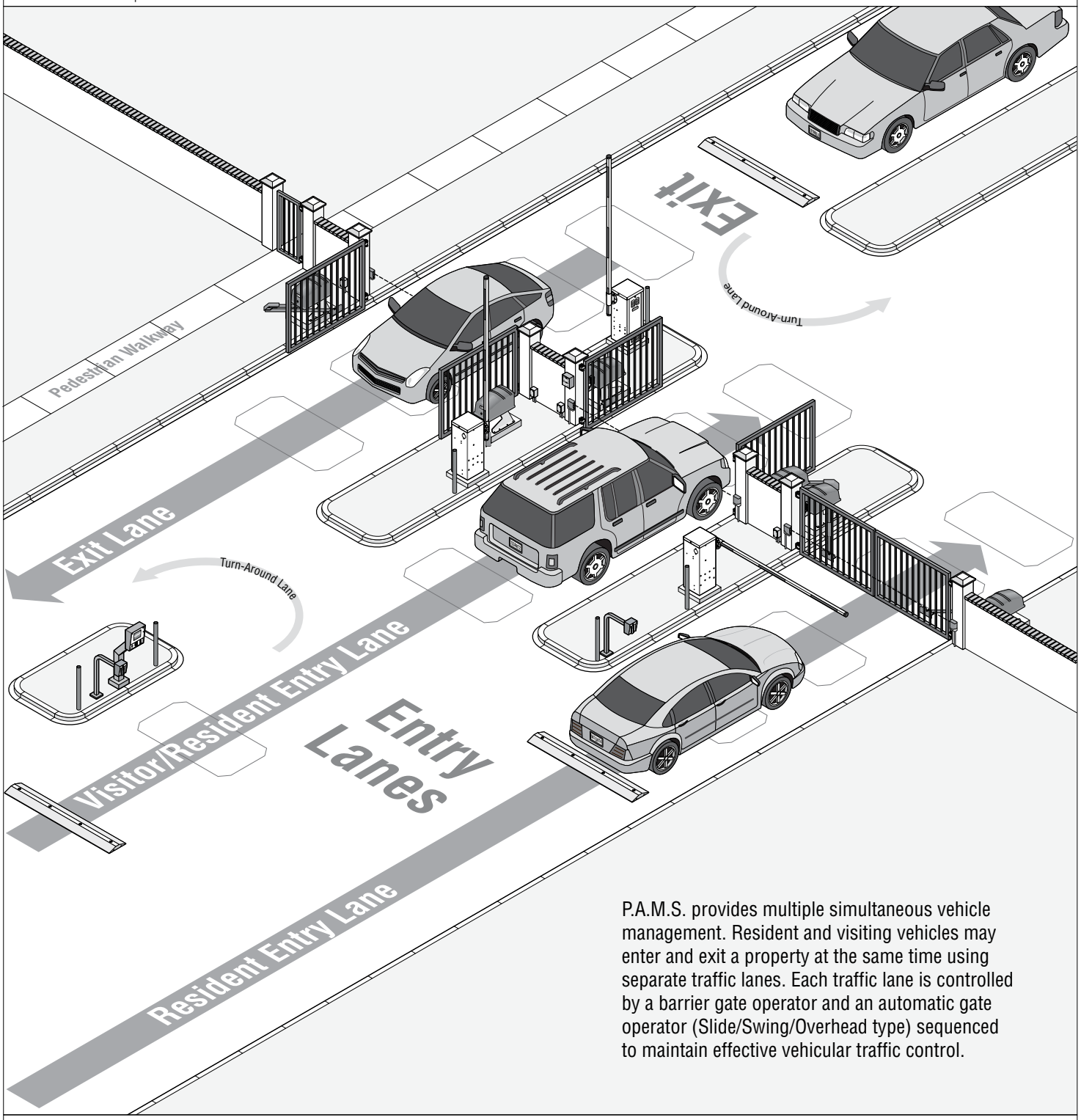
Information Manual

P.A.M.S.

Perimeter Access Management Solutions

DOORKING Systems Access Control Solutions ™

PAMS-T-8-15



P.A.M.S. provides multiple simultaneous vehicle management. Resident and visiting vehicles may enter and exit a property at the same time using separate traffic lanes. Each traffic lane is controlled by a barrier gate operator and an automatic gate operator (Slide/Swing/Overhead type) sequenced to maintain effective vehicular traffic control.

DOORKING®

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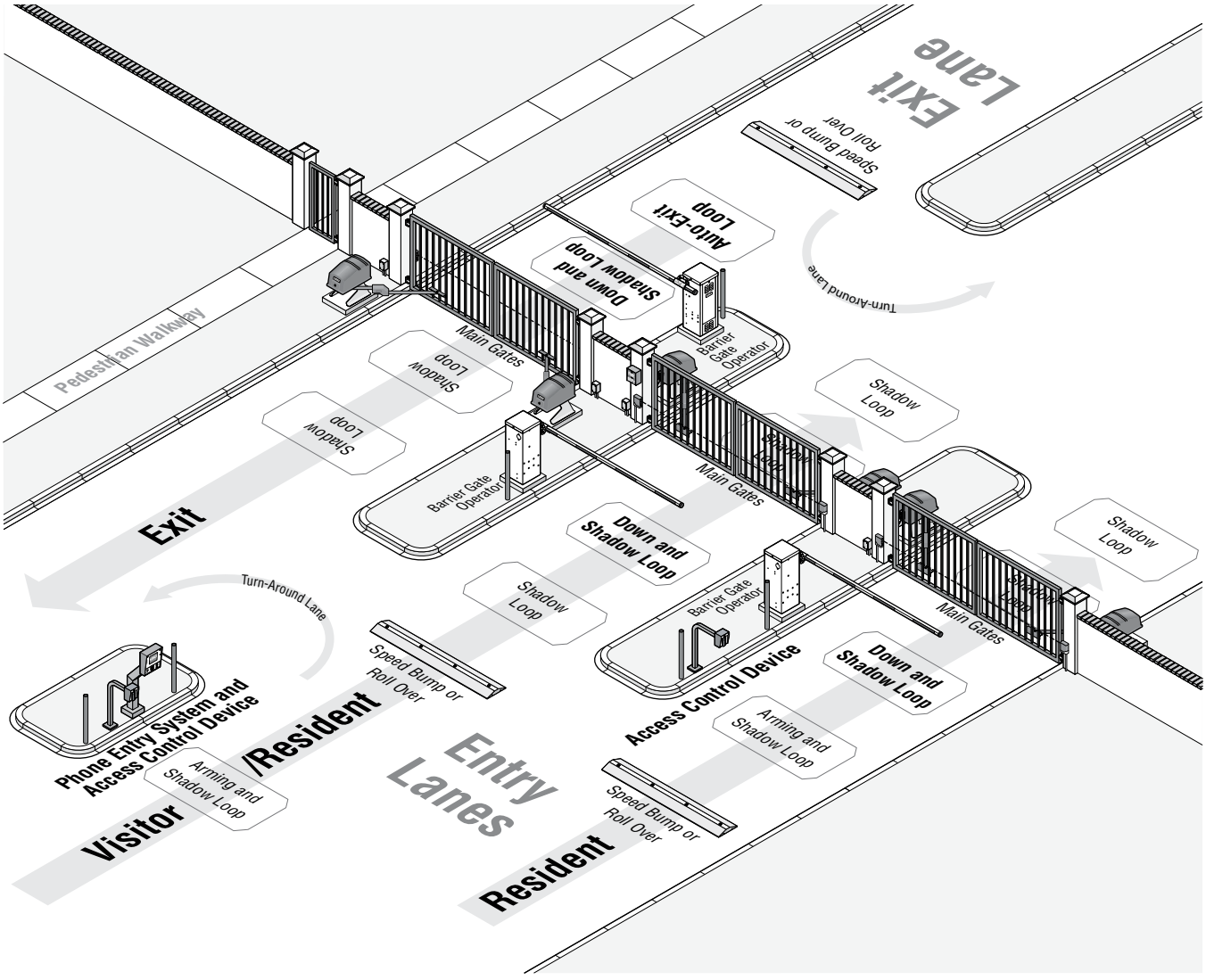
SECTION 1 - P.A.M.S. SYSTEM OVERVIEW

How P.A.M.S. Works

Effective Control for Vehicular Traffic: The Perimeter Access Management Solutions, or P.A.M.S. for short, is based upon gate operators working in a specific operating sequence, to provide close control of vehicles entering and exiting a property **ONE VEHICLE AT A TIME**. Each traffic lane is controlled by a combination of a barrier gate operator and an automatic gate operator(s) (either a slide,swing or overhead type main gates). The sequencing between these gate operators is a principal factor in controlling vehicular access.

When access has been granted for a vehicle, the phone entry system **OR** access control device will activate the automatic gate operators (Slide/Swing/Overhead). The main gates will open but the barrier gate operator arm will remain in the down position. The authorized vehicle, and any additional vehicles behind it will be held in position. Once the main gates reach the full open position, the barrier gate operator arm will raise to the up position. The first vehicle will pass through the gates. As soon as the first vehicle clears the Down Loop (located beneath the barrier gate operator arm), the arm will QUICKLY lower to the down position inhibiting another vehicle from following through (The main gates will remain open). If no other vehicles are present after the initial vehicle has passed through the gate entrance, the main gate's automatic-close timer will count down and close the gates after the programmed hold open time.

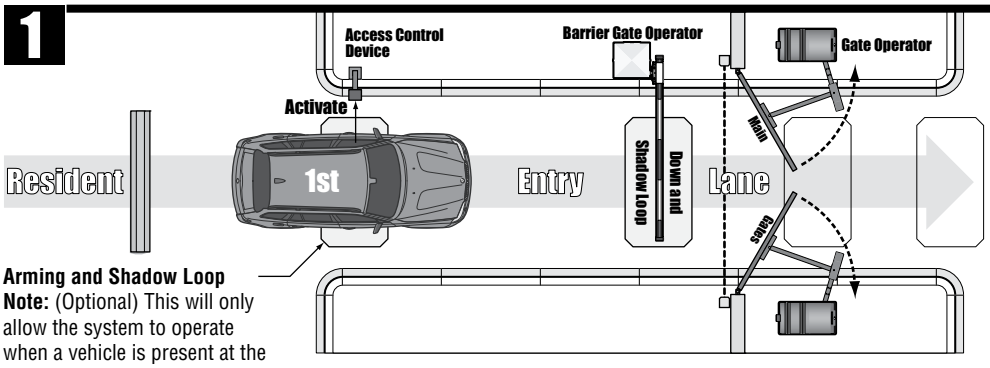
If additional vehicles are lined up at this entrance, the Slide/Swing/Overhead main gates will remain open using underground loop sensors. Additional vehicles may activate the phone entry system or access control device and the barrier gate operator arm will cycle up and down QUICKLY to allow additional vehicles to enter **ONE VEHICLE AT A TIME**. Once the last vehicle has entered, the barrier gate operator arm will lower first then the main gates will start their closing cycle. Activation of the phone entry system or access control device at this point will stop the main gates from closing and reopen them. Once the gates reach the full open position, the barrier gate operator arm will be raised and the previously described process can continue. See the next 2 pages for specific entry and exit sequences.



P.A.M.S. Gate Operators Resident ENTRY Sequence

At the heart of the P.A.M.S. concept is the sequencing of the barrier gate operator and the gate operators. This is a principal factor in the effectiveness of this system. The following is an example of the resident entry operating sequence in a typical P.A.M.S. set up. The start of this sequence begins with the swing (slide or overhead) gates closed and the barrier gate operator arm in the down position…

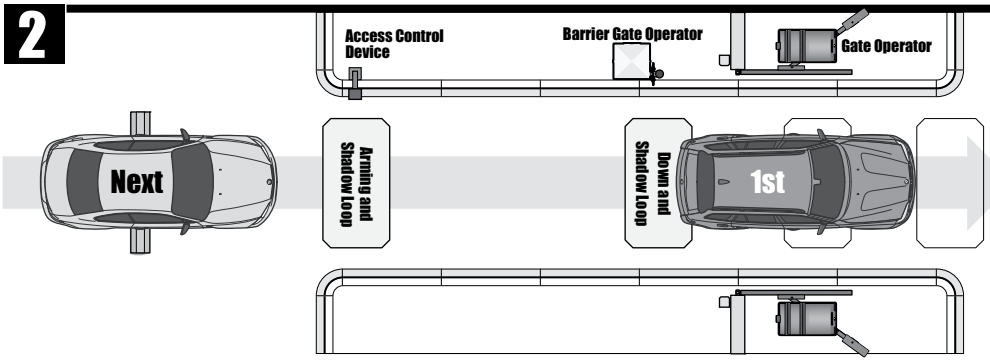
1



The 1st vehicle activates the access control device (Card reader, RF Radio Receiver or Keypad). The main gates respond first and open (Swing, slide, overhead). The barrier gate operator arm remains down.

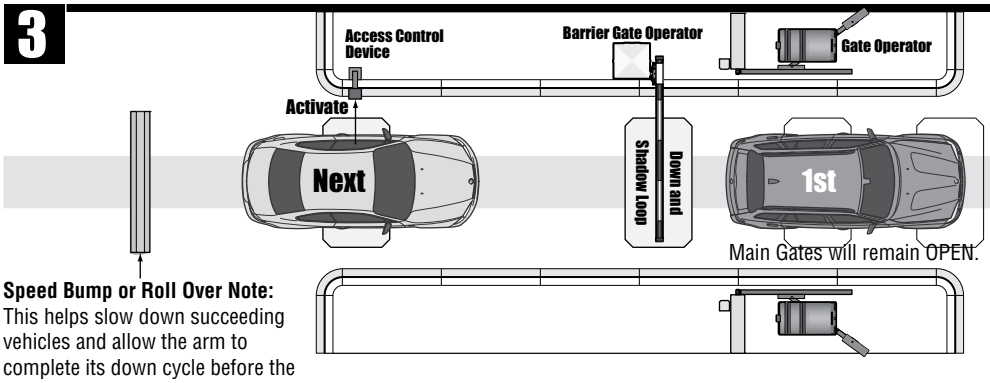
Arming and Shadow Loop Note: (Optional) This will only allow the system to operate when a vehicle is present at the access control device. Recommended when using an RF Radio Receiver.

2



When the main gates reach the full open position, the barrier gate operator arm **quickly raises** for the first vehicle.

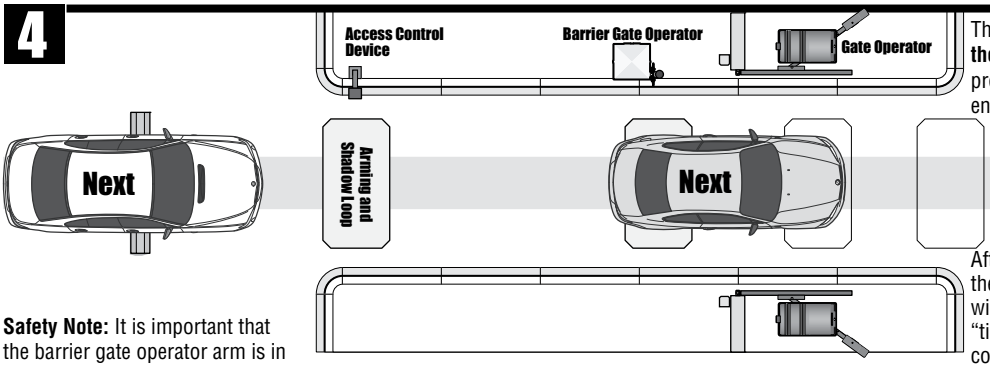
3



After the first vehicle clears the **down loop,** the barrier gate operator arm **quickly lowers** to prevent the next vehicle from unauthorized entry into the property.
While the main gates are still open and the barrier gate operator arm is **down**, the next vehicle can activate the access control device which gives an open command to the barrier gate operator.

Speed Bump or Roll Over Note: This helps slow down succeeding vehicles and allow the arm to complete its down cycle before the next vehicle can get to the access control device.

4



The barrier gate operator arm **quickly raises then lowers** for each vehicle entering, this process can continue for additional vehicles entering the property.

After all authorized vehicles have entered the property, the barrier gate operator arm will **quickly lower** and the main gates will "time out" and start to close. An open command at this point will reverse and open the main gates and the previously described process can continue.

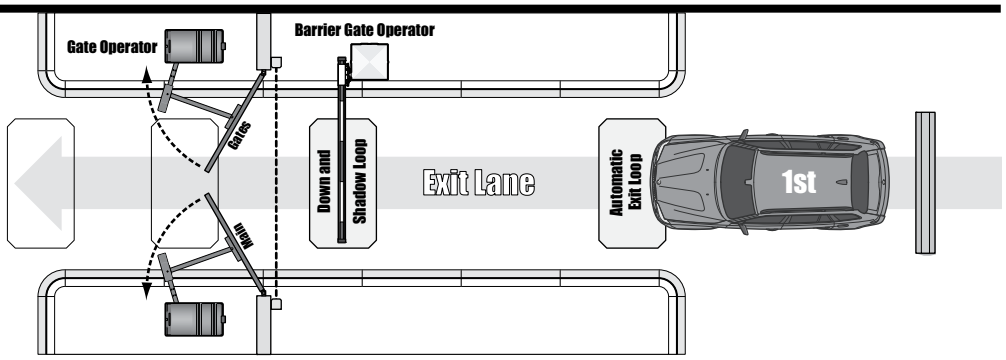
Safety Note: It is important that the barrier gate operator arm is in the **DOWN** position **BEFORE** the main gates start the closing cycle.

