
- Earth Ground
- Vehicle Loops
- Spare (Optional)

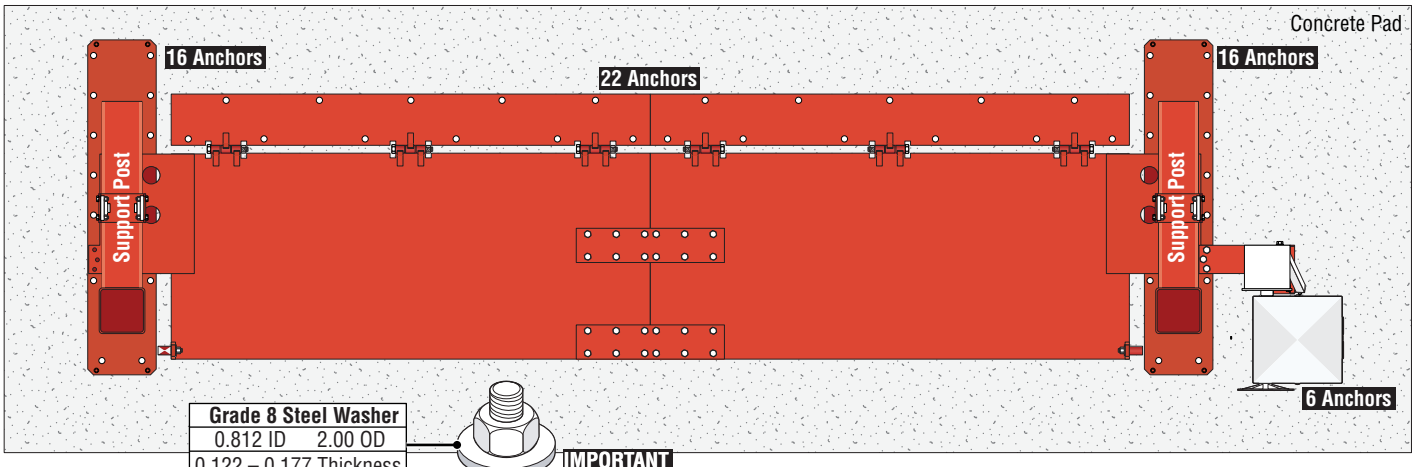
Layout Cont

Rebar / Concrete Pad Detail



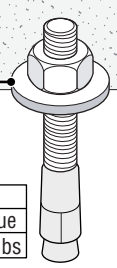
- Concrete Pad 4,000 PSI.
- Soil compression under and around the foundation shall be compacted to a soil density of 95% of standard ASTM-698.
- Add gravel where necessary to insure a solid base. Soil must be stable and able to support the weight of the concrete pad.
- The 1625 Wedge must be installed on a flat and level 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.

Anchor Detail



Grade 8 Steel Washer
0.812 ID 2.00 OD
0.122 – 0.177 Thickness

McMaster-Carr 98026A036 or equivalent



316 Stainless Steel Wedge Anchor				
Length	Thread	Pull Out	Shear	Torque
5.5 inch	3/4 - 10 Anchor	2200 lbs	2800 lbs	175 ft/lbs

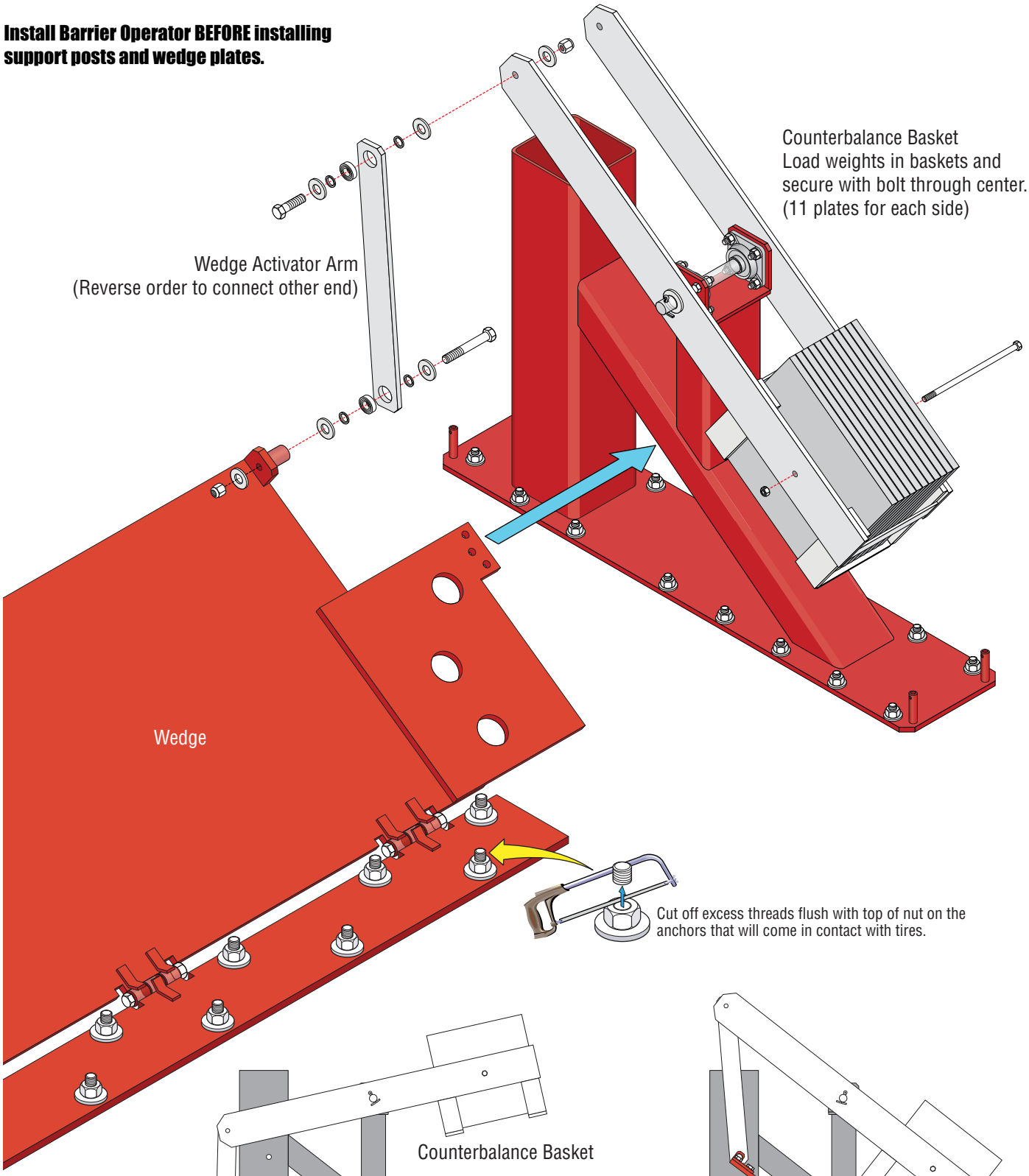
McMaster-Carr 98026A036 or equivalent
4,000 PSI Concrete

IMPORTANT

- Position the operator, post and wedge on the concrete slab per the CRITICAL measurements on the previous pages and mark the mounting holes.
- Drill ¾ inch holes (54) to anchor posts and wedge, minimum of six (6) anchor holes for the operator.
- Use a ¼" bit to drill pilot holes if necessary.
- Minimum depth engagement for the wedge anchors is 3.75 inch.
- Use a 2" O.D. Grade 8 washer with the wedge anchors.
- Torque wedge anchors bolts to 175 Ft Lb.

Wedge, Support Post and Counterbalance Installation

Install Barrier Operator BEFORE installing support posts and wedge plates.