P.A.M.S. Gate Operators EXIT Sequence

At the heart of the P.A.M.S. concept is the sequencing of the barrier gate operator and the gate operators. This is a principal factor in the effectiveness of this system. The following is an example of the exit operating sequence in a typical P.A.M.S. set up. The start of this sequence begins with the swing (slide or overhead) gates closed and the barrier gate operator arm in the down position…

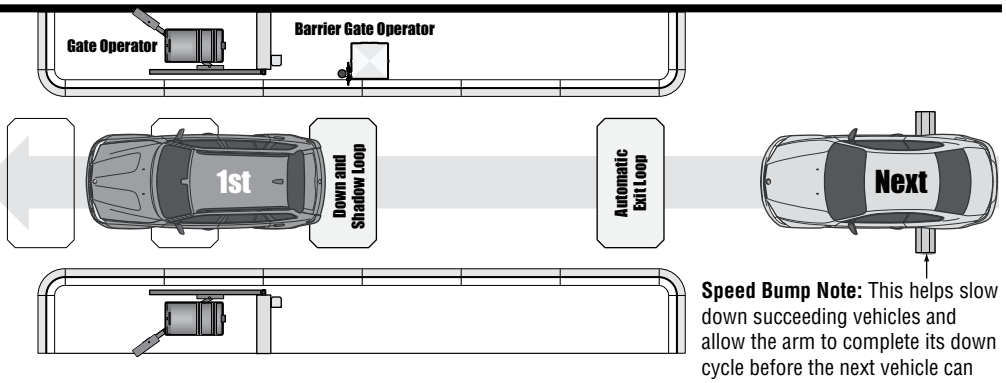
1

The 1st vehicle activates the automatic exit loop. The main gates open first (Swing, slide, overhead). The barrier gate operator arm remains down.



2

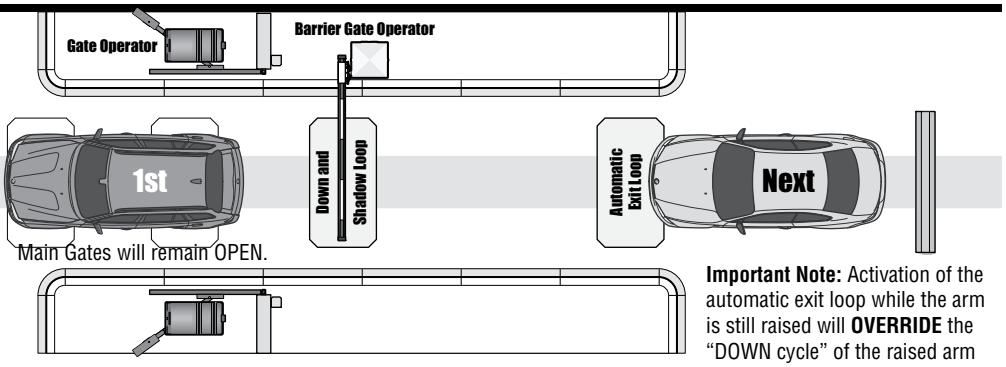
When the main gates reach the full open position, the barrier gate operator arm **quickly raises** for the first vehicle.



Speed Bump Note: This helps slow down succeeding vehicles and allow the arm to complete its down cycle before the next vehicle can get to the automatic exit loop.

3

After the first vehicle clears the **down loop,** the barrier gate operator arm **quickly lowers**. While the main gates are still open and the barrier gate operator arm is **down**, the next vehicle will activate the automatic exit loop. The arm will **quickly raise** for the next vehicle to exit.

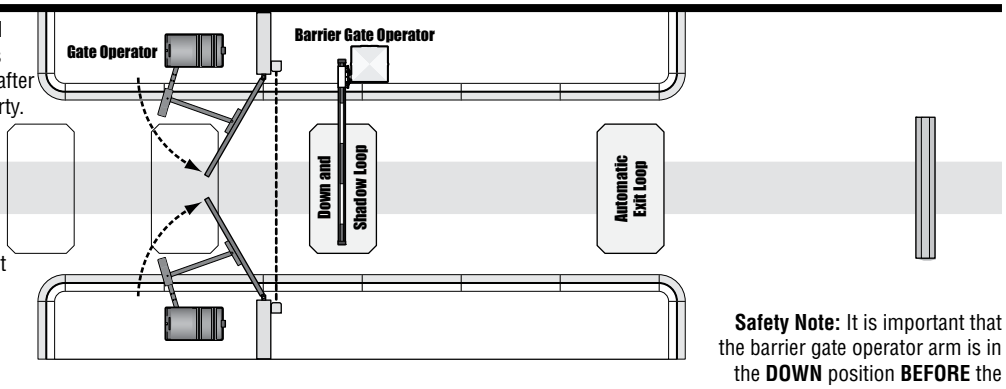


Main Gates will remain OPEN.

Important Note: Activation of the automatic exit loop while the arm is still raised will **OVERRIDE** the "DOWN cycle" of the raised arm and allow the vehicle that activated the automatic exit loop to exit.

4

The barrier gate operator arm will **quickly lower** and the main gates will "time out" and start to close after all vehicles have exited the property.



An activation of the automatic exit loop at this point will reverse and open the main gates and the previously described process can continue.

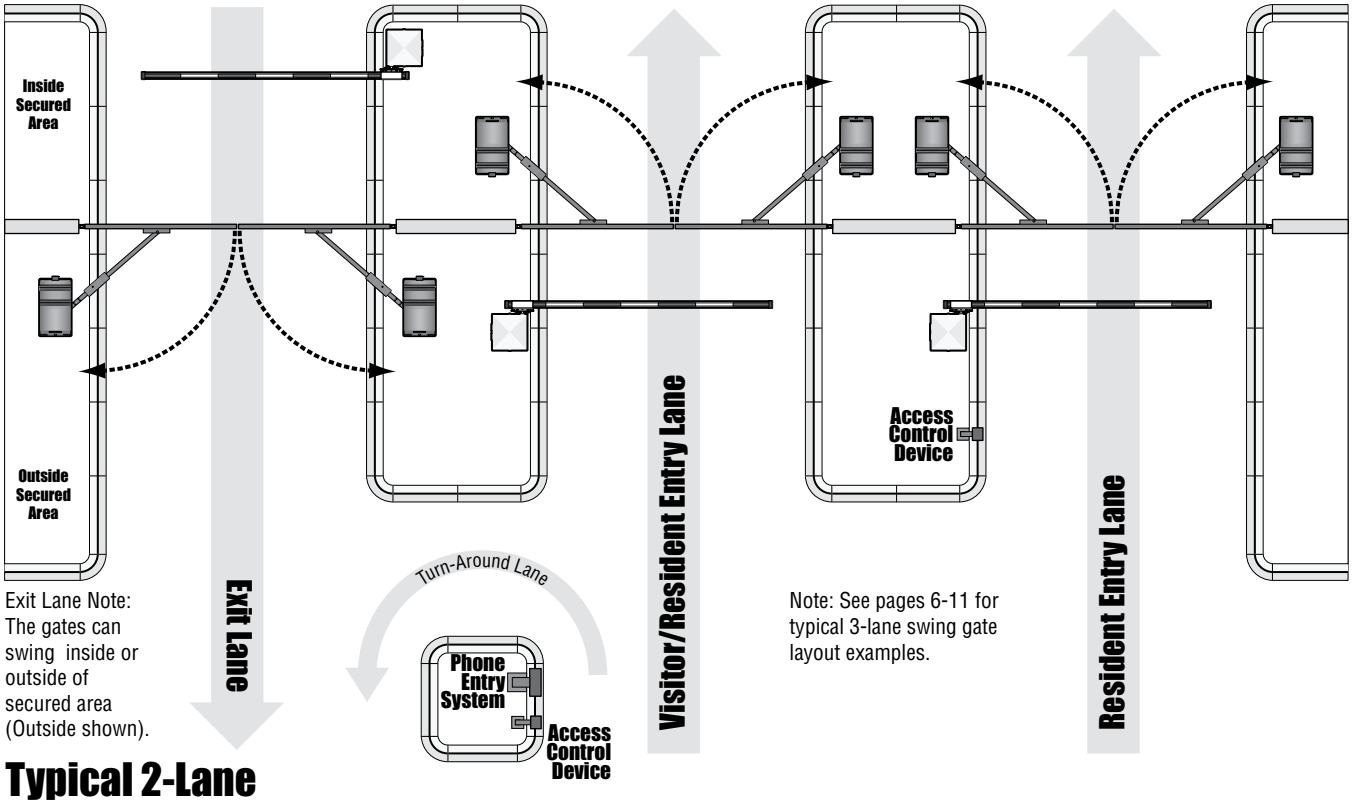
Safety Note: It is important that the barrier gate operator arm is in the **DOWN** position **BEFORE** the main gates start the closing cycle.

P.A.M.S. System Arrangements

For the P.A.M.S. concept to provide the best performance, it is **strongly recommended** to utilize a 3-lane layout. This provides an exit lane, a resident entry lane and a combination visitor/resident entry lane. The separate entry lanes are necessary to ensure smooth movement of vehicles during peak traffic periods. DoorKing recommends utilizing the P.A.M.S. set up only in applications where there is sufficient room for separate visitor and resident entry lanes. In applications where only a single entry lane is provided, with a visitor turnout, or where there is room for residents to pass around visitors, DoorKing recommends **against** utilizing the P.A.M.S. system.

Typical 3-Lane (Recommended)

Different combinations of swing/slide/overhead gate operators can be used for each lane. For example, a slide gate operator can be substituted in the exit lane instead of the swing gates that are shown if that would work better for a specific installation. Slide gate operators typically open slower than swing gates which will reduce the traffic flow.

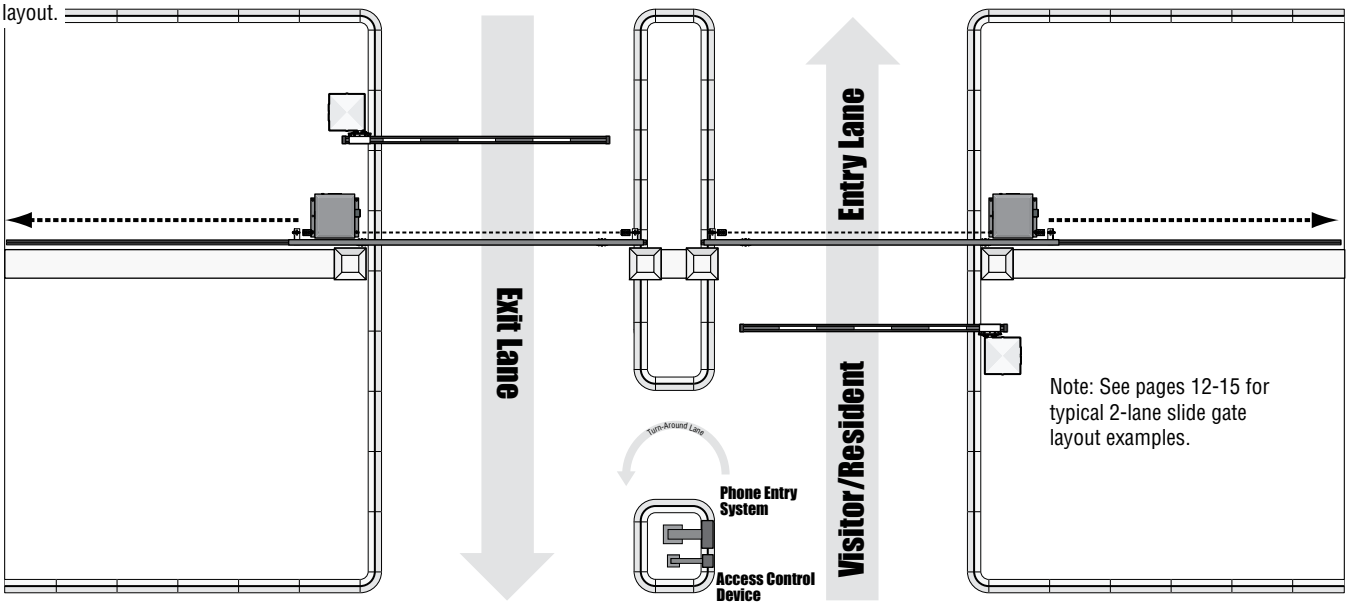


Exit Lane Note: The gates can swing inside or outside of secured area (Outside shown).

Note: See pages 6-11 for typical 3-lane swing gate layout examples.

Typical 2-Lane

Different combinations of swing/slide/overhead gate operators can be used for each lane. For example, both lanes can use either swing gates or overhead gates instead of the slide gates that are shown if that would work better for a specific installation. The 2-lane layout will not allow traffic to flow as quickly as a 3-lane layout.



Note: See pages 12-15 for typical 2-lane slide gate layout examples.

SECTION 2 - TYPICAL SYSTEM LAYOUTS

Critical Factors for a 3-Lane Layout

There is critical equipment and lane layout design specifications that should be adhered to in order for P.A.M.S. to provide optimum performance. These include:

Equipment Placement: Follow the guidelines provided in the lane details pertaining to distances between the main gates and the barrier gate operator, and between the barrier gate operator, access control device (Phone entry system, card reader or keypad) and Speed Bump or Roll Over on the next 4 pages.

Arming and Shadow Loop: (Optional) Does not allow the phone entry system or access control device to initiating the gate cycle sequence unless a vehicle is present at the loop. Recommended when utilizing an RF Receiver (Remote control) for entry. Provides shadow loop function when the main gates are open.

Down and Shadow Loop: Provides down command for the barrier gate operator and provides shadow loop function when the main gates are open.

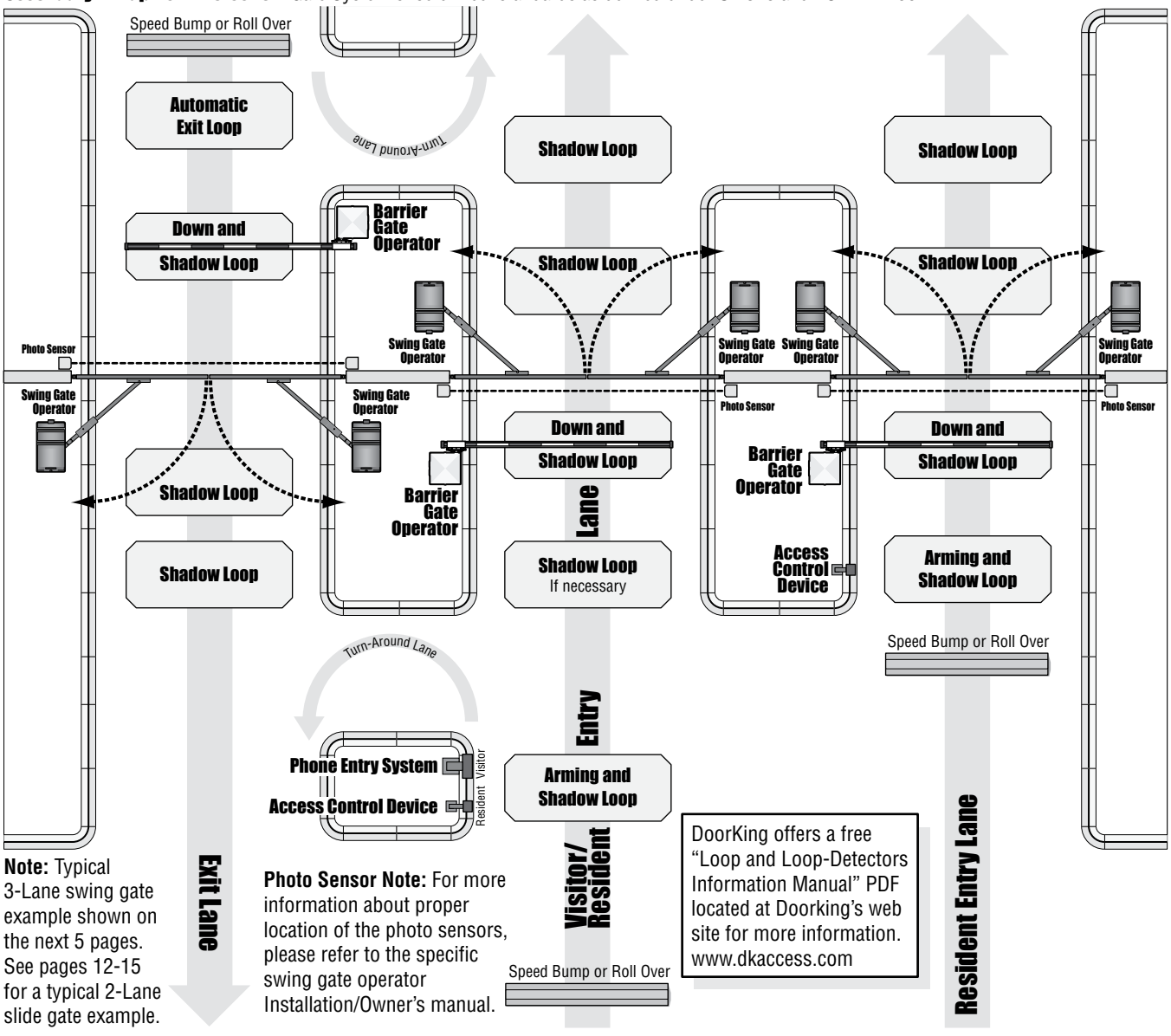
Automatic Exit Loop: On the exit lane, required to activate the main gates open cycle first, then opens the barrier gate operator arm.

Shadow Loop on the Visitor/Resident Lane: Make sure complete coverage is provided between the phone entry system and the barrier gate operator to keep the system open and operational for slow vehicles.

Speed Bump or Roll Over: Positioned behind the vehicle at the access control device. Helps create a separation between vehicles which allows the barrier gate operator arm to lower between vehicles. Helps prevent unauthorized tailgating vehicles from entering.

Gate Operator Settings: Follow the guidelines for gate operator and barrier gate operator settings, including Auto-Close Timer settings.

Secondary Entrapment Protection: Gate System should meet standards as defined under UL 325 and ASTM F2200.