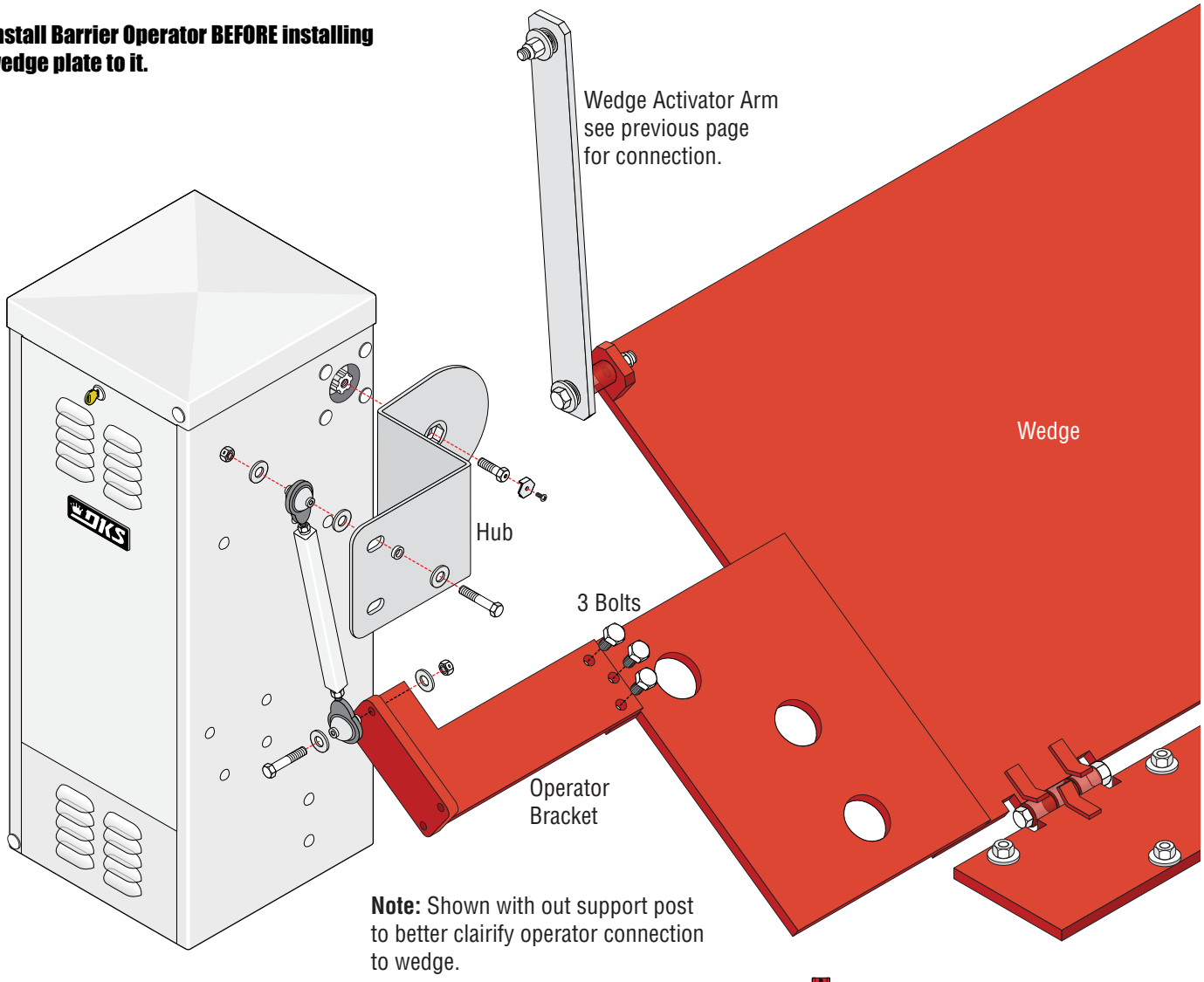


Wedge Down

Wedge Up

Operator Connection

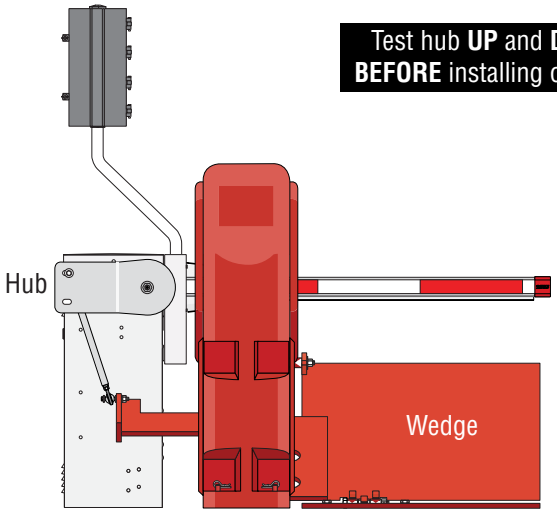
Install Barrier Operator BEFORE installing wedge plate to it.



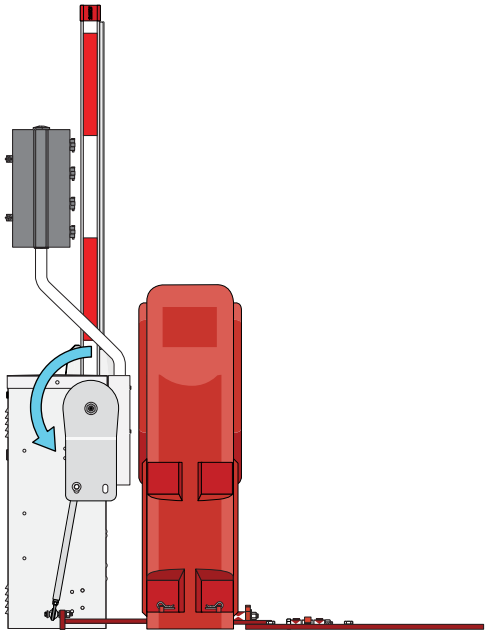
Note: Shown with out support post to better clairify operator connection to wedge.

Hub Operation

Test hub **UP** and **DOWN** position **BEFORE** installing operator bracket.

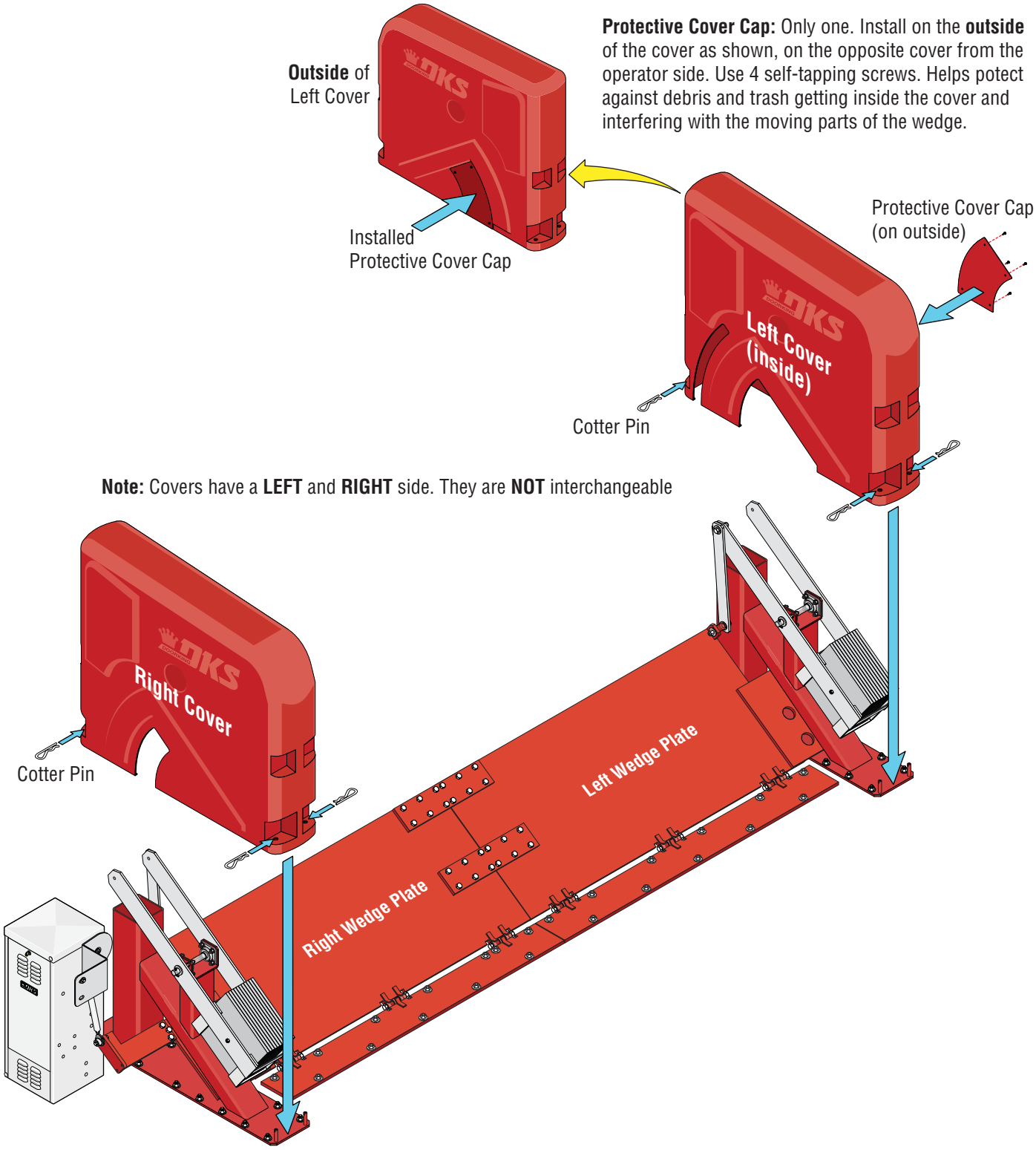


Wedge Up, Arm Down



Wedge Down, Arm Up

Wedge Covers and Maintenance



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.**

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

Install Reverse/LED Edge on Octagon Arm

Install on a 14 ft aluminum **octagon arm**.