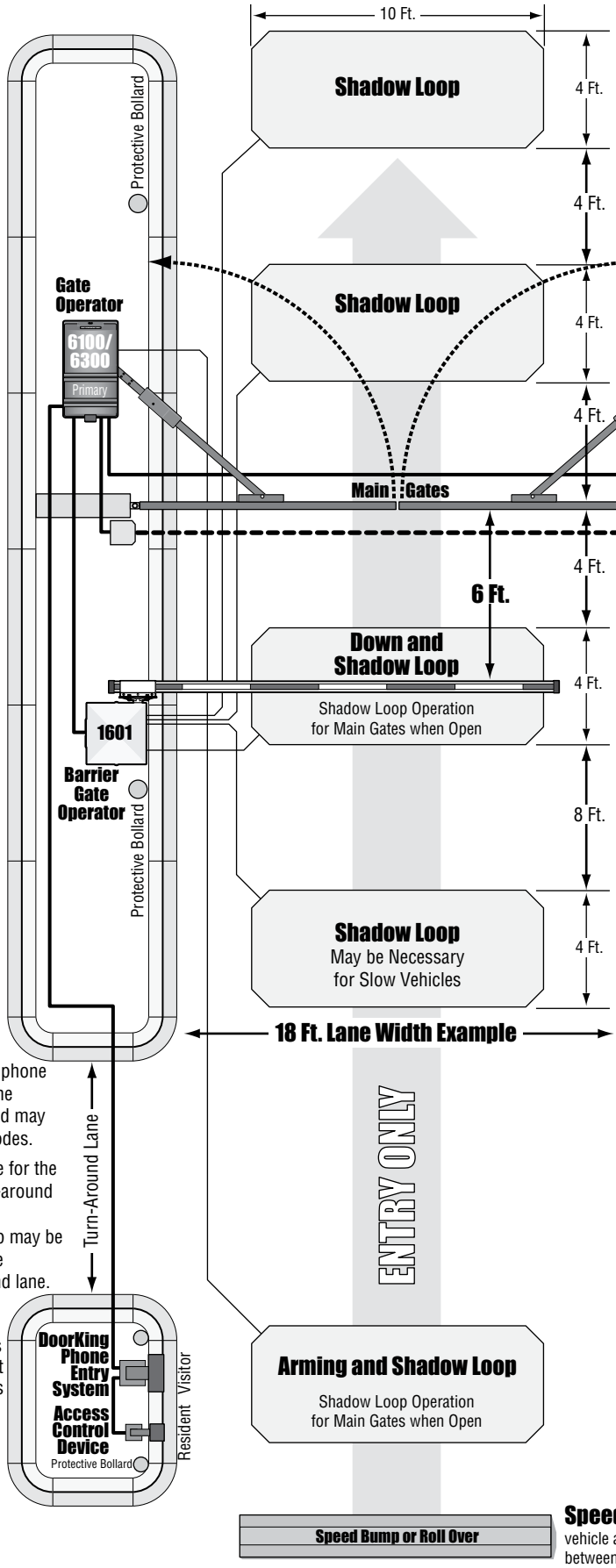


Note: Typical 3-Lane swing gate example shown on the next 5 pages. See pages 12-15 for a typical 2-Lane slide gate example.

Photo Sensor Note: For more information about proper location of the photo sensors, please refer to the specific swing gate operator Installation/Owner's manual.

DoorKing offers a free "Loop and Loop-Detectors Information Manual" PDF located at Doorking's web site for more information. www.dkaccess.com

Swing Gate - Visitor/Resident Lane Layout



2-Lane Arrangement Note: If you are using this configuration as the **ONLY** entry lane for a 2-Lane Arrangement, it will slow down entering traffic and is **NOT** recommended for high traffic areas, but may be necessary because of space limitations.

Gate Operators

Note: For more information about proper location of the gate operators, please refer to the specific swing gate operator Installation/Owner's manual.

Photo Sensors:

Mounted 5" or less from the gate. Typically mounted 21" high but no more than 27.5" high.

Shadow Loop between Barrier Gate Operator and Phone Entry System: (Optional)

Make sure coverage is provided between the phone entry system and the barrier gate operator to keep the main gates open and operational for slower vehicles if there is a significant distance between the two devices.

Loop Operation:

All loops function as shadow loops for the main gates. Activation from any loop will **HOLD** the main gates in the **Full Open Position.** However, they **WILL NOT** stop or reverse the main gates once they start to close. The barrier gate operator **ONLY** uses the down loop to control lowering the arm.

Turn-Around Lane:

The distance between the phone entry system island and the operator lane divider island may be affected by local fire codes.

Provide sufficient distance for the turning radius of the turn-around lane.

An additional shadow loop may be required depending on the distance of the turn-around lane.

Gate Safety:

ALL loops in the P.A.M.S. system operate as shadow loops, **NOT** reverse loops. The barrier gate operator arm provides the safety function for the main gates. The system **MUST** be set to allow the barrier gate operator arm to lower **BEFORE** the main gates start to close.

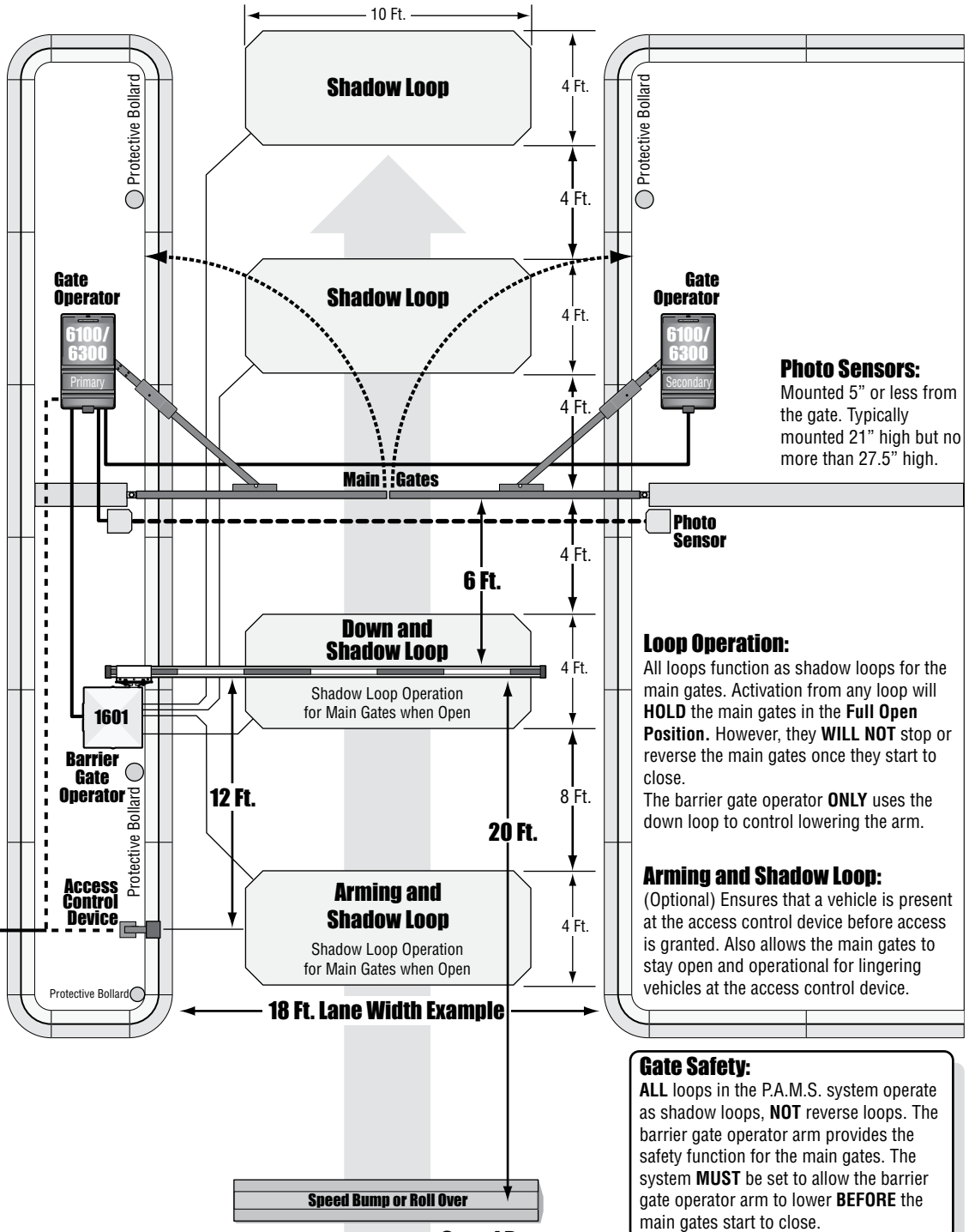
Arming and Shadow Loop: (Optional)

Ensures that a vehicle is **present** at the access control devices before access is granted. Also allows the main gates to stay open and operational for lingering vehicles at the access control devices.

1. Drawing is NOT to scale.
2. Distances from gate are ideal for PAMS applications.
3. Consult local authorities and applicable regulations for lane dimensions and emergency access requirements.
4. Loop sizes and placement are determined by the lane width and the type of vehicle to be detected.

Speed Bump or Roll Over: Positioned behind the vehicle at the access control device. Helps create a separation between vehicles which allows the barrier gate operator arm to lower between vehicles. Helps prevent unauthorized tailgating vehicles from entering.

Swing Gate - Resident Lane Layout



Gate Operators

Note: For more information about proper location of the gate operators, please refer to the specific swing gate operator Installation/Owner's manual.

Photo Sensors:

Mounted 5" or less from the gate. Typically mounted 21" high but no more than 27.5" high.

Loop Operation:

All loops function as shadow loops for the main gates. Activation from any loop will **HOLD** the main gates in the **Full Open Position.** However, they **WILL NOT** stop or reverse the main gates once they start to close.

The barrier gate operator **ONLY** uses the down loop to control lowering the arm.

Arming and Shadow Loop:

(Optional) Ensures that a vehicle is present at the access control device before access is granted. Also allows the main gates to stay open and operational for lingering vehicles at the access control device.

The access control device typically runs to the phone entry system in the visitor/resident entry lane but can run to the gate operator.

Gate Safety:

ALL loops in the P.A.M.S. system operate as shadow loops, **NOT** reverse loops. The barrier gate operator arm provides the safety function for the main gates. The system **MUST** be set to allow the barrier gate operator arm to lower **BEFORE** the main gates start to close.

Speed Bump or Roll Over: This helps slow down succeeding vehicles to allow the arm to complete its down cycle. Helps keep unauthorized tailgating vehicles from entering.

1. Drawing is NOT to scale.
2. Distances from gate are ideal for PAMS applications.
3. Consult local authorities and applicable regulations for lane dimensions and emergency access requirements.
4. Loop sizes and placement are determined by the lane width and the type of vehicle to be detected.

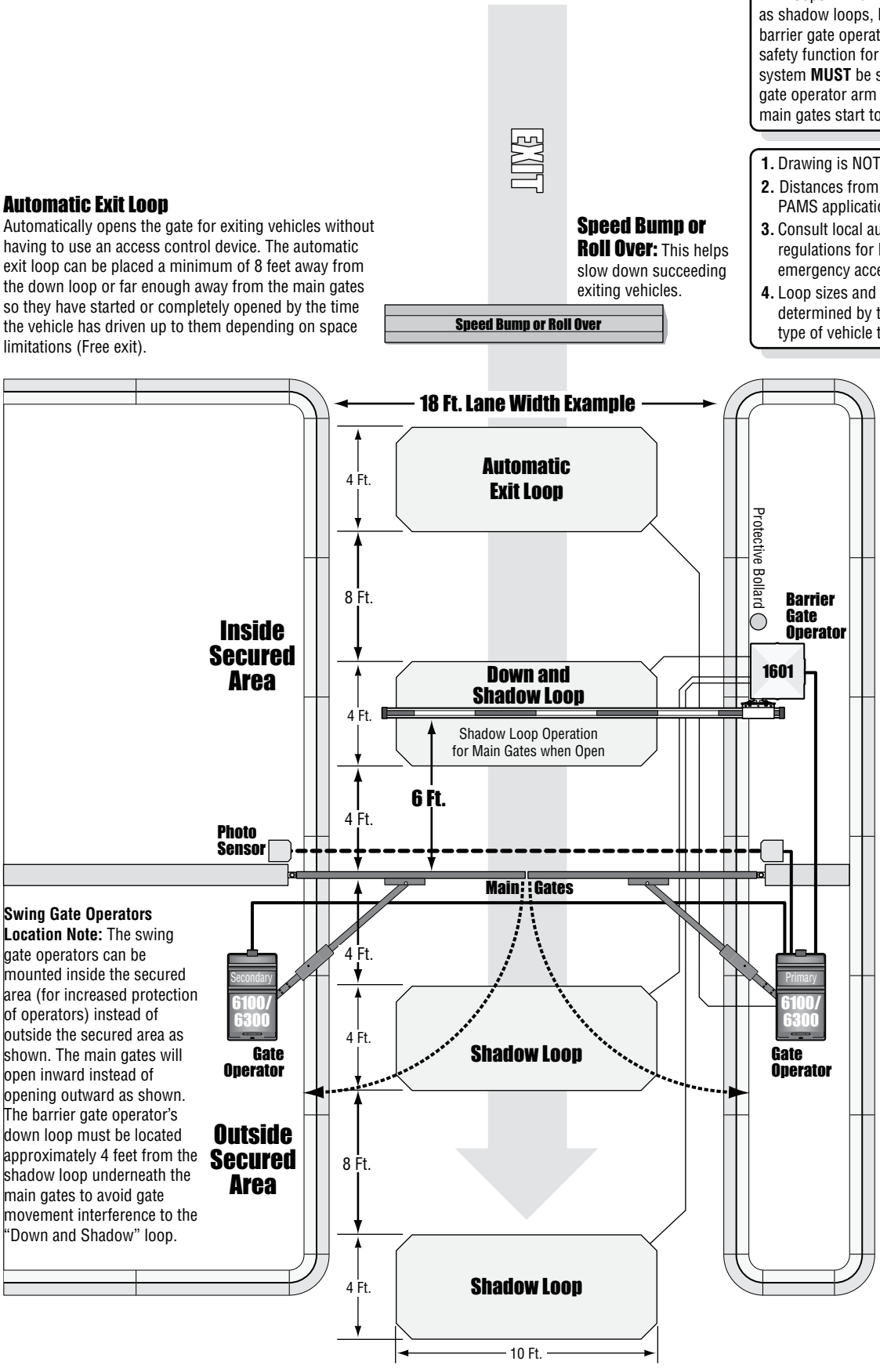
Swing Gate - Exit Lane Layout

Gate Safety:
ALL loops in the P.A.M.S. system operate as shadow loops, **NOT** reverse loops. The barrier gate operator arm provides the safety function for the main gates. The system **MUST** be set to allow the barrier gate operator arm to lower **BEFORE** the main gates start to close.

1. Drawing is NOT to scale.
2. Distances from gate are ideal for PAMS applications.
3. Consult local authorities and applicable regulations for lane dimensions and emergency access requirements.
4. Loop sizes and placement are determined by the lane width and the type of vehicle to be detected.

Automatic Exit Loop
Automatically opens the gate for exiting vehicles without having to use an access control device. The automatic exit loop can be placed a minimum of 8 feet away from the down loop or far enough away from the main gates so they have started or completely opened by the time the vehicle has driven up to them depending on space limitations (Free exit).

Speed Bump or Roll Over: This helps slow down succeeding exiting vehicles.



Swing Gate Operators Location Note: The swing gate operators can be mounted inside the secured area (for increased protection of operators) instead of outside the secured area as shown. The main gates will open inward instead of opening outward as shown. The barrier gate operator's down loop must be located approximately 4 feet from the shadow loop underneath the main gates to avoid gate movement interference to the "Down and Shadow" loop.

Loop Operation:
Shadow and Down loops function as shadow loops for the main gates. Activation from these loops will **HOLD** the main gates in the **Full Open Position.** However, they **WILL NOT** stop or reverse the main gates once they start to close. The automatic exit loop **WILL** reverse the main gates once they start to close.
The barrier gate operator **ONLY** uses the down loop to control lowering the arm.

Photo Sensors:
Mounted 5" or less from the gate. Typically mounted 21" high but no more than 27.5" high.

Gate Operators Note: For more information about proper location of the gate operators, please refer to the specific swing gate operator Installation/Owner's manual.

Swing Gate with 3-Lanes - Typical Equipment List

Please note that there are many options available when configuring the P.A.M.S. Gate System. These options include: Battery Back-up for All Gate Operators, Gate Operator Mounting Kits, Barrier Gate Operator Arm Styles, Access Control Device Options.

Equipment	Part Number	Quantity	
Gates:			
Bi-parting Vehicular Iron Swing Gates	(by outside contractor)	3 sets	
DoorKing Sealed Bearing Gate Hinges	1200-019	12	
Gate Operators:			
DoorKing Commercial 6100 Swing Gate Operator, ½ hp Primary	6100-080	3	6100
DoorKing Commercial 6100 Swing Gate Operator, ½ hp Secondary	6100-081	3	
DoorKing 6100 Swing Gate Accessory Kit, Pad Mount (Post mount kit also available P/N 2600-674)	2600-691	6	
DoorKing Commercial 6300 Swing Gate Operator, 1 hp Primary	6300-084	3	6300
DoorKing Commercial 6300 Swing Gate Operator, 1 hp Secondary	6300-085	3	
DoorKing 6300 Swing Gate Accessory Kit, Pad Mount (Post mount kit also available P/N 2600-263)	2600-264	6	
DoorKing Commercial 6500 Swing Gate Operator, ½ hp Primary	6500-080	3	6500
DoorKing Commercial 6500 Swing Gate Operator, ½ hp Secondary	6500-081	3	
DoorKing Barrier Gate Operator	1601-080	3	
DoorKing Aluminum Arm Hardware Kit	1601-242	3	
DoorKing Aluminum Arm - 14 ft.	1601-216	3	
Arm Note: DoorKing also manufactures Wood and PVC arms for the 1601 Barrier Gate Operator			
DoorKing Interconnection Cable - 30 Ft. - P/N 2600-755, 40 Ft. - P/N 2600-756, 50 Ft. - P/N 2600-757			
Interconnection Cable Note: Cable between primary and secondary gate operator for each lane.			
Loops:			
DoorKing Digital Plug-In Loop Detector 2-Channel (Down Loops and Shadow Loops)	9409-010	3	
DoorKing Digital External Loop Detector 2-Relays (and Wire Harness P/N 9402-061)	9402-047	3	
External Detector Note: Arming/Shadow Loop at Phone Entry System and Access Control Device			
DoorKing Underground Loop Wire (XLPE) Black	9402-077	1000'	
DoorKing Underground Loop Wire (XLPE) Blue	9402-079	1000'	
Safety:			
DoorKing Infrared Thru-Beam Photo Sensors	8080-031	3	
Photo Sensor Options: Photo Reflective type photo sensor available (P/N 8080-011). Standard Photo Sensor layout provides separate Photo Sensors for Opening and Closing cycles. A single photo sensor may be used if placed close to operator (Shown in layout illustrations throughout manual).			
DoorKing Speed Bump - Mount on a concrete surface Only	1610-150	3	
Access Control Devices:			
DoorKing PC Programmable Phone Entry System, including 3000 memory and Remote Account Manager Software	1835-080	1	
Phone Entry Note: DoorKing has various phone entry systems available for any specific needs.			
DoorKing Architectural series Gooseneck Mounting Post (For Phone Entry System)	1200-038	1	
DoorKing Proximity Card Reader in lighted housing (For Visitor/Resident and Resident Entry Lanes)	1815-230	2 when used	
DoorKing Prox Cards (Typically 2 per household)	1508-110	qty varies	
Card Reader Note: DoorKing has various card reader models available, including touch plate readers and proximity readers.			
DoorKing Gooseneck Mounting Post (For Card Readers or Digital Keypads)	1200-046	2	
DoorKing Wiegand RF Receiver (For Visitor/Resident and Resident Entry Lanes)	8056-080	2 when used	
DoorKing MicroPLUS RF Transmitters (Typically 2 per household)	8069-080	qty varies	
DoorKing Weigand Digital Keypad in lighted housing (For Visitor/Resident and Resident Entry Lanes)	1815-051	2 when used	
Keypad Note: DoorKing has various stand alone digital keypad models available which may be substituted for the card reader or RF receiver.			
Emergency Access Devices:			
Emergency Access Devices as required by local codes.			
Fire Department Lock Box with Knox KS-2 Key Switch	1401-080	as needed	

Pedestrian Entrance Note: There MUST be a SEPARATE entrance for pedestrians installed AWAY from the vehicular gates.