Note: DO NOT operate arm with a malfunctioning reverse edge.

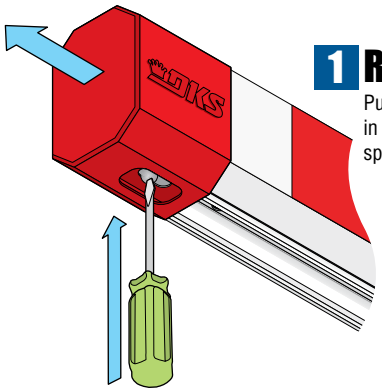
DoorKing Part Numbers

8080-080
Reverse Edge

8080-096
Reverse Edge + Red/Green LED

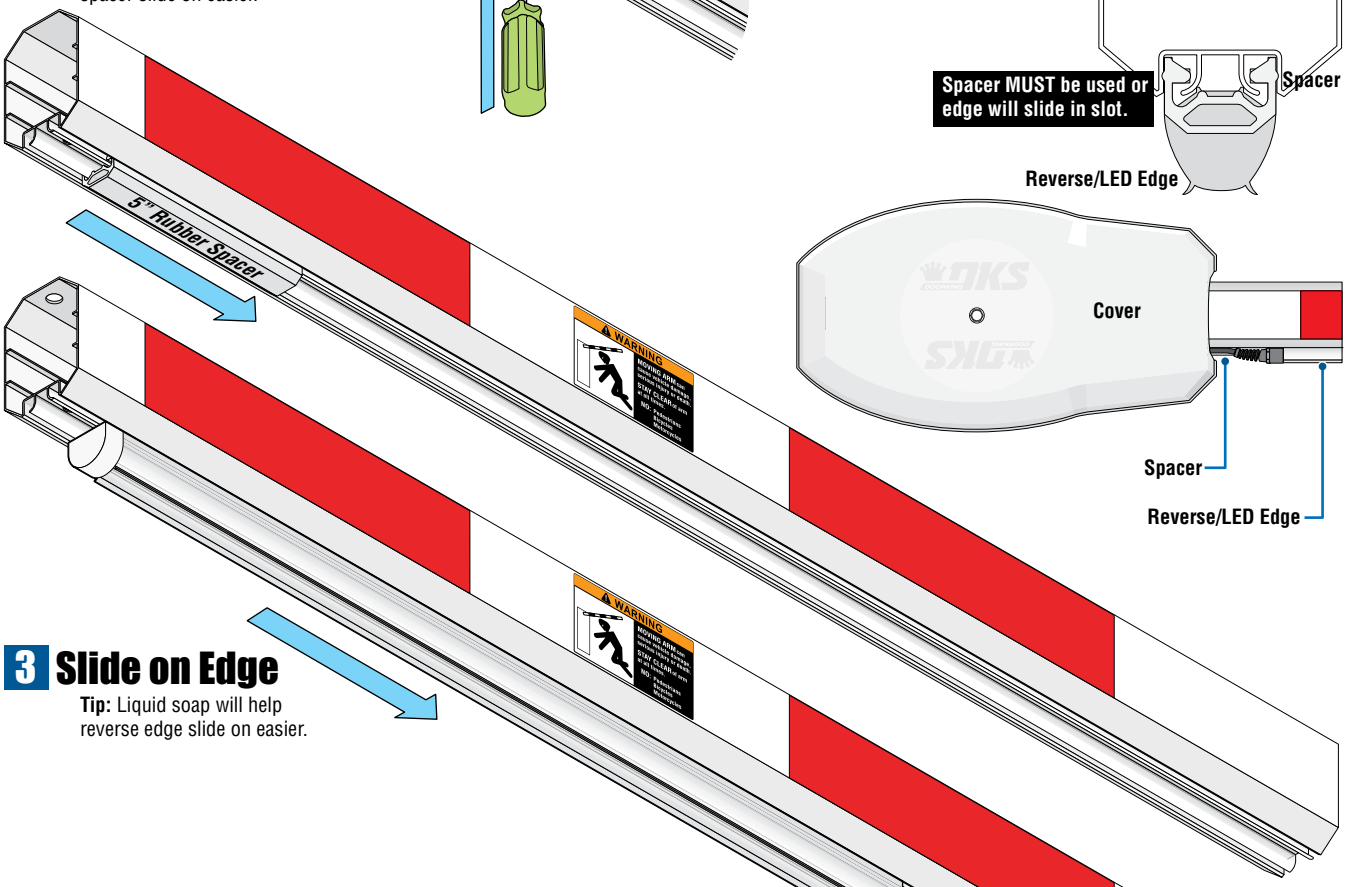
1 Remove End Cap

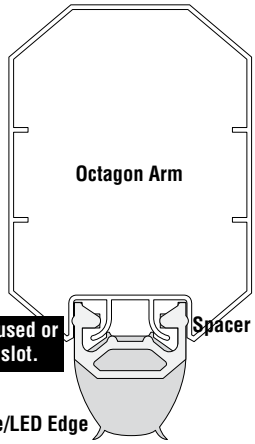
Push a screwdriver through hole in bottom of end cap to release spring **while** pulling cap off.



2 Slide on Spacer

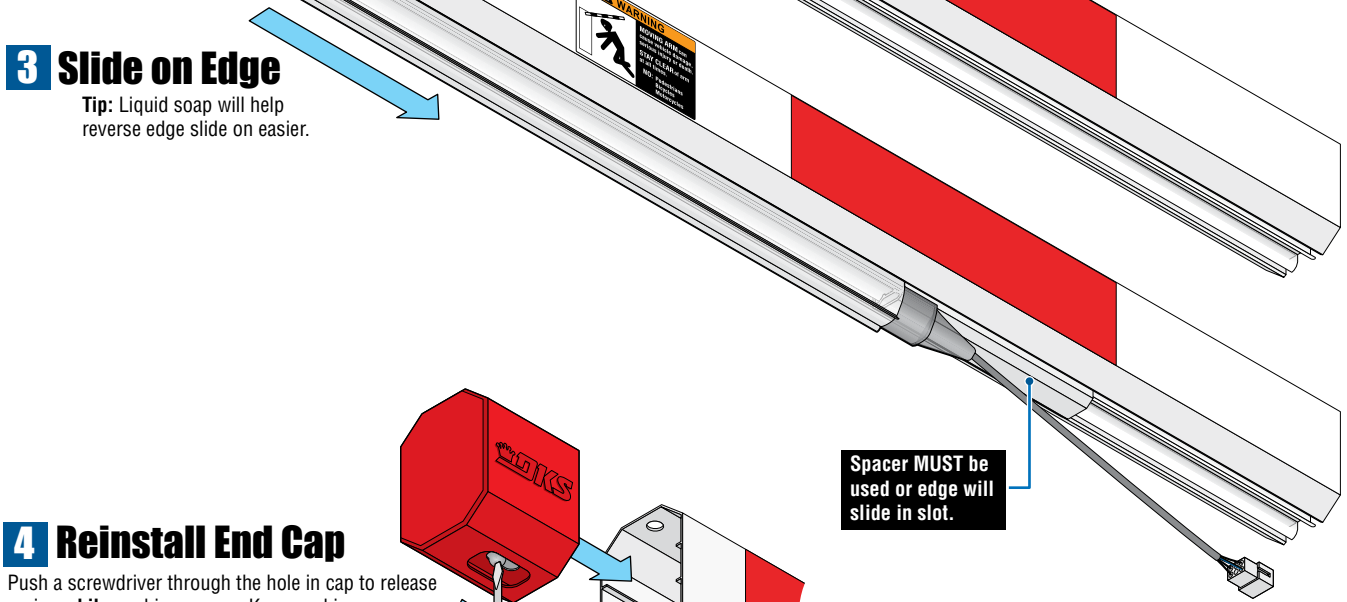
Tip: Liquid soap will help spacer slide on easier.