Critical Factors for a 2-Lane Layout

There is critical equipment and lane layout design specifications that should be adhered to in order for P.A.M.S. to provide optimum performance. These include:

Equipment Placement: Follow the guidelines provided in the lane details pertaining to distances between the main gate and the barrier gate operator, and between the barrier gate operator, access control device (Phone entry system, card reader or keypad) and Speed Bump or Roll Over on the next 2 pages.

Arming and Shadow Loop: (Optional) Does not allow the phone entry system or access control device to initiating the gate cycle sequence unless a vehicle is present at the loop. Recommended when utilizing an RF Receiver (Remote control) for entry. Provides shadow loop function when the main gates are open.

Down and Shadow Loop: Provides down command for the barrier gate operator and provides shadow loop function when the main gates are open.

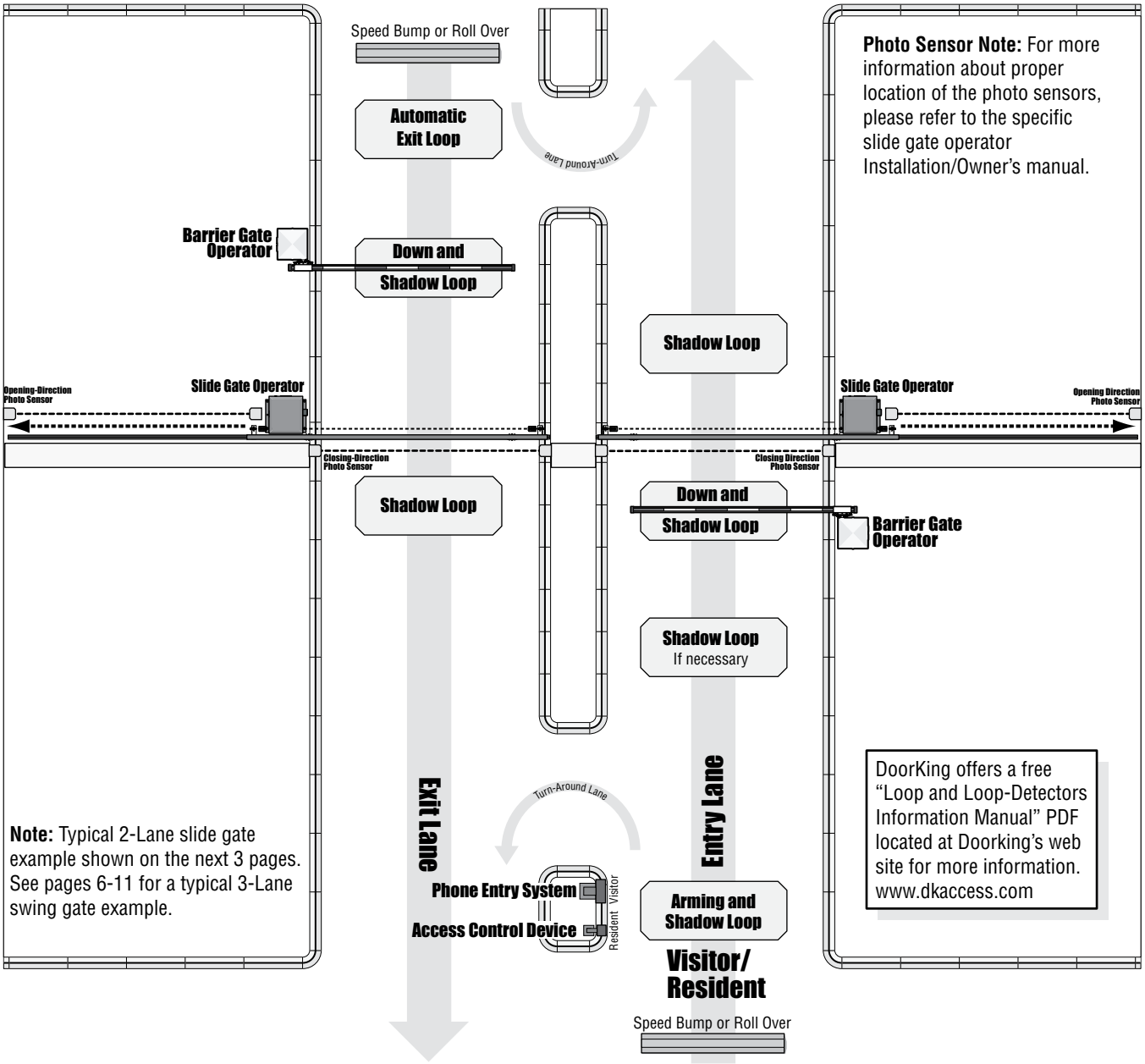
Automatic Exit Loop: On the exit lane, required to activate the main gates open cycle first, then opens the barrier gate operator arm.

Shadow Loop on the Visitor/Resident Lane: Make sure complete coverage is provided between the phone entry system and the barrier gate operator to keep the system open and operational for slow vehicles.

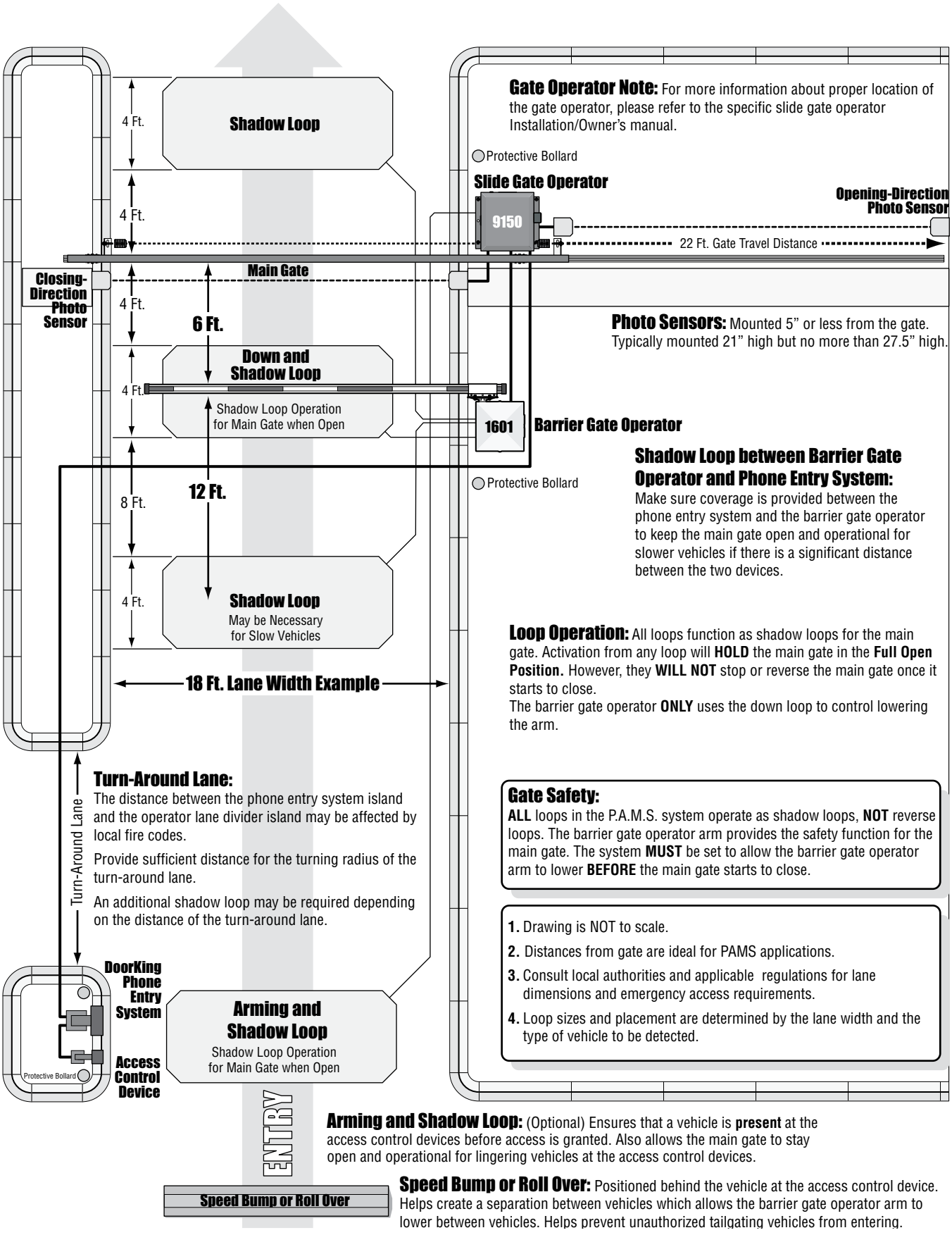
Speed Bump or Roll Over: Positioned behind the vehicle at the access control device. Helps create a separation between vehicles which allows the barrier gate operator arm to lower between vehicles. Helps prevent unauthorized tailgating vehicles from entering.

Gate Operator Settings: Follow the guidelines for gate operator and barrier gate operator settings, including Auto-Close Timer settings.

Secondary Entrapment Protection: Gate System should meet standards as defined under UL 325 and ASTM F2200.



Slide Gate - Visitor/Resident Lane Layout



Gate Operator Note: For more information about proper location of the gate operator, please refer to the specific slide gate operator Installation/Owner's manual.

Photo Sensors: Mounted 5" or less from the gate. Typically mounted 21" high but no more than 27.5" high.

Shadow Loop between Barrier Gate Operator and Phone Entry System:
Make sure coverage is provided between the phone entry system and the barrier gate operator to keep the main gate open and operational for slower vehicles if there is a significant distance between the two devices.

Loop Operation: All loops function as shadow loops for the main gate. Activation from any loop will **HOLD** the main gate in the **Full Open Position.** However, they **WILL NOT** stop or reverse the main gate once it starts to close.
The barrier gate operator **ONLY** uses the down loop to control lowering the arm.

Turn-Around Lane:
The distance between the phone entry system island and the operator lane divider island may be affected by local fire codes.

Provide sufficient distance for the turning radius of the turn-around lane.

An additional shadow loop may be required depending on the distance of the turn-around lane.

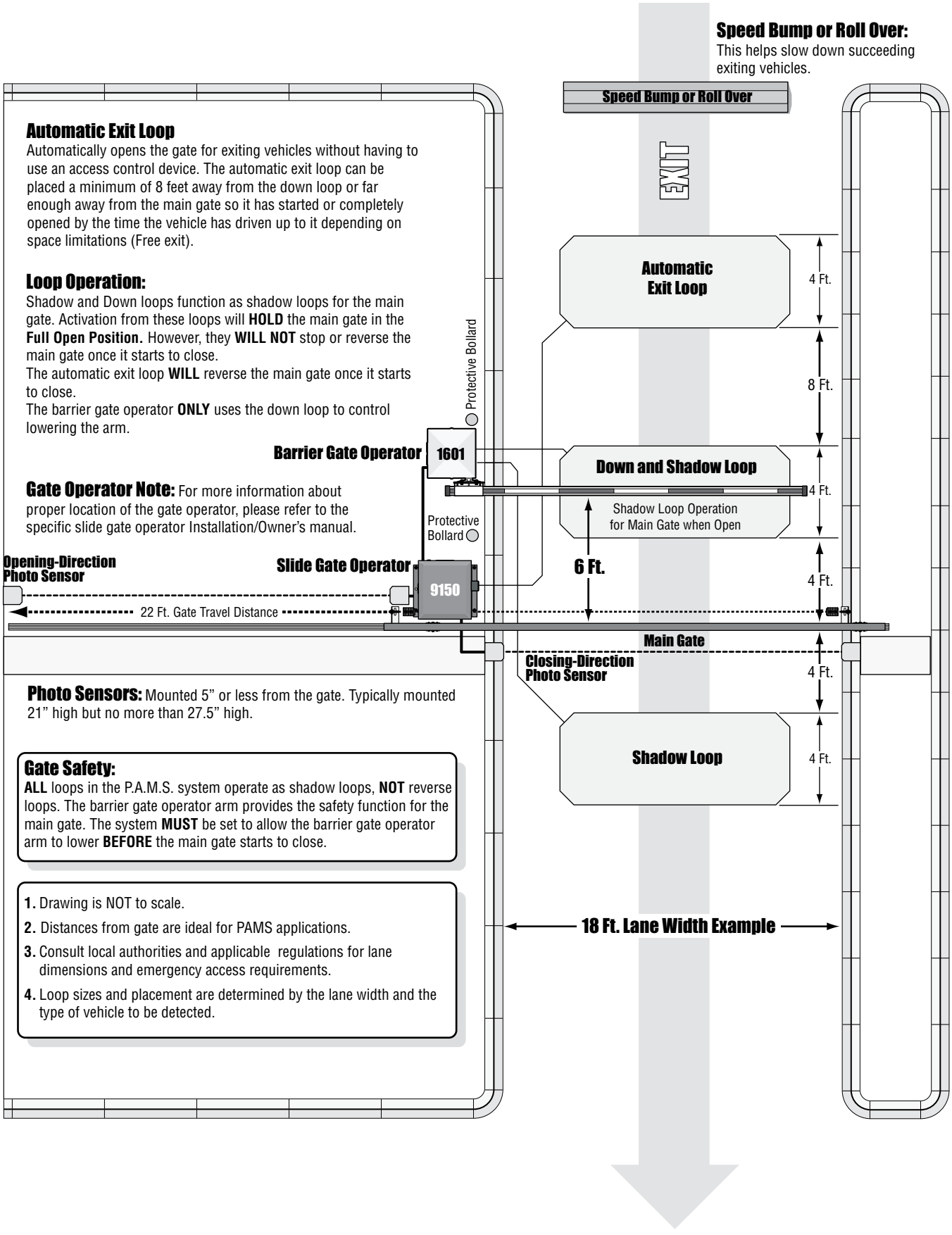
Gate Safety:
ALL loops in the P.A.M.S. system operate as shadow loops, **NOT** reverse loops. The barrier gate operator arm provides the safety function for the main gate. The system **MUST** be set to allow the barrier gate operator arm to lower **BEFORE** the main gate starts to close.

1. Drawing is NOT to scale.
2. Distances from gate are ideal for PAMS applications.
3. Consult local authorities and applicable regulations for lane dimensions and emergency access requirements.
4. Loop sizes and placement are determined by the lane width and the type of vehicle to be detected.

Arming and Shadow Loop: (Optional) Ensures that a vehicle is **present** at the access control devices before access is granted. Also allows the main gate to stay open and operational for lingering vehicles at the access control devices.

Speed Bump or Roll Over: Positioned behind the vehicle at the access control device. Helps create a separation between vehicles which allows the barrier gate operator arm to lower between vehicles. Helps prevent unauthorized tailgating vehicles from entering.

Slide Gate - Exit Lane Layout



Automatic Exit Loop

Automatically opens the gate for exiting vehicles without having to use an access control device. The automatic exit loop can be placed a minimum of 8 feet away from the down loop or far enough away from the main gate so it has started or completely opened by the time the vehicle has driven up to it depending on space limitations (Free exit).

Loop Operation:

Shadow and Down loops function as shadow loops for the main gate. Activation from these loops will **HOLD** the main gate in the **Full Open Position.** However, they **WILL NOT** stop or reverse the main gate once it starts to close.
The automatic exit loop **WILL** reverse the main gate once it starts to close.
The barrier gate operator **ONLY** uses the down loop to control lowering the arm.

Gate Operator Note: For more information about proper location of the gate operator, please refer to the specific slide gate operator Installation/Owner's manual.

Photo Sensors: Mounted 5" or less from the gate. Typically mounted 21" high but no more than 27.5" high.

Gate Safety:

ALL loops in the P.A.M.S. system operate as shadow loops, **NOT** reverse loops. The barrier gate operator arm provides the safety function for the main gate. The system **MUST** be set to allow the barrier gate operator arm to lower **BEFORE** the main gate starts to close.

1. Drawing is NOT to scale.
2. Distances from gate are ideal for PAMS applications.
3. Consult local authorities and applicable regulations for lane dimensions and emergency access requirements.
4. Loop sizes and placement are determined by the lane width and the type of vehicle to be detected.

Slide Gate with 2-Lanes - Typical Equipment List

Please note that there are many options available when configuring the P.A.M.S. Gate System. These options include: Battery Back-up for All Gate Operators, Gate Operator Mounting Kits, Barrier Gate Operator Arm Styles, Access Control Device Options.