3 Slide on Edge

Tip: Liquid soap will help reverse edge slide on easier.



4 Reinstall End Cap

Push a screwdriver through the hole in cap to release spring **while** pushing cap on. Keep pushing cap on until a "**CLICK**" is heard which locks it in place.

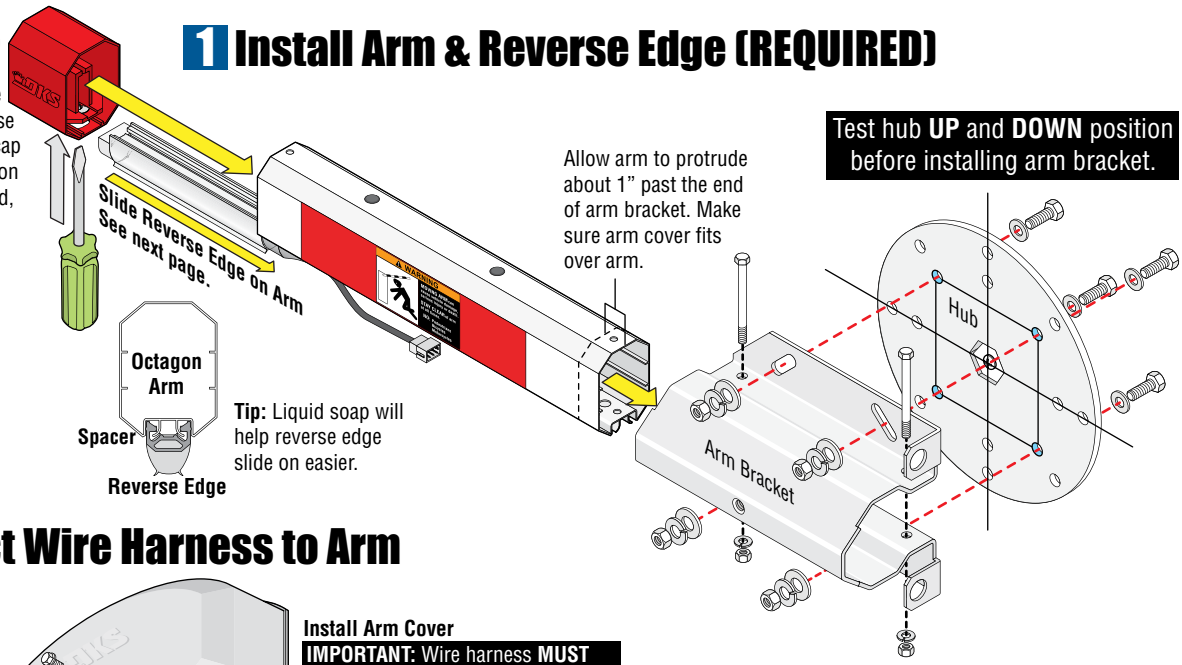
Drawings NOT to scale.

Install Octagon Arm with Reverse/LED Edge

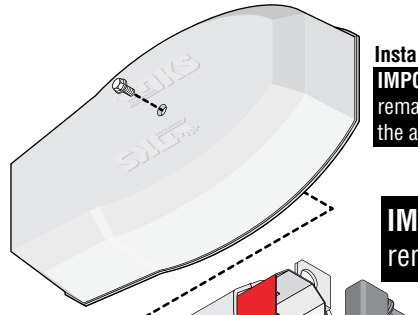
Drawings NOT to scale.

1 Install Arm & Reverse Edge (REQUIRED)

Install End Cap
Push a screwdriver through the hole in the bottom of cap to release spring while pushing cap on. Keep pushing cap on until a "CLICK" is heard, locking it in place.

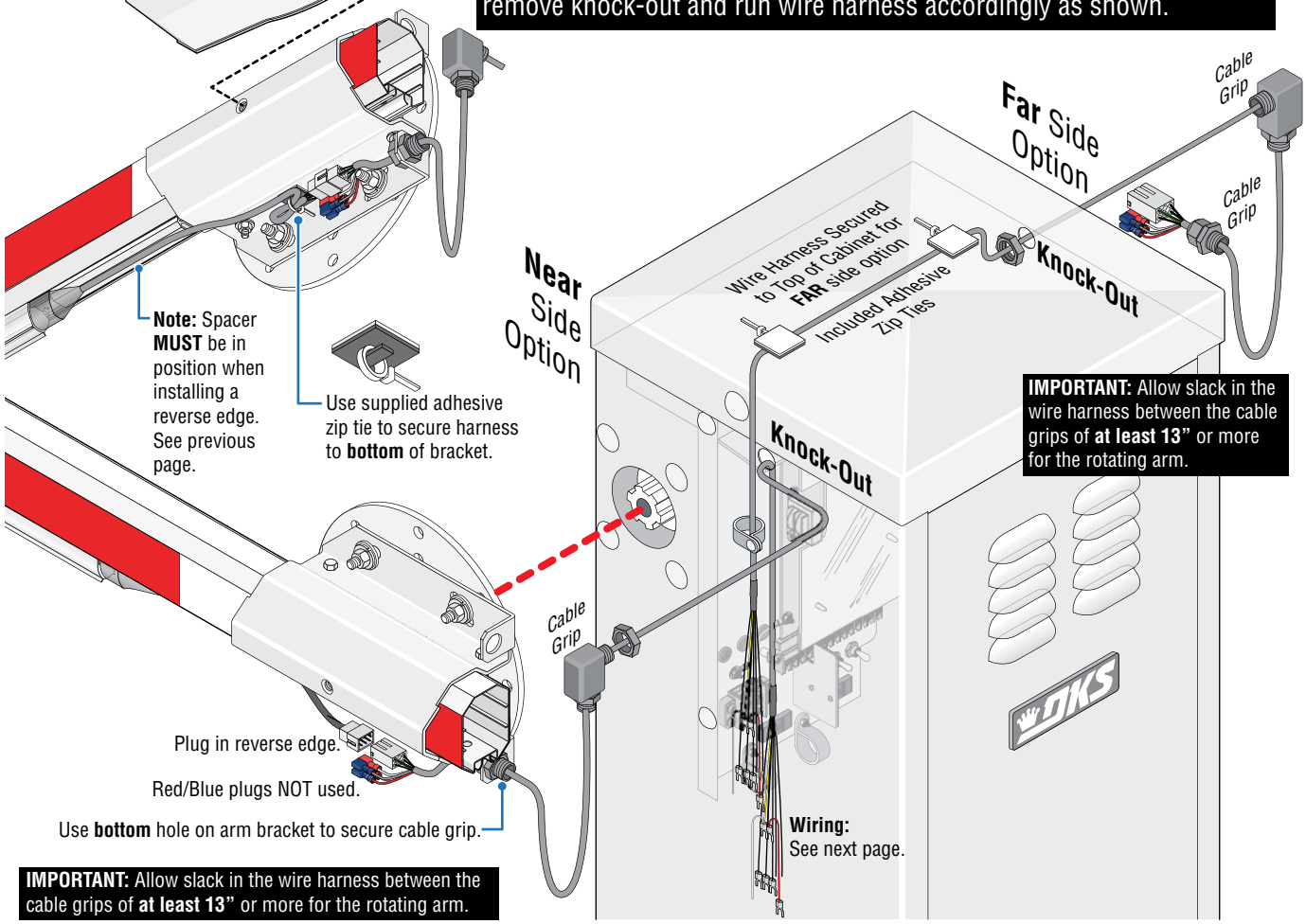


2 Connect Wire Harness to Arm



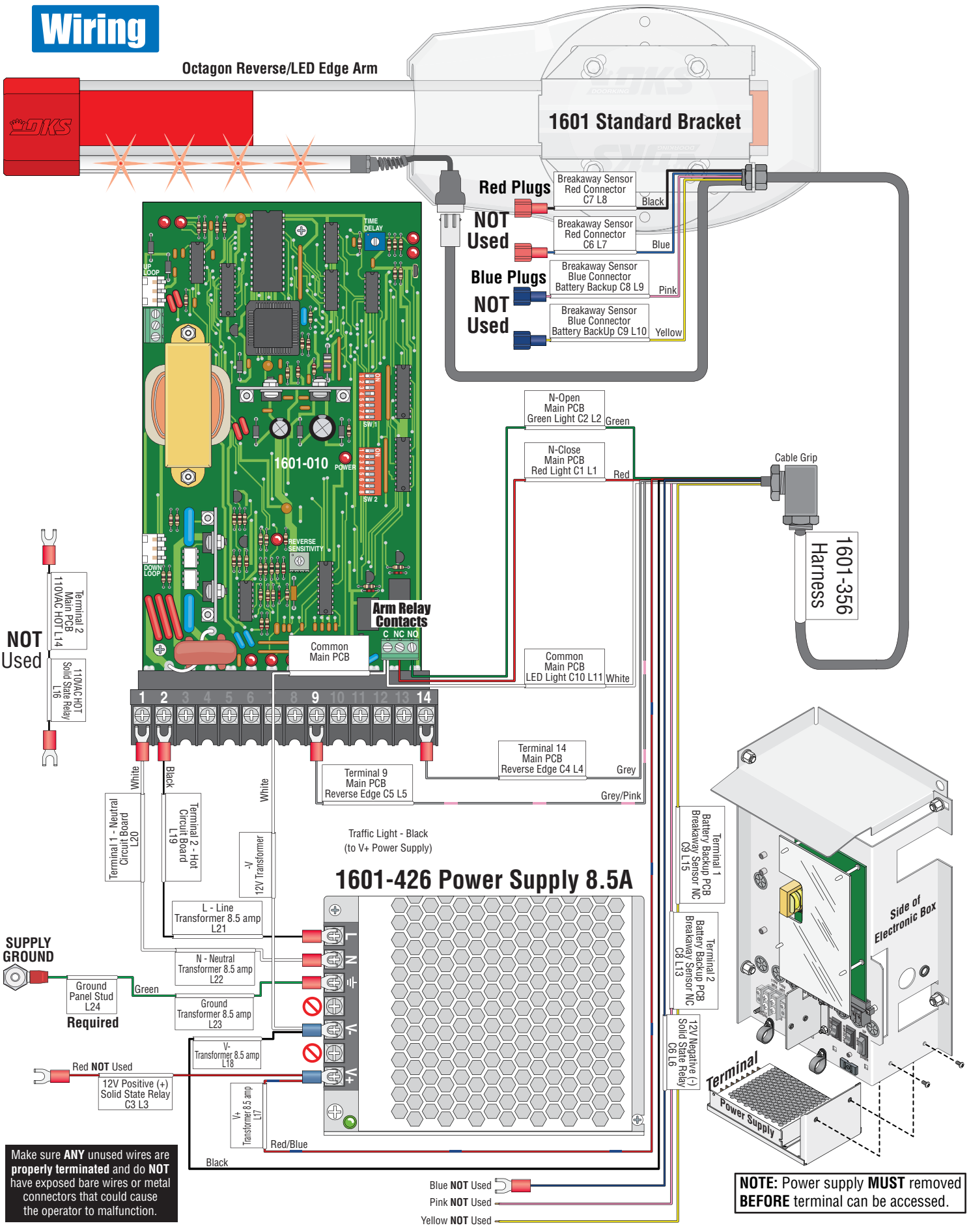
Install Arm Cover
IMPORTANT: Wire harness **MUST** remain clear of the rotating arm and the arm cover to avoid wire chaffing.

IMPORTANT: Choose which side of the operator the arm is mounted on, remove knock-out and run wire harness accordingly as shown.



IMPORTANT: Allow slack in the wire harness between the cable grips of **at least 13"** or more for the rotating arm.

Wiring



Make sure **ANY** unused wires are **properly terminated** and do **NOT** have exposed bare wires or metal connectors that could cause the operator to malfunction.

NOTE: Power supply **MUST** removed **BEFORE** terminal can be accessed.

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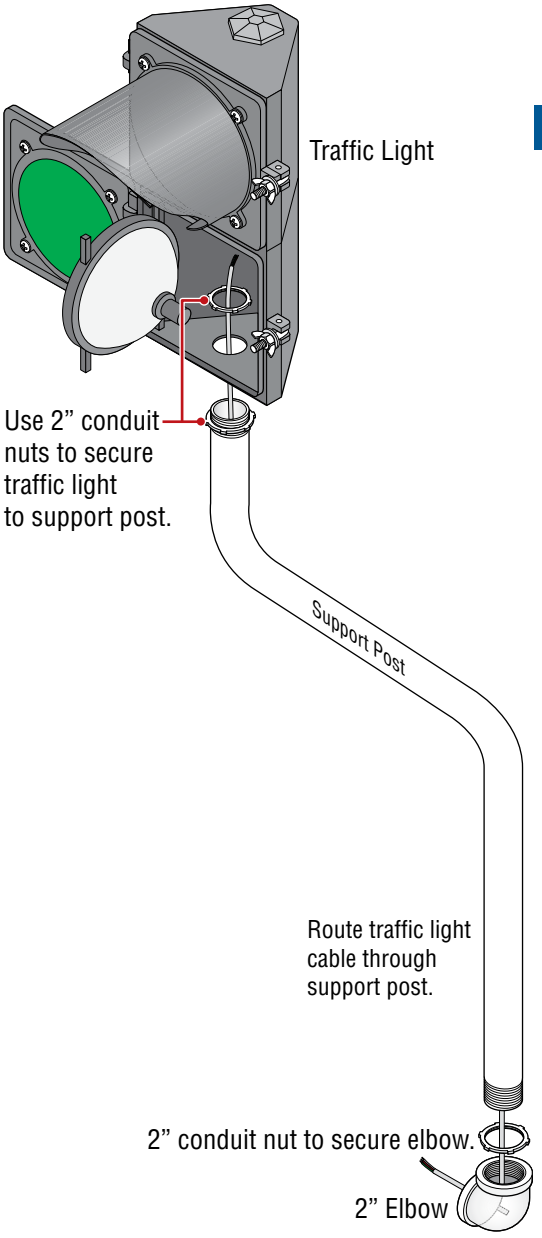
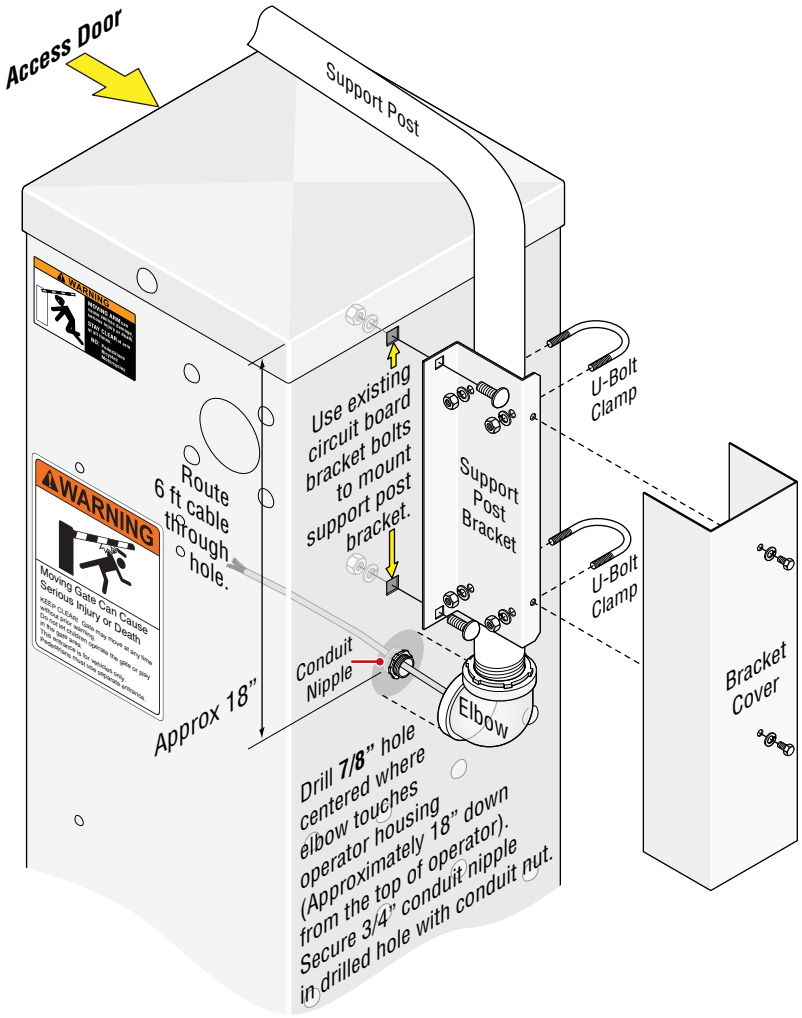
Install Traffic Light (REQUIRED)