Equipment	Part Number	Quantity
Gates:		
Vehicular Iron Slide Gate (2" Gate Frame)	(by outside contractor)	2
DoorKing Machined 4" Steel V-Wheel Assembly (Fits on a 2" Gate Frame)	1201-117	4
DoorKing Guarded Guide Rollers, 3" Double Rollers (Guides a 2" Gate Frame)	1204-122	2
Gate Operators:		
DoorKing Commercial 9000 Slide Gate Operator, ½ hp	9000-080	2 when used
DoorKing Commercial 9100 Slide Gate Operator, ½ hp	9100-080	2 when used
DoorKing Commercial 9150 Slide Gate Operator, ½ hp	9150-084	2 when used
DoorKing Barrier Gate Operator	1601-080	2
DoorKing Aluminum Arm Hardware Kit	1601-242	2
DoorKing Aluminum Arm - 14 ft.	1601-216	2
Arm Note: DoorKing also manufactures Wood and PVC arms for the 1601 Barrier Gate Operator		
DoorKing Interconnection Cable - 30 Ft. - P/N 2600-755, 40 Ft. - P/N 2600-756, 50 Ft. - P/N 2600-757		
Interconnection Cable Note: Cable between gate operator and barrier gate operator for each lane.		
Loops:		
DoorKing Digital Plug-In Loop Detector 2-Channel (Down Loops and Shadow Loops)	9409-010	2
DoorKing Digital External Loop Detector 2-Relays (and Wire Harness P/N 9402-061)	9410-047	2
External Detector Note: Including Arming/Shadow Loop at Phone Entry System		
DoorKing Underground Loop Wire (XLPE) Black	9402-077	1000'
DoorKing Underground Loop Wire (XLPE) Blue	9402-079	1000'
Safety:		
DoorKing Infrared Thru-Beam Photo Sensors	8080-031	4
Photo Sensor Options: Photo Reflective type photo sensor available (8080-011). Standard Photo Sensor layout provides separate Photo Sensors for Opening and Closing cycles.		
DoorKing Speed Bump - Mount on a concrete surface Only	1610-150	2
Access Control Devices:		
DoorKing PC Programmable Phone Entry System, including 3000 memory and Remote Account Manager Software	1835-080	1
Phone Entry Note: DoorKing has various phone entry systems available for any specific needs.		
DoorKing Architectural series Gooseneck Mounting Post (For Phone Entry System)	1200-038	1
DoorKing Proximity Card Reader in lighted housing	1815-230	1 when used
DoorKing Prox Cards (Typically 2 per household)	1508-110	qty varies
Card Reader Note: DoorKing has various card reader models available, including touch plate readers and proximity readers.		
DoorKing Gooseneck Mounting Post (For Card Readers or Digital Keypads)	1200-046	1
DoorKing Wiegand RF Receiver	8056-080	1 when used
DoorKing MicroPLUS RF Transmitters (Typically 2 per household)	8069-080	qty varies
DoorKing Weigand Digital Keypad in lighted housing	1815-051	1 when used
Keypad Note: DoorKing has various stand alone digital keypad models available which may be substituted for the card reader or RF receiver.		
Emergency Access Devices:		
Emergency Access Devices as required by local codes.		
Fire Department Lock Box with Knox KS-2 Key Switch	1401-080	as needed

Pedestrian Entrance Note: There MUST be a SEPARATE entrance for pedestrians installed AWAY from the vehicular gates.

SECTION 3 - KEYS FOR MAKING P.A.M.S. WORK

The DoorKing Perimeter Access Control Solution, or P.A.M.S., has proven to be very effective at controlling vehicular traffic and limiting access to **one vehicle at a time**. The key to the success of our P.A.M.S. concept is how we sequence the operation of the Barrier Gate Operator with the Swing/Slide/Overhead Gate Operator.
This special gate sequencing is accomplished by utilizing some special features found in DoorKing Gate Operators.

1601 Barrier Gate Operator

Special inputs on this operator provide specifically designed functions, which help make the P.A.M.S. configuration work.

Momentary Up Input - Terminal #10: This input provides two important functions:

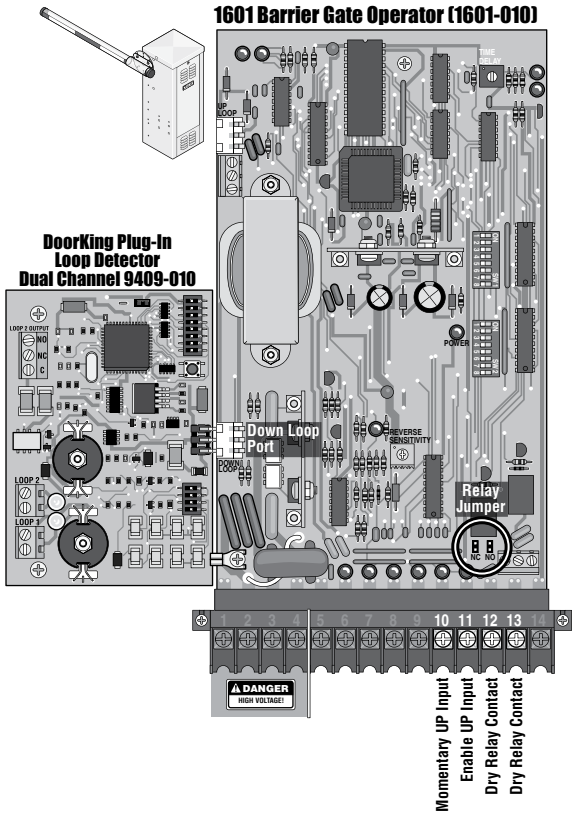
- An input provided to terminal #10 will function as a **"One Time UP"** Command to the operator, raising the barrier arm. Once the arm reaches the UP position, any down command will lower the arm, even though the operator is still receiving a contact on terminal #10. A continuous input on terminal #10 will only raise the arm **one time.** Once this contact is dropped, the sequence will start over again.

- An input on terminal #10 will also enable terminal #11. This input is only active while terminal #10 has a maintained contact present.

Enable UP Input - Terminal #11: This input provides a controllable up command for the Barrier Gate Operator Arm:

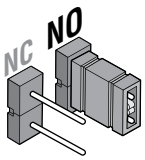
- When a contact is present at terminal #10, then terminal #11 will provide normal UP command performance for the Barrier Gate Operator Arm.

- If no input is present on terminal #10, then all commands received at terminal #11 are ignored.



Function of the Dry Relay Contacts - Terminals #12 & #13: These inputs provide a link from the 1601 to the Slide/Swing/Overhead gate for Shadow Loop operation. These inputs are set to operate in conjunction with the Loop Detector plugged into the DOWN Loop Port.

Set the relay jumper on the main circuit board to "Normally Open" (NO).

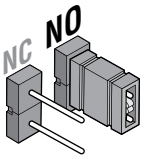


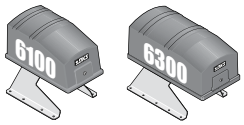
6100/6300 Swing Gate Operator

Function of the Dry Relay Contacts - Terminals #16 & #17:
The relay inputs provide two basic functions.

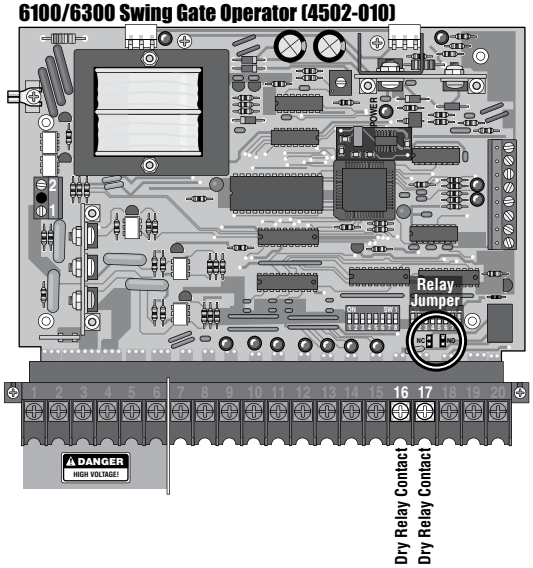
- When the swing gate reaches the full open position, the relay contacts close. This provides a key input to the 1601 Momentary UP (terminal #10), raising the arm and activating the 1601 Enable UP (terminal #11).
- While the relay contacts are closed, they route the common leg of the shadow loop output from the 1601 to the 6100/6300 operator.

Set the relay jumper on the main circuit board to “Normally Open” (NO).





6100/6300 Swing Gate Operator (4502-010)

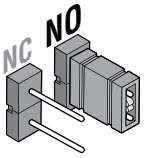


6500 Swing Gate Operator

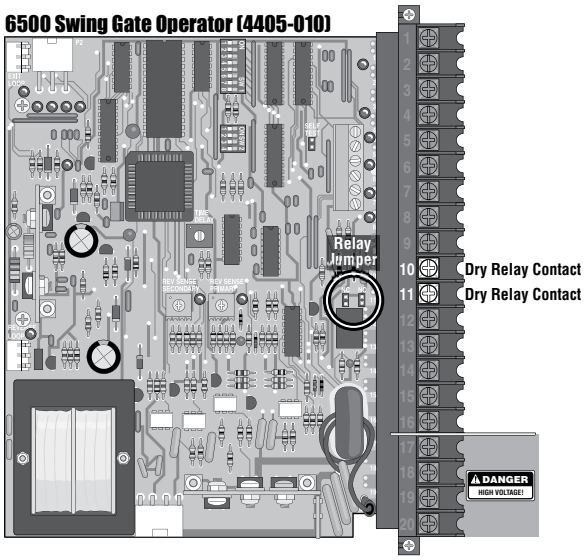
Function of the Dry Relay Contacts - Terminals #10 & #11:
The relay inputs provide two basic functions.

- When the swing gate reaches the full open position, the relay contacts close. This provides a key input to the 1601 Momentary UP (terminal #10), raising the arm and activating the 1601 Enable UP (terminal #11).
- While the relay contacts are closed, they route the common leg of the shadow loop output from the 1601 to the 6500 operator.

Set the relay jumper on the main circuit board to “Normally Open” (NO).



6500 Swing Gate Operator (4405-010)

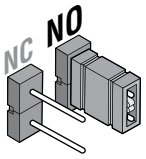


9000 Slide Gate Operator

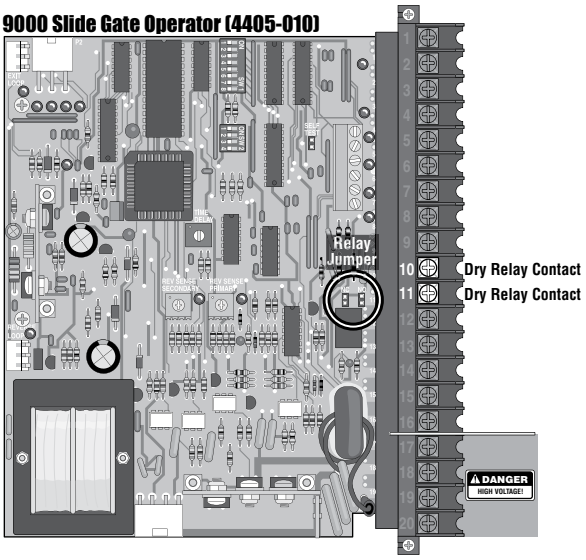
Function of the Dry Relay Contacts - Terminals #10 & #11:
The relay inputs provide two basic functions.

- When the slide gate reaches the full open position, the relay contacts close. This provides a key input to the 1601 Momentary UP (terminal #10), raising the arm and activating the 1601 Enable UP (terminal #11).
- While the relay contacts are closed, they route the common leg of the shadow loop output from the 1601 to the 9000 operator.

Set the relay jumper on the main circuit board to "Normally Open" (NO).



9000 Slide Gate Operator (4405-010)

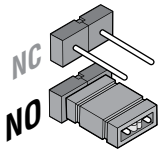


9100/9150 Slide Gate Operator

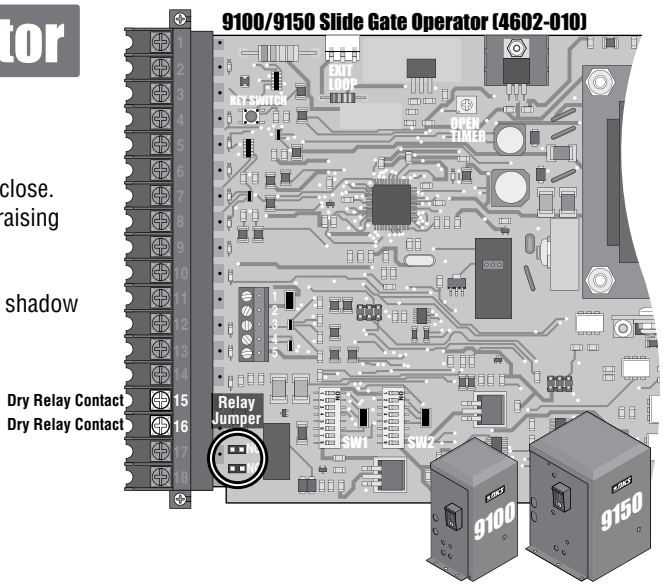
Function of the Dry Relay Contacts - Terminals #15 & #16:
The relay inputs provide two basic functions.

- When the slide gate reaches the full open position, the relay contacts close. This provides a key input to the 1601 Momentary UP (terminal #10), raising the arm and activating the 1601 Enable UP (terminal #11).
- While the relay contacts are closed, they route the common leg of the shadow loop output from the 1601 to the 9100/9150 operator.

Set the relay jumper on the main circuit board to "Normally Open" (NO).



9100/9150 Slide Gate Operator (4602-010)

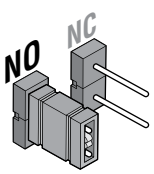


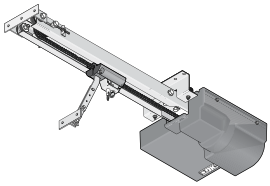
1150 Overhead Gate Operator

Function of the Dry Relay Contacts - Terminals #12 & #13:
The relay inputs provide two basic functions.

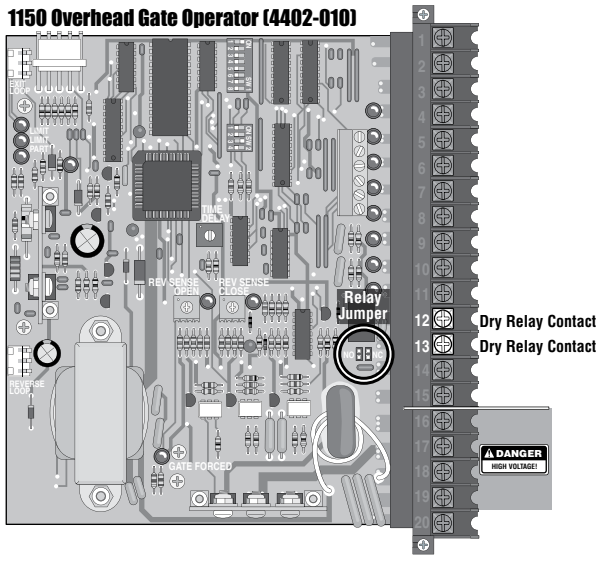
- When the overhead gate reaches the full open position, the relay contacts close. This provides a key input to the 1601 Momentary UP (terminal #10), raising the arm and activating the 1601 Enable UP (terminal #11).
- While the relay contacts are closed, they route the common leg of the shadow loop output from the 1601 to the 1150 operator.

Set the relay jumper on the main circuit board to "Normally Open" (NO).





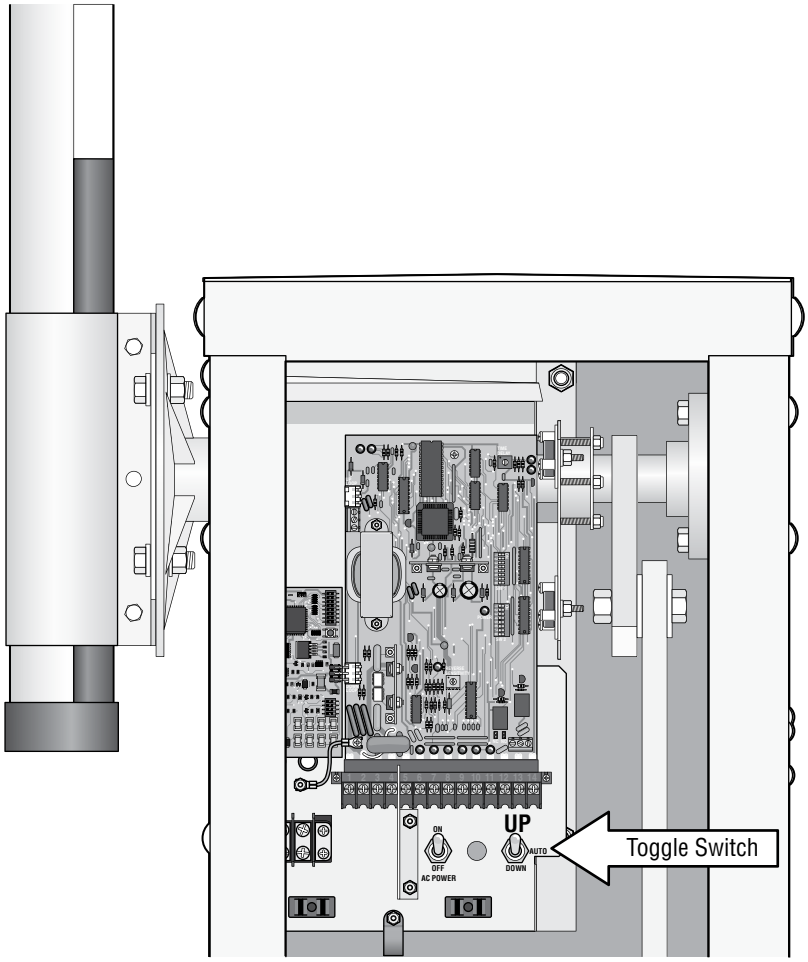
1150 Overhead Gate Operator (4402-010)



IMPORTANT: If the Barrier Gate Operator Arm is Broken

If the Barrier Gate Arm is broken, there is **NO SAFETY** function in the gate system. Shadow Loops will hold the gate open while a vehicle is present. However, once the gate begins to close, an approaching vehicle **WILL NOT stop or reverse the gates. DoorKing's First Recommendation is to Open Both Gates and Shut Down the System until the arm can be replaced.**

If the customer demands that the main gates remain in operation with the arm broken, **Do Not Turn OFF the power to the 1601.** All the system loops are routed through the 1601. Turning off power will deactivate **All** the system loops, allowing the main gates to close on a vehicle if it is in the gate's pathway after they have timed out. Lock the toggle switch inside the 1601 into the "UP" position. This will allow all system loops to function until the arm can be replaced.



SECTION 4 - OPERATOR WIRING AND SETTINGS GUIDELINES

DoorKing Swing/Slide/Overhead Gate Operators are wired to the Barrier Gate Operator in a specific way for each operator type. Follow the operator wiring, DIP-switch and relay settings for your chosen setup on the next pages.

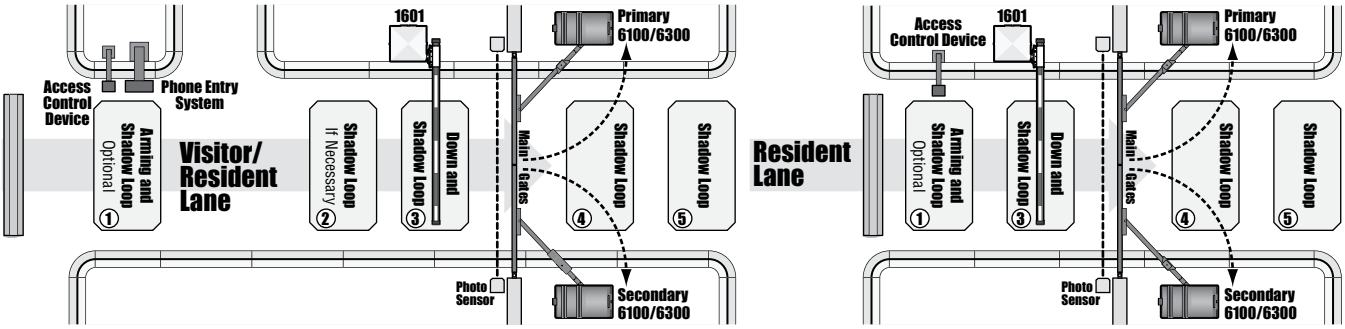
All wires should be run in underground conduit and low voltage wire insulation should be run in separate conduits from high voltage wire insulation. **NEVER** run them in the same conduit.

Each operator needs the correct AC power wire gauge and wire insulation for the specific wire run distance away from the main power source (See the specific Installation/Owner's manual for "High voltage wire size and distance table" for your chosen operator). Too low of voltage caused by too small of wires, to any operator in the system may cause a system malfunction.

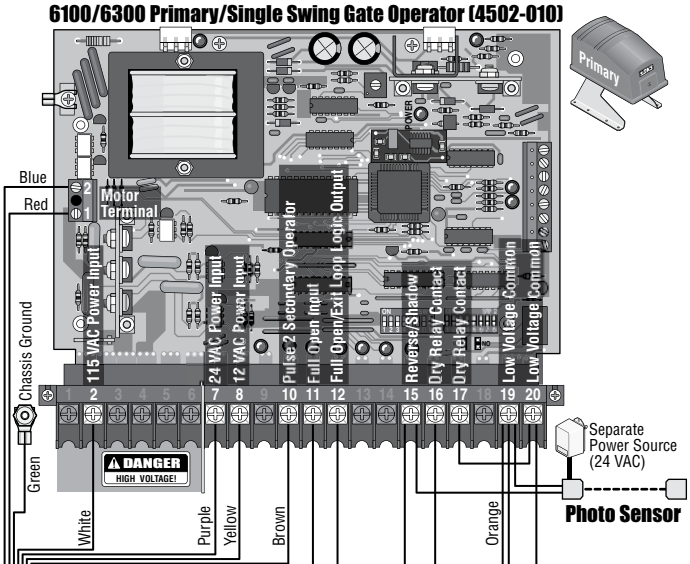
Use heavy enough gauge wire with the proper wire insulation to connect the operators together. DoorKing recommends 18 AWG minimum. Using a lighter gauge wire may cause communication problems between the operators. Make sure all wiring stays clear of the moving parts inside the operators.

All the operators and access control devices **MUST** be properly grounded! The system will NOT function properly if this is not done.

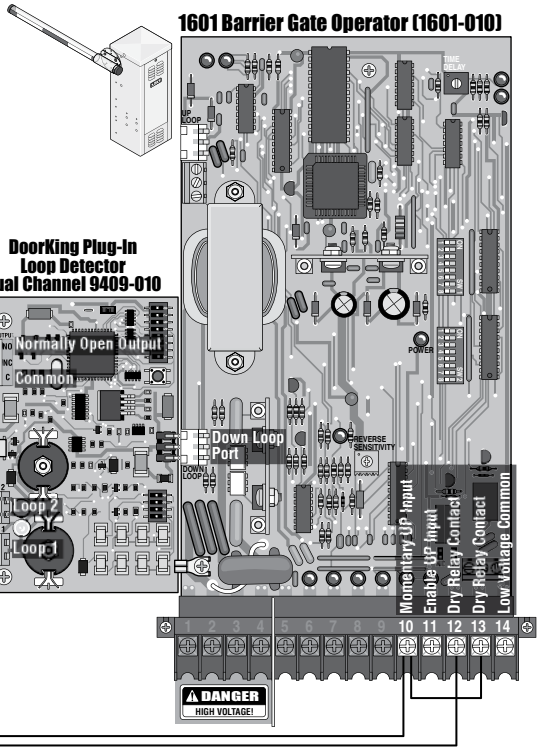
6100/6300 Swing Gate(s) - Entry Lanes Wiring



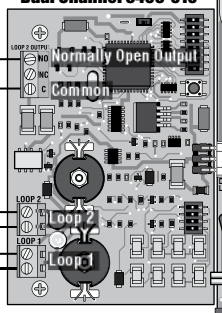
6100/6300 Primary/Single Swing Gate Operator (4502-010)

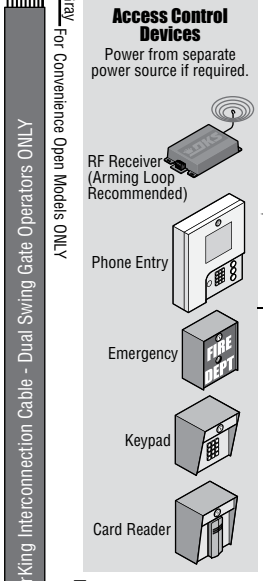


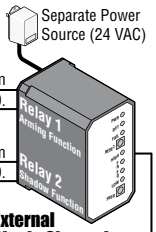
1601 Barrier Gate Operator (1601-010)

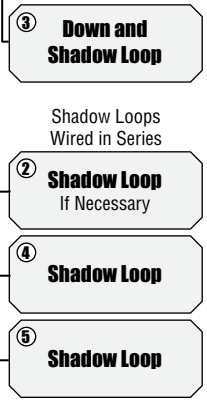


DoorKing Plug-In Loop Detector Dual Channel 9409-010

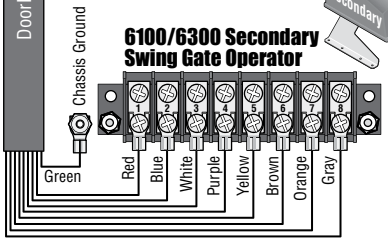




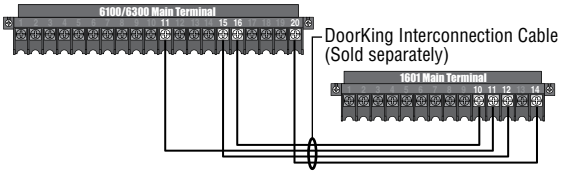




6100/6300 Secondary Swing Gate Operator

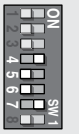


Operator's Interconnection Cable Wiring



Gate Operator's Critical Settings:

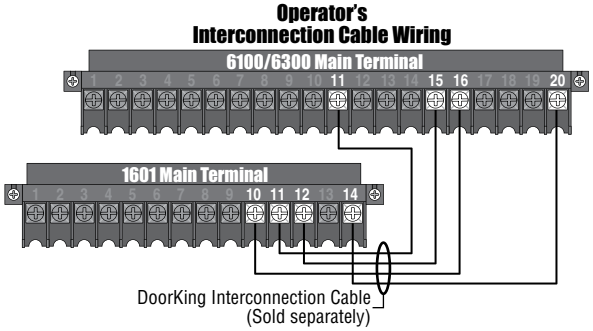
1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 6100/6300.

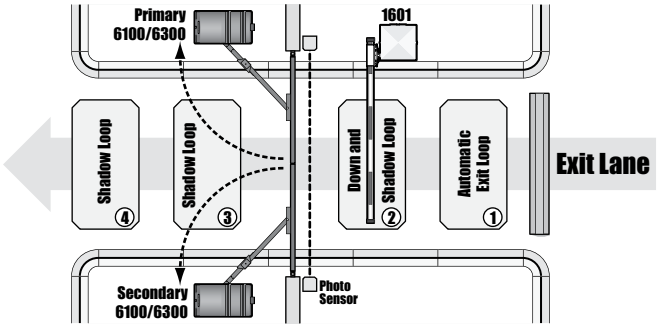


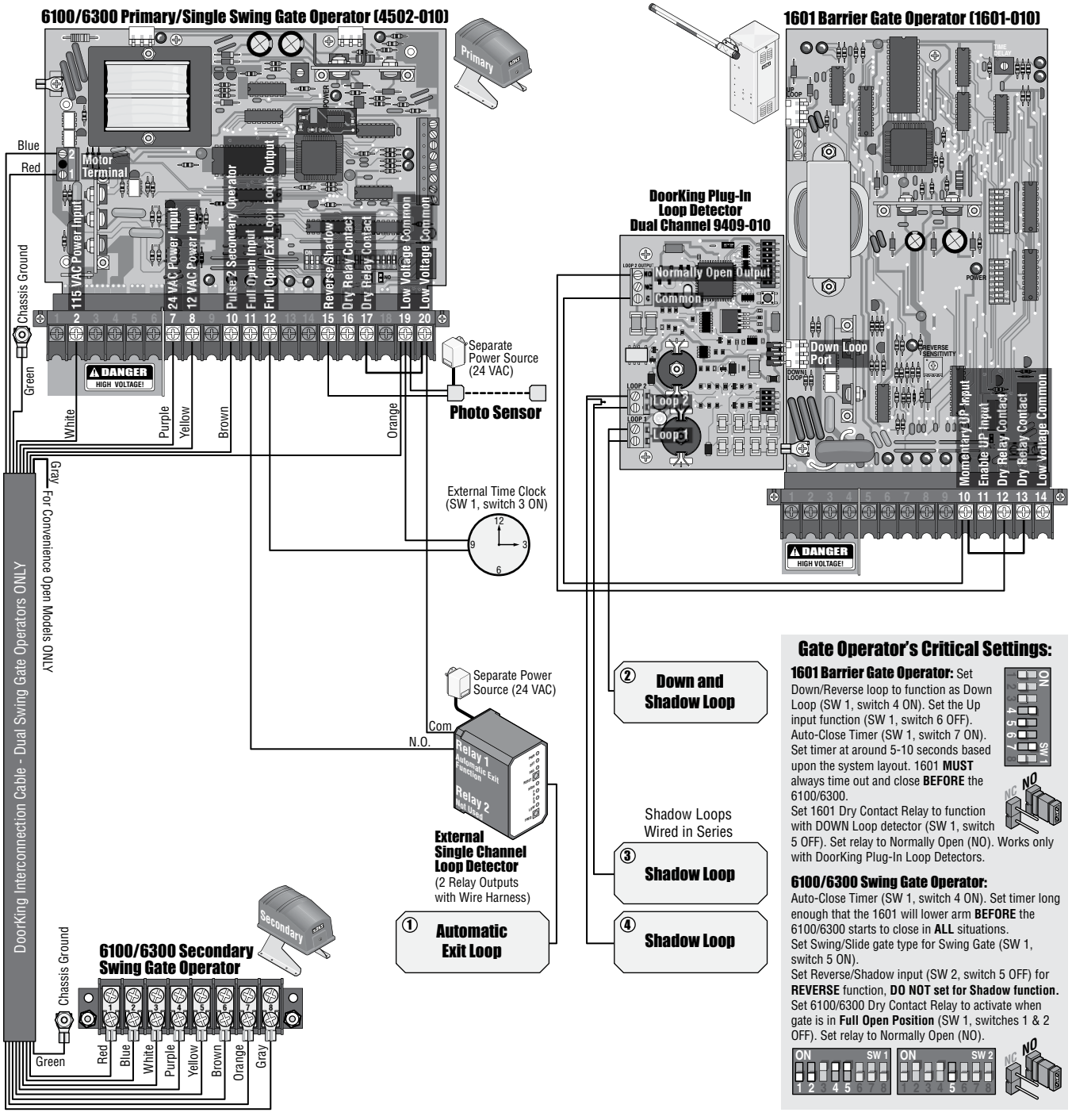
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

6100/6300 Swing Gate Operator:
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 6100/6300 starts to close in **ALL** situations.
Set Swing/Slide gate type for Swing Gate (SW 1, switch 5 ON).
Set Reverse/Shadow input (SW 2, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**
Set 6100/6300 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 1 & 2 OFF). Set relay to Normally Open (NO).

6100/6300 Swing Gate(s) - Exit Lane Wiring







Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 6100/6300.

Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

6100/6300 Swing Gate Operator:

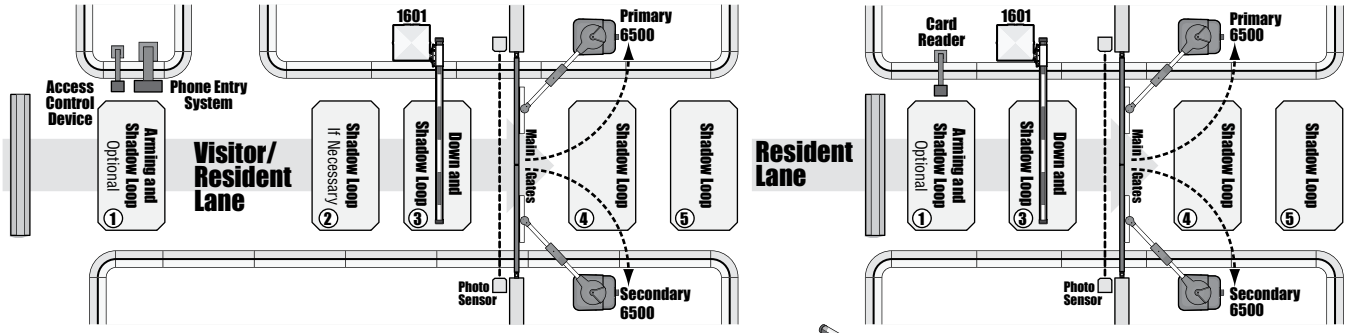
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 6100/6300 starts to close in **ALL** situations.

Set Swing/Slide gate type for Swing Gate (SW 1, switch 5 ON).

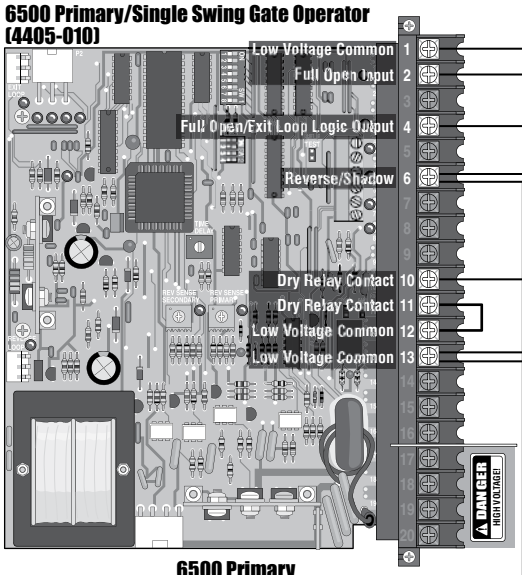
Set Reverse/Shadow input (SW 2, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**

Set 6100/6300 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 1 & 2 OFF). Set relay to Normally Open (NO).

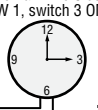
6500 Swing Gate(s) - Entry Lanes Wiring



6500 Primary/Single Swing Gate Operator (4405-010)



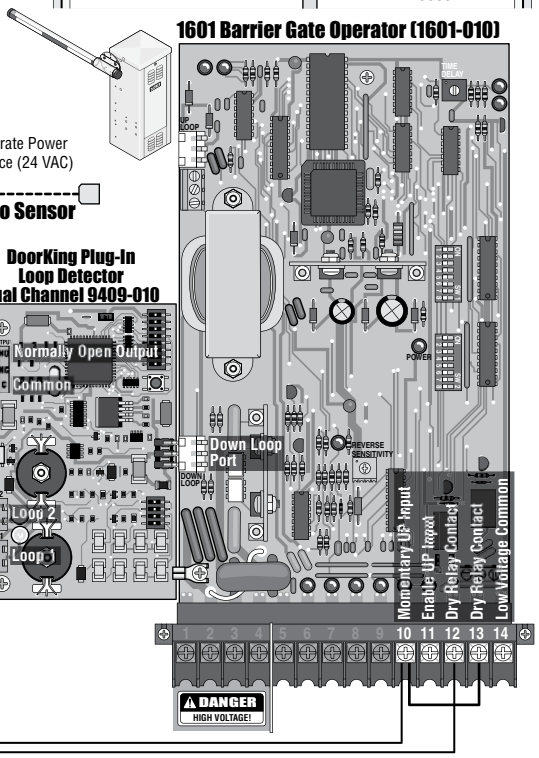
External Time Clock (SW 1, switch 3 ON)



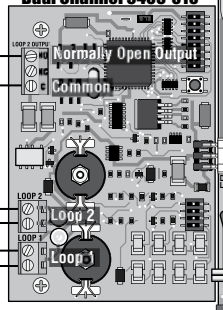
Separate Power Source (24 VAC)

Photo Sensor

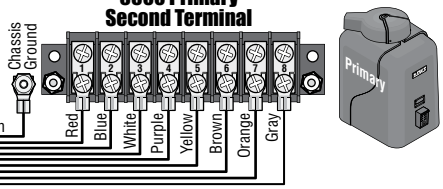
1601 Barrier Gate Operator (1601-010)



DoorKing Plug-In Loop Detector Dual Channel 9409-010



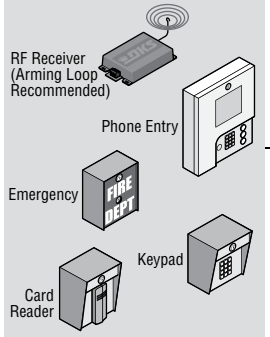
6500 Primary Second Terminal



DoorKing Interconnection Cable - Dual Swing Gate Operators ONLY

Access Control Devices

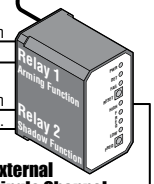
Power from separate power source if required.