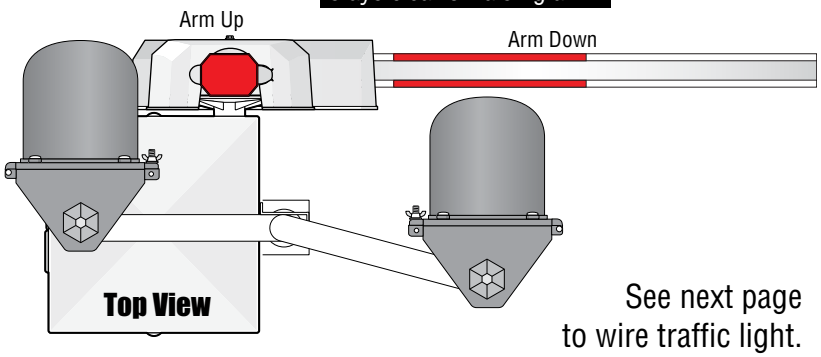
1 Assemble Support Post



2 Mount Support Post on OPPOSITE Side of Access Door



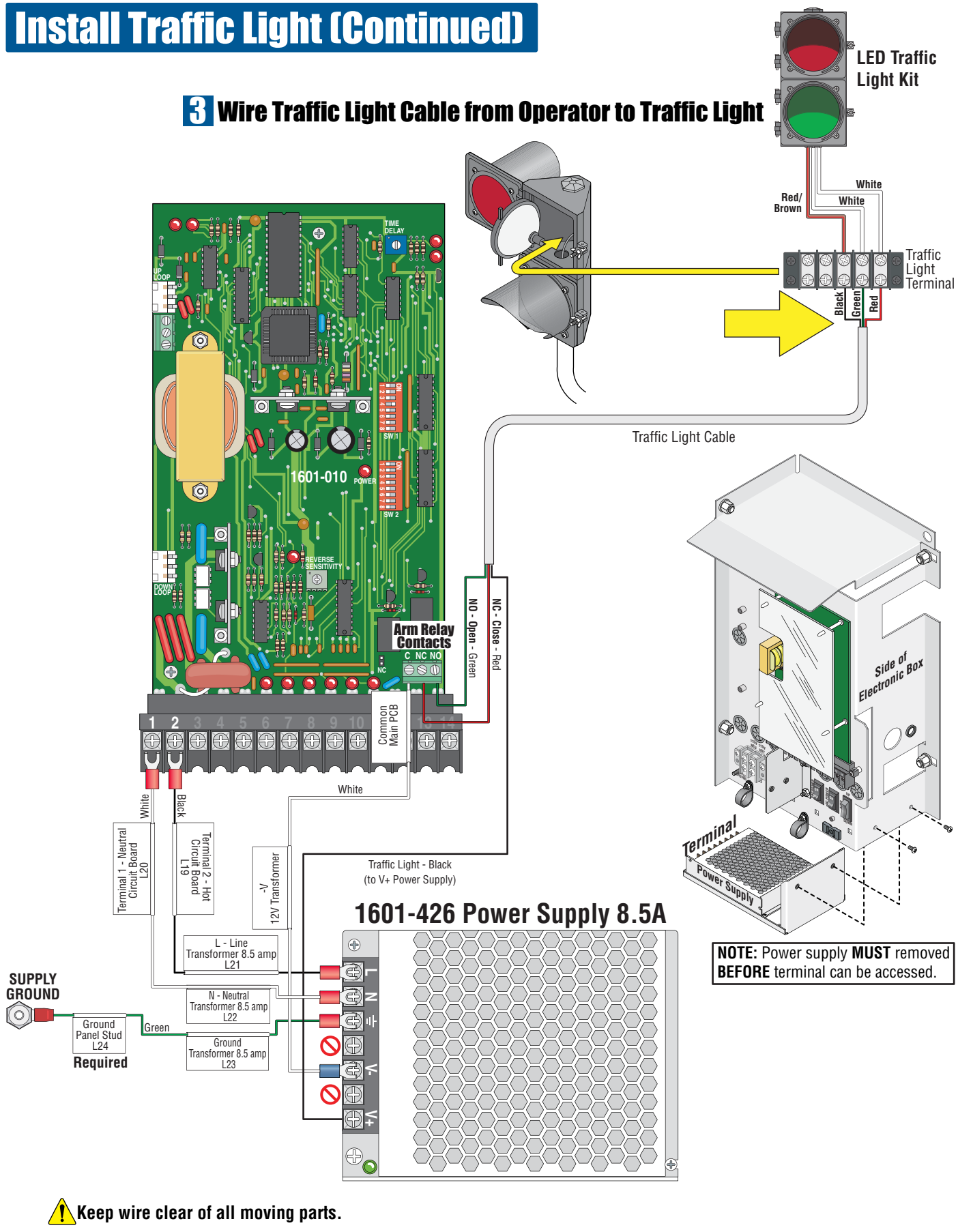
Make sure traffic light stays clear of raising arm.



See next page to wire traffic light.

Install Traffic Light (Continued)

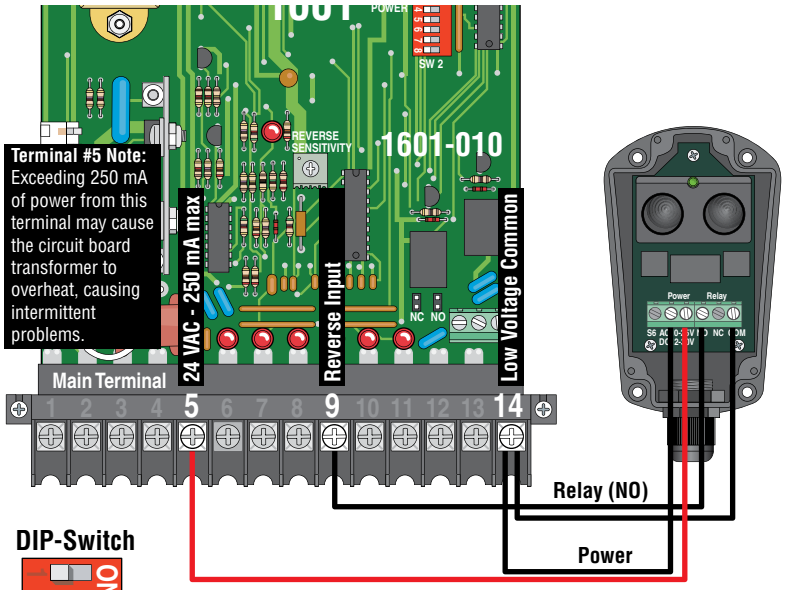
3 Wire Traffic Light Cable from Operator to Traffic Light



Keep wire clear of all moving parts.

Install Photocell (REQUIRED)

Mount photocell **directly** below the octagon arm on separate posts as shown, mounting brackets not supplied.



Terminal #5 Note: Exceeding 250 mA of power from this terminal may cause the circuit board transformer to overheat, causing intermittent problems.

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.

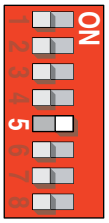
DoorKing Retro-Reflective Photocell (P/N 8080-057)

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.

Wiring Note: See page 20 for complete wiring.

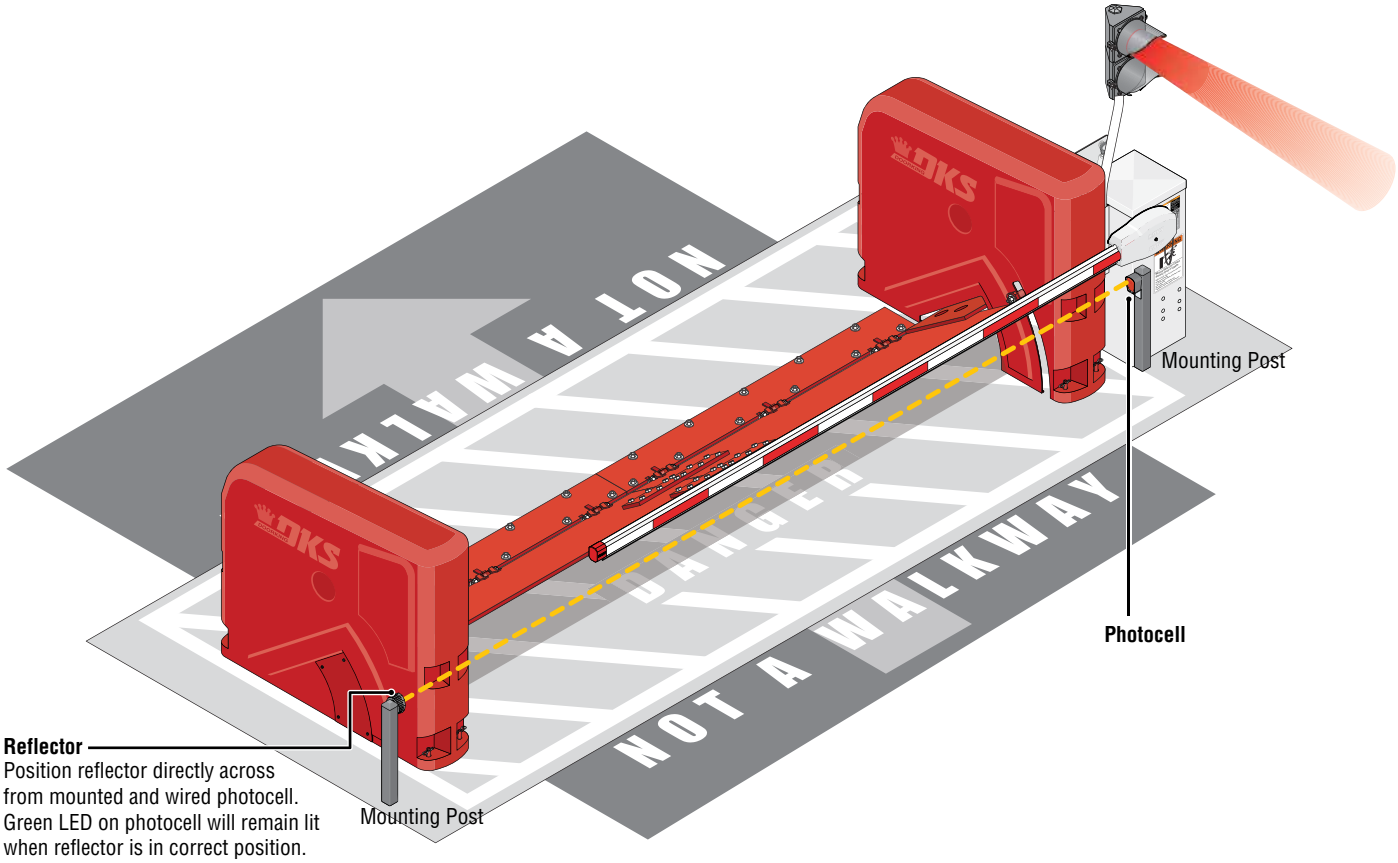
DIP-Switch



SW 2

SW 2, Switch 5 is **ON**. The lowering arm will **instantly reverse** when photocell gets blocked.

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



Reflector
Position reflector directly across from mounted and wired photocell. Green LED on photocell will remain lit when reflector is in correct position. Permanently mount reflector making sure LED remains lit. "Fine Tune" photocell alignment if necessary, see above.

1625-065-B-6-23

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.

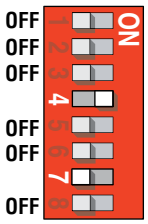
Loop detector wiring shown is for DoorKing model 9409 Dual Channel plug-In loop detector only.
If using other loop detectors refer to their Loop Information Manual for installation instructions, loops/preformed loops and wiring diagrams.
All inputs to the main terminal are NORMALLY OPEN.

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**

Typical DIP-Switch Settings

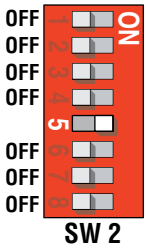
A



SW 1

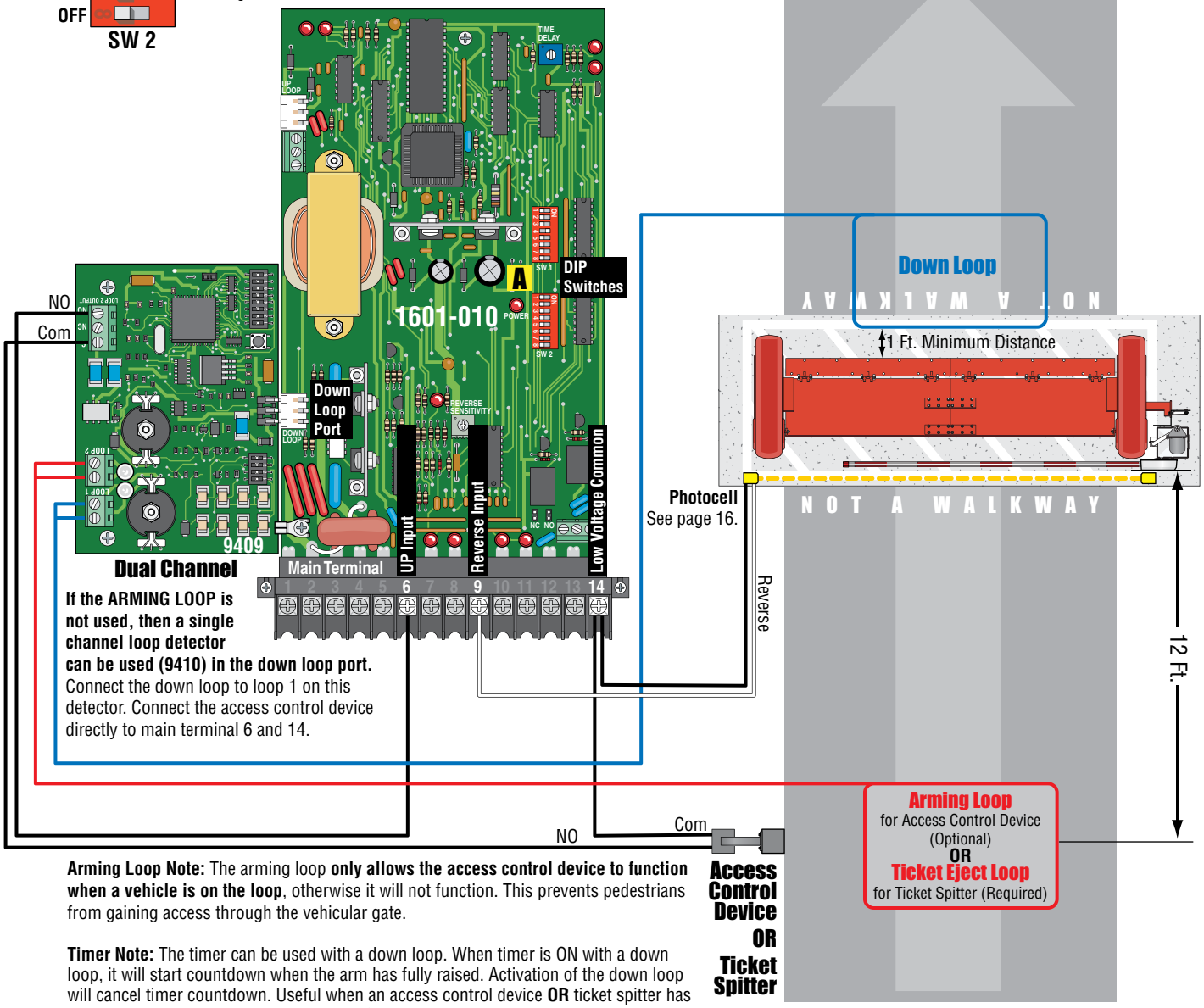
Switch 4 is **ON**.