Com

N.O.

Separate Power Source (24 VAC)



External Single Channel Loop Detector
(2 Relay Outputs with Wire Harness)

① **Arming and Shadow Loop**

③ **Down and Shadow Loop**

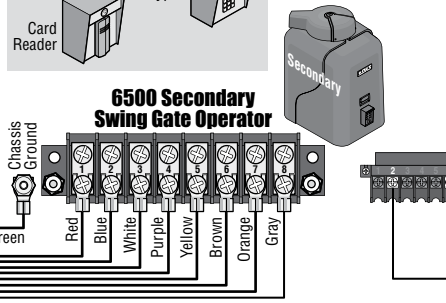
Shadow Loops Wired in Series

② **Shadow Loop** If Necessary

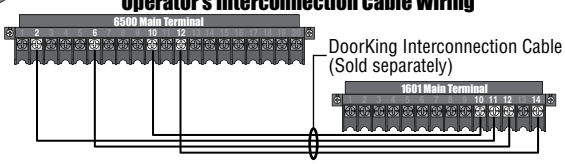
④ **Shadow Loop**

⑤ **Shadow Loop**

6500 Secondary Swing Gate Operator

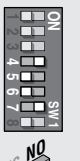


Operator's Interconnection Cable Wiring



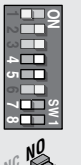
Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 6500.



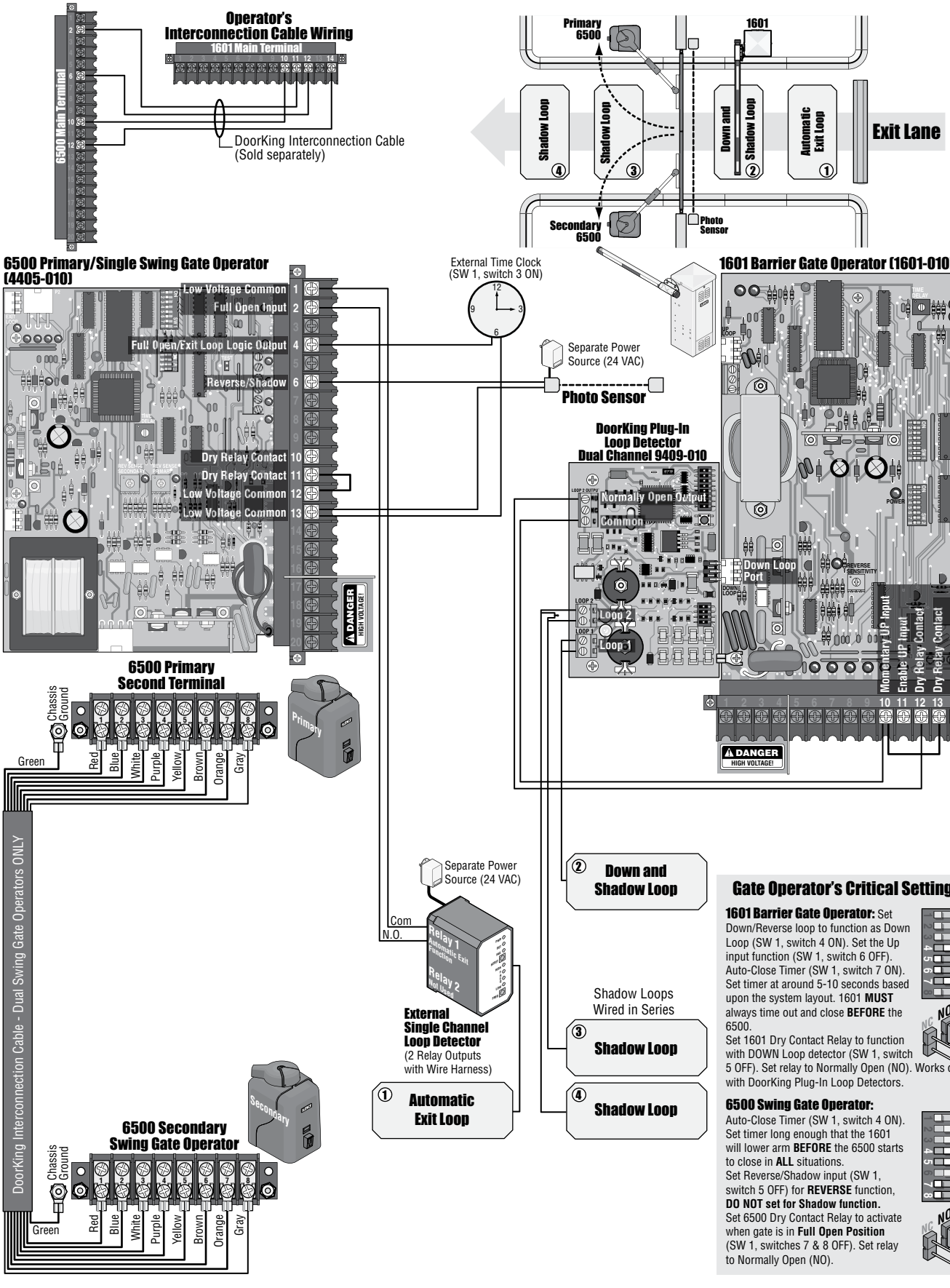
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

6500 Swing Gate Operator:
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 6500 starts to close in **ALL** situations.



Set Reverse/Shadow input (SW 1, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.** Set 6500 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 7 & 8 OFF). Set relay to Normally Open (NO).

6500 Swing Gate(s) - Exit Lane Wiring

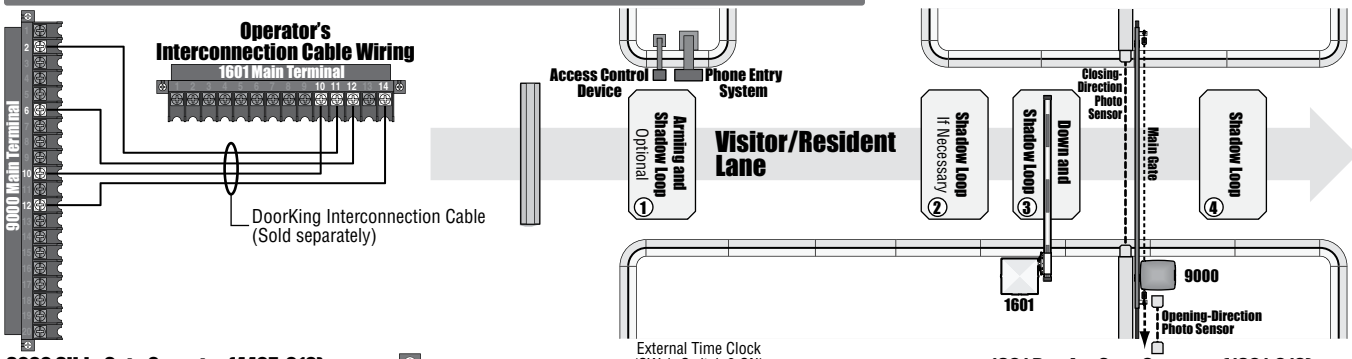


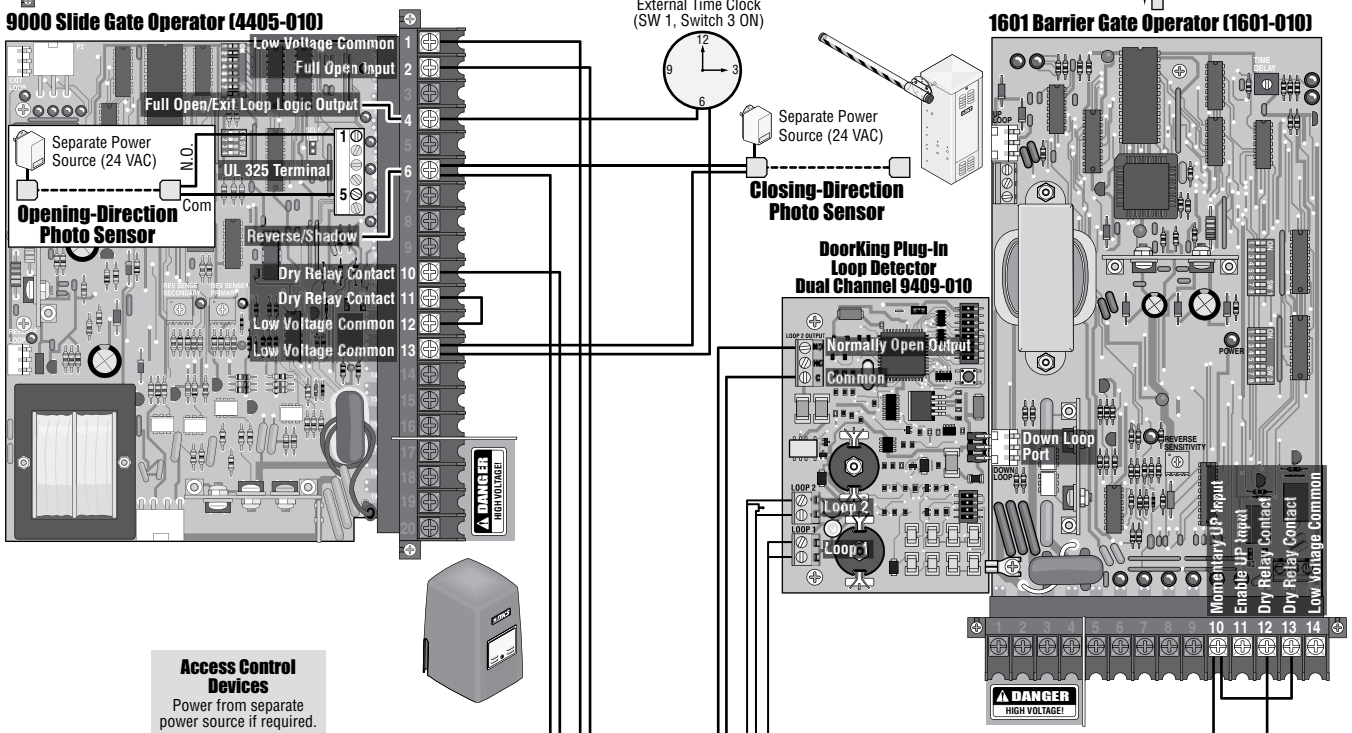
Gate Operator's Critical Settings:

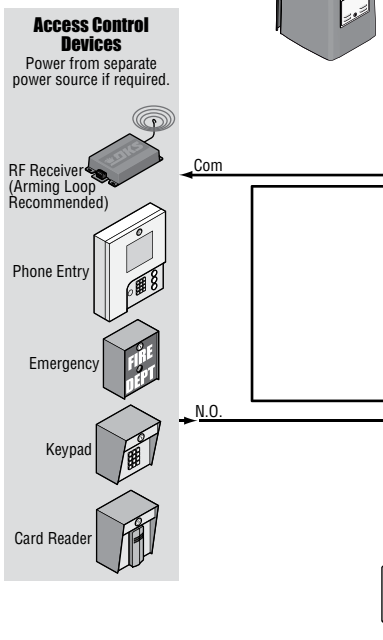
1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 6500.
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

6500 Swing Gate Operator:
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 6500 starts to close in **ALL** situations.
Set Reverse/Shadow input (SW 1, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**
Set 6500 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 7 & 8 OFF). Set relay to Normally Open (NO).

9000 Slide Gate - Entry Lane Wiring





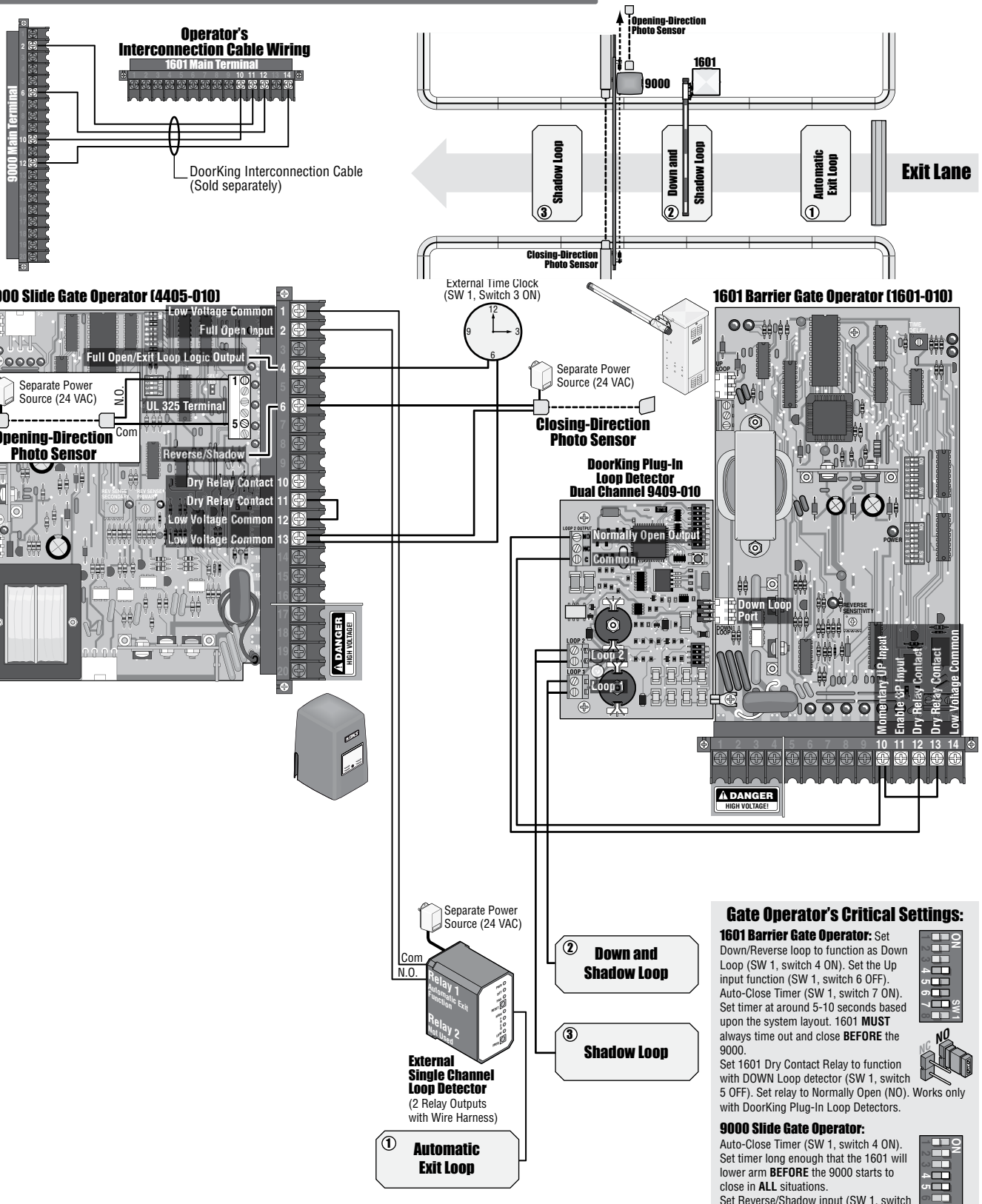


Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 9000.
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

9000 Slide Gate Operator:
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 9000 starts to close in **ALL** situations.
Set Reverse/Shadow input (SW 1, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**
Set 9000 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 7 & 8 OFF). Set relay to Normally Open (NO).

9000 Slide Gate - Exit Lane Wiring



Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 9000.