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



SW 2

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



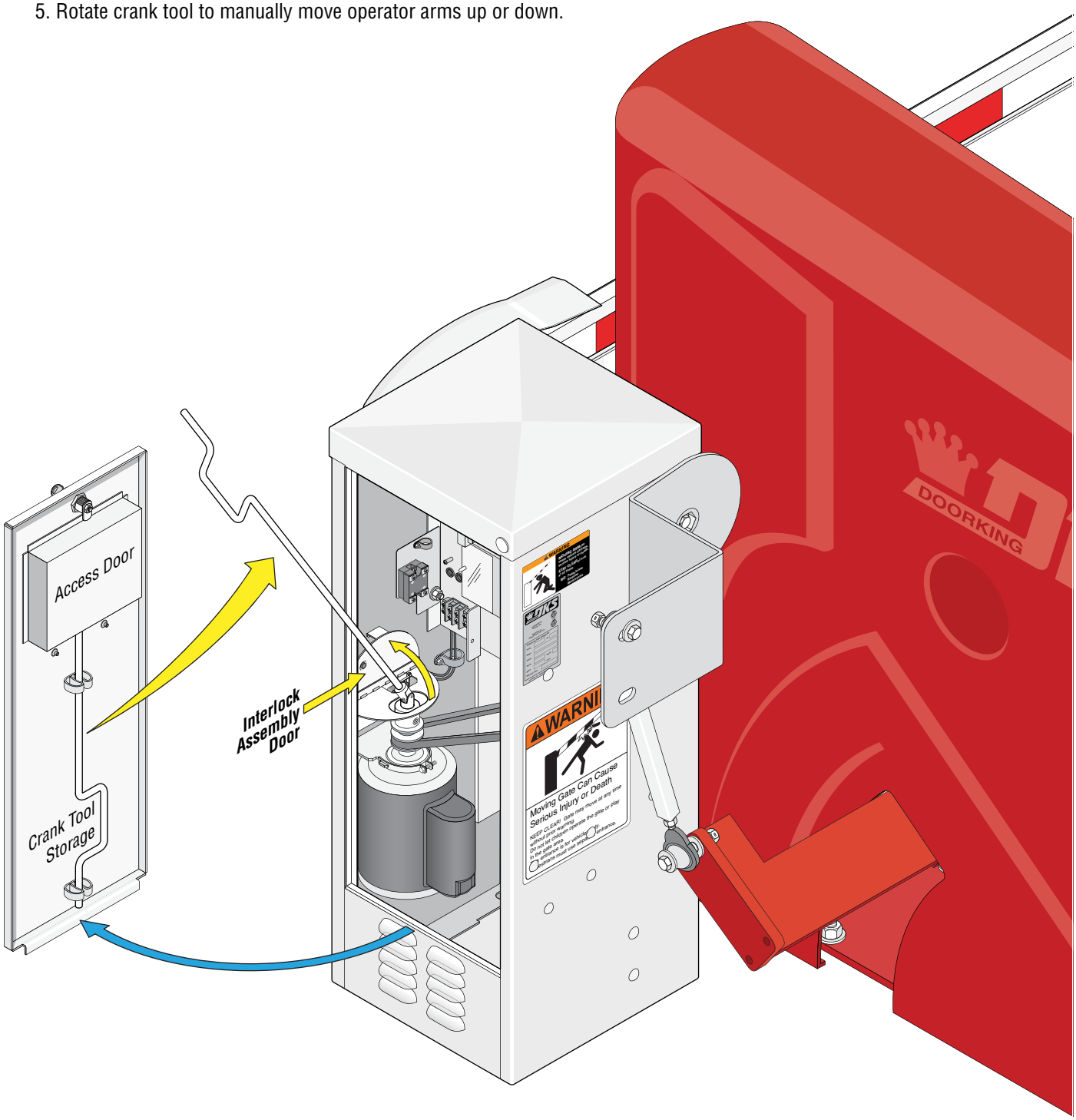
If the ARMING LOOP is not used, then a single channel loop detector can be used (9410) in the down loop port. Connect the down loop to loop 1 on this detector. Connect the access control device directly to main terminal 6 and 14.

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.

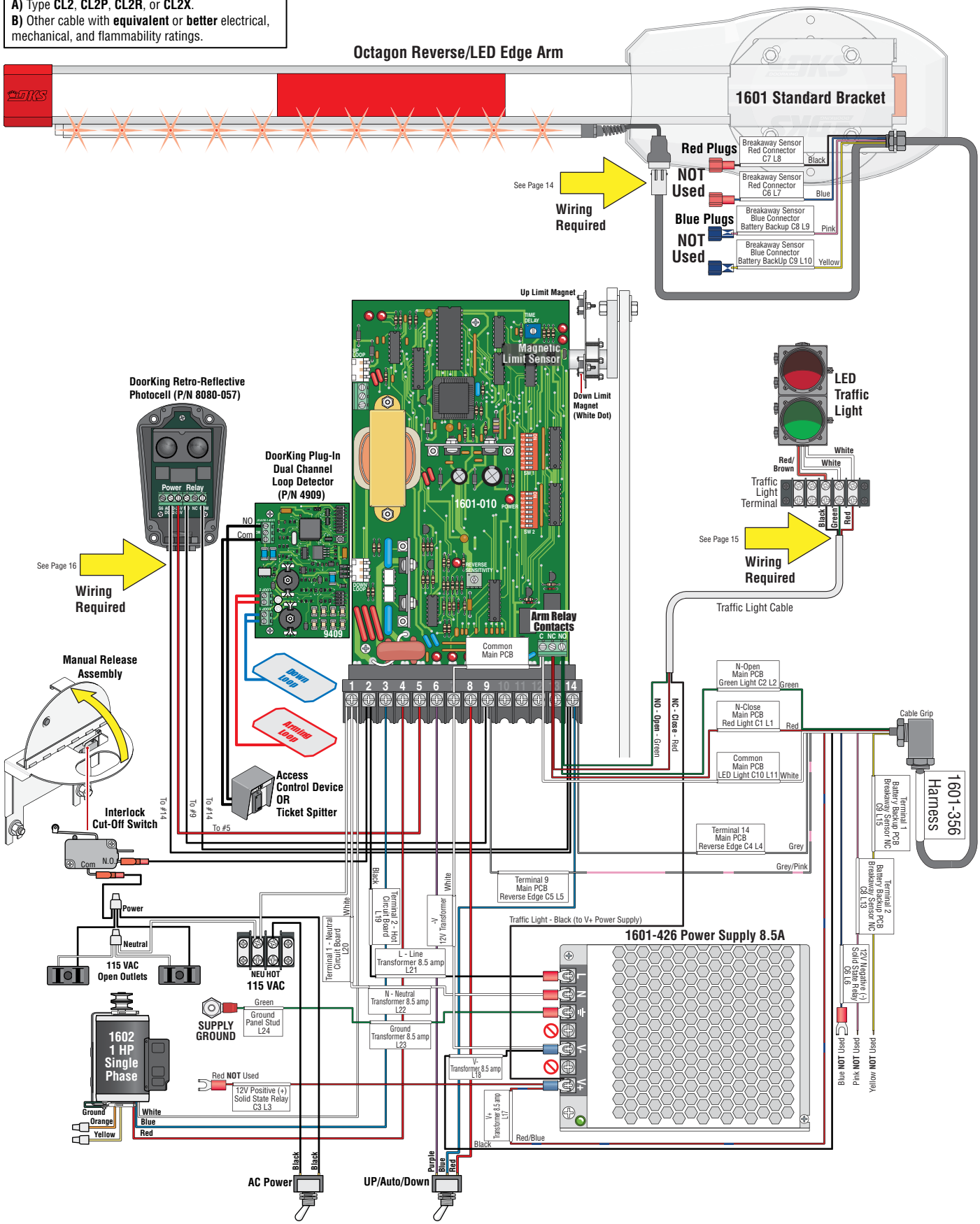
Manual Release Operation

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 arms up or down.



ALL Components Wiring Schematic

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.



Installation Manual

1625 Wedge Barrier

Surface Mount Vehicular Wedge Barrier Accessory

Use this manual for circuit board 1601-010 Revision W or higher.

1625-065-B-6-23

IMPORTANT: Installation of Traffic Light, Photocell and Octagon Arm with LED Edge is REQUIRED.

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** to find a professional installing and servicing dealer in your area.

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 not crash rated. 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 lightduty trucks.

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