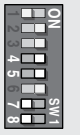
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

9000 Slide Gate Operator:

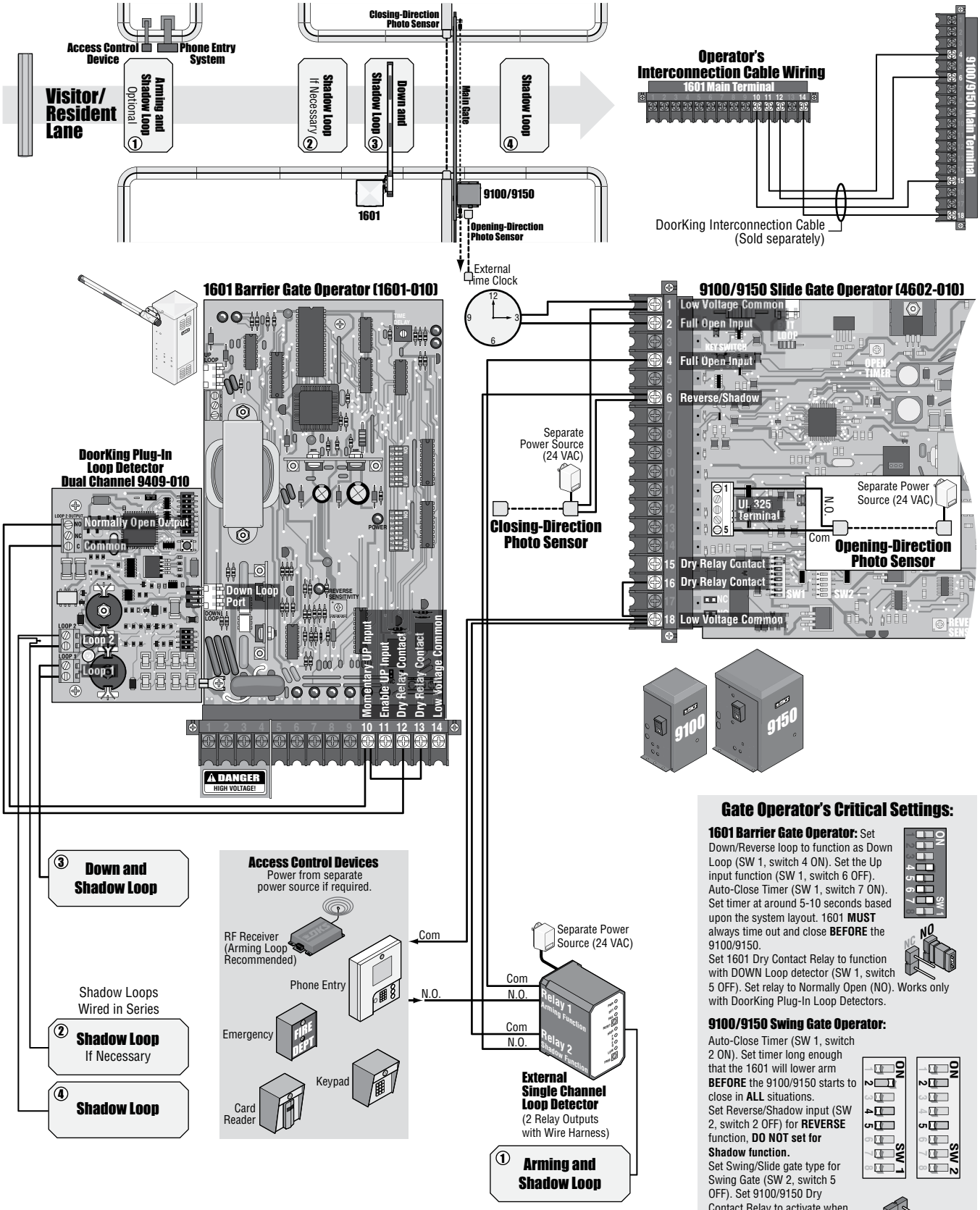
Auto-Close Timer (SW 1, switch 4 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 9000 starts to close in **ALL** situations.

Set Reverse/Shadow input (SW 1, switch 5 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**

Set 9000 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 7 & 8 OFF). Set relay to Normally Open (NO).



9100/9150 Slide Gate - Entry Lane Wiring



Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 9100/9150.

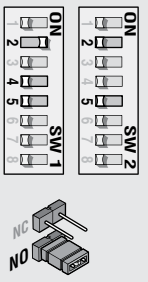
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

9100/9150 Swing Gate Operator:

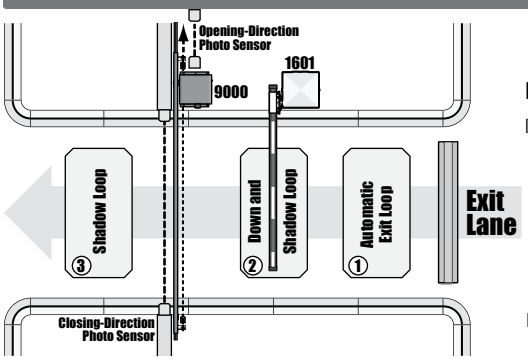
Auto-Close Timer (SW 1, switch 2 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 9100/9150 starts to close in **ALL** situations.

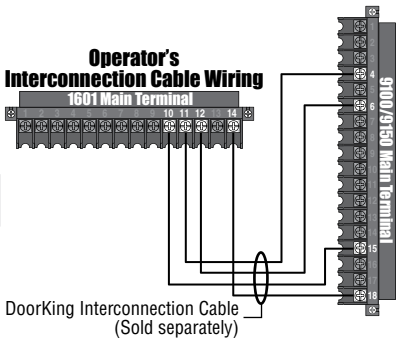
Set Reverse/Shadow input (SW 2, switch 2 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**

Set Swing/Slide gate type for Swing Gate (SW 2, switch 5 OFF). Set 9100/9150 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 4 & 5 OFF). Set relay to Normally Open (NO).

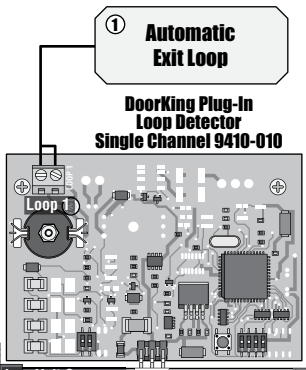


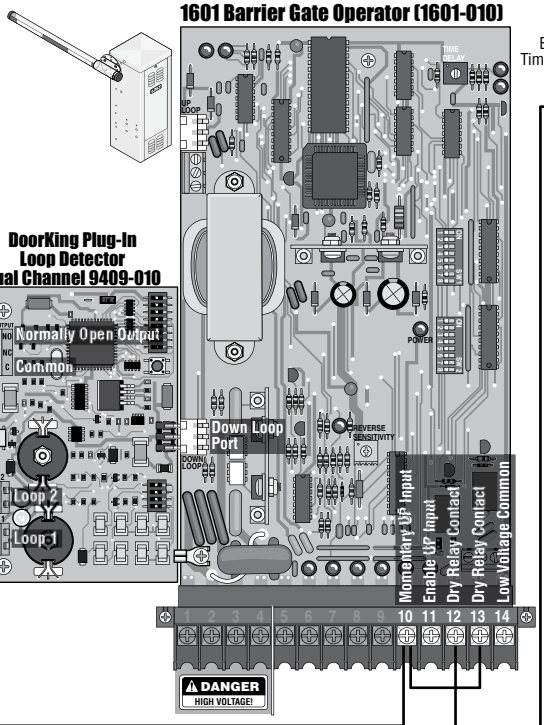
9100/9150 Slide Gate - Exit Lane Wiring

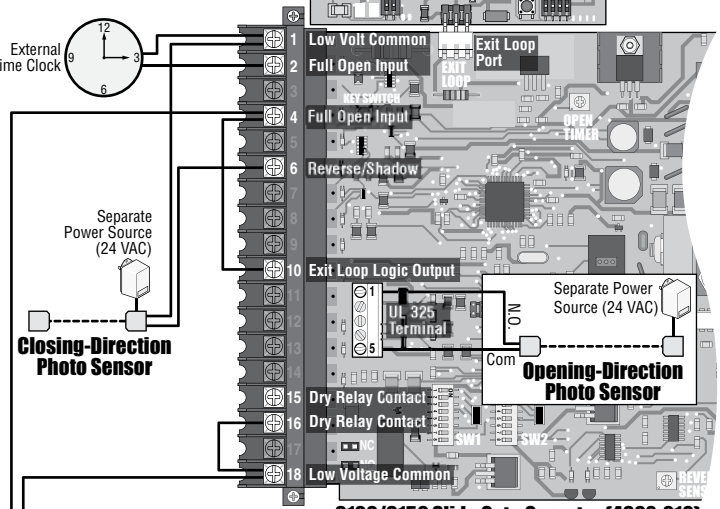


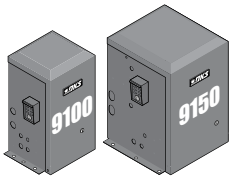


Recommended Wiring for Automatic Exit Loop





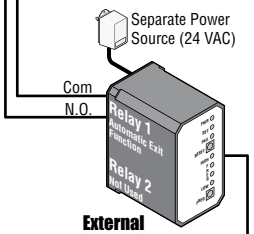




② Down and Shadow Loop

③ Shadow Loop

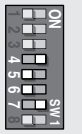
Alternative Wiring for Automatic Exit Loop



① Automatic Exit Loop

Gate Operator's Critical Settings:

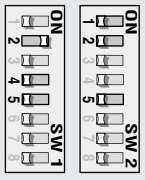
1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 9100/9150.



Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

9100/9150 Swing Gate Operator:

Auto-Close Timer (SW 1, switch 2 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 9100/9150 starts to close in **ALL** situations.

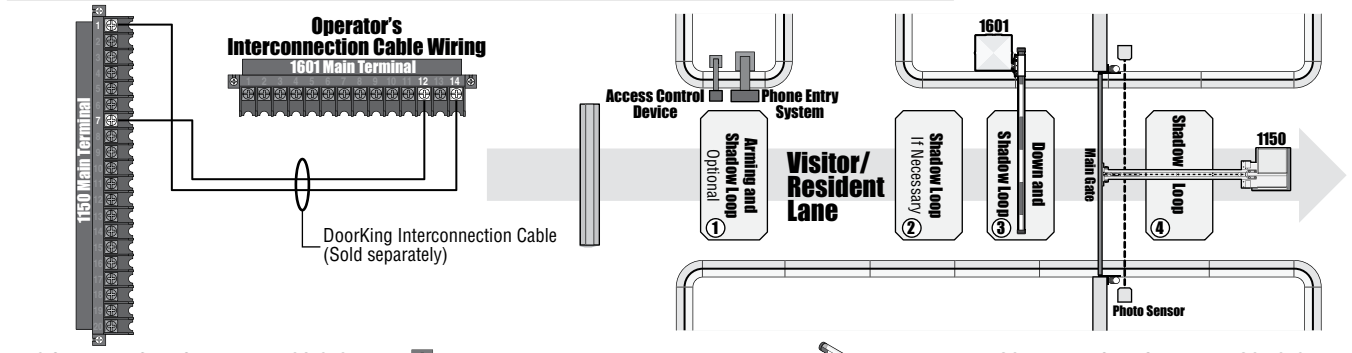


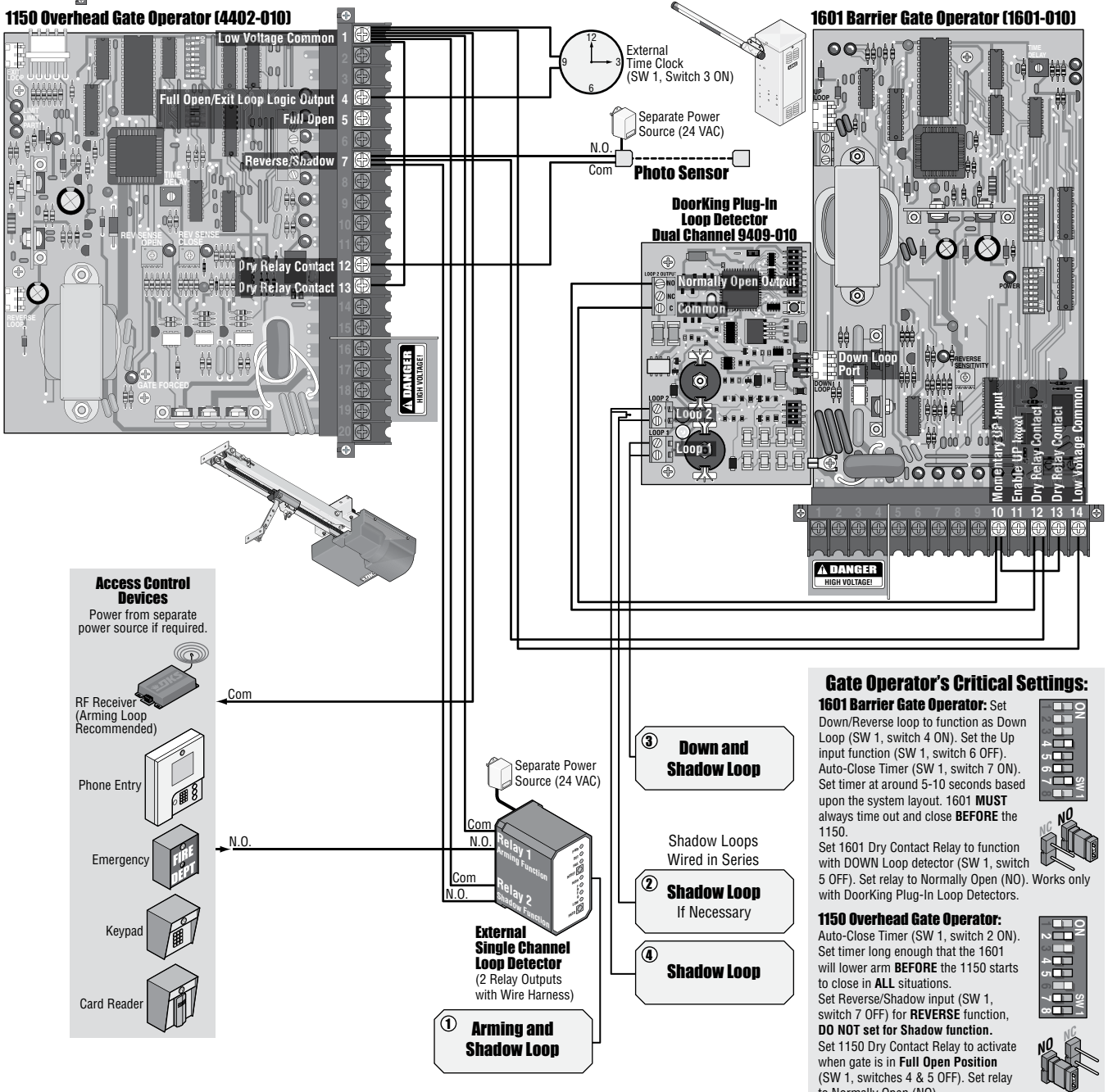
Set Exit Loop Logic Output from Exit Loop Port to bypass terminal #10 with jumper wire connected from terminal #10 to terminal #4 (SW 2, switch 1 OFF).

Set Reverse/Shadow input (SW 2, switch 2 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**

Set Swing/Slide gate type for Swing Gate (SW 2, switch 5 OFF). Set 9100/9150 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 4 & 5 OFF). Set relay to Normally Open (NO).

1150 Overhead Gate - Entry Lane Wiring

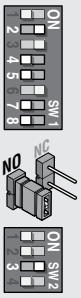




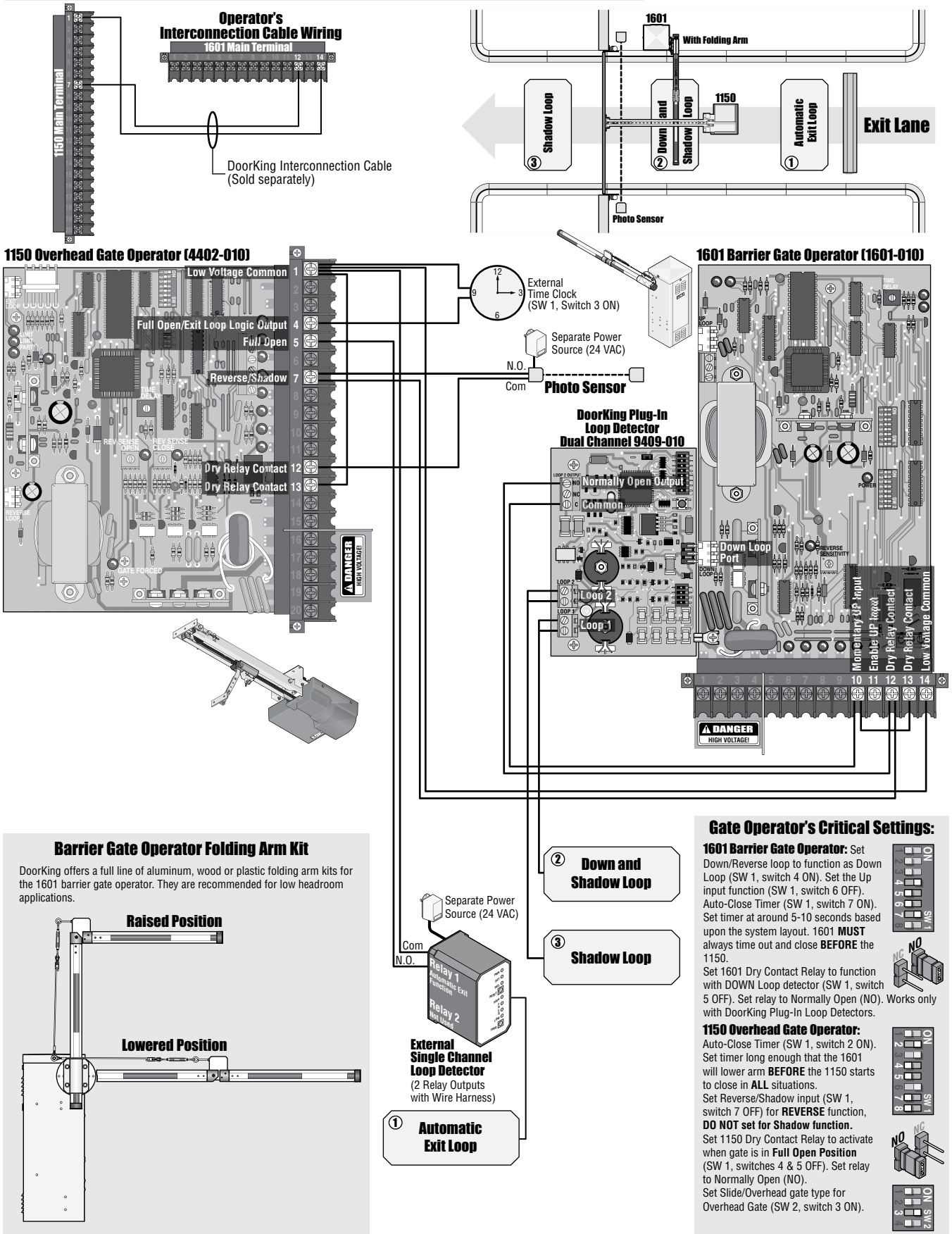
Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 1150.
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

1150 Overhead Gate Operator:
Auto-Close Timer (SW 1, switch 2 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 1150 starts to close in **ALL** situations.
Set Reverse/Shadow input (SW 1, switch 7 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**
Set 1150 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 4 & 5 OFF). Set relay to Normally Open (NO).
Set Slide/Overhead gate type for Overhead Gate (SW 2, switch 3 ON).



1150 Overhead Gate - Exit Lane Wiring



Barrier Gate Operator Folding Arm Kit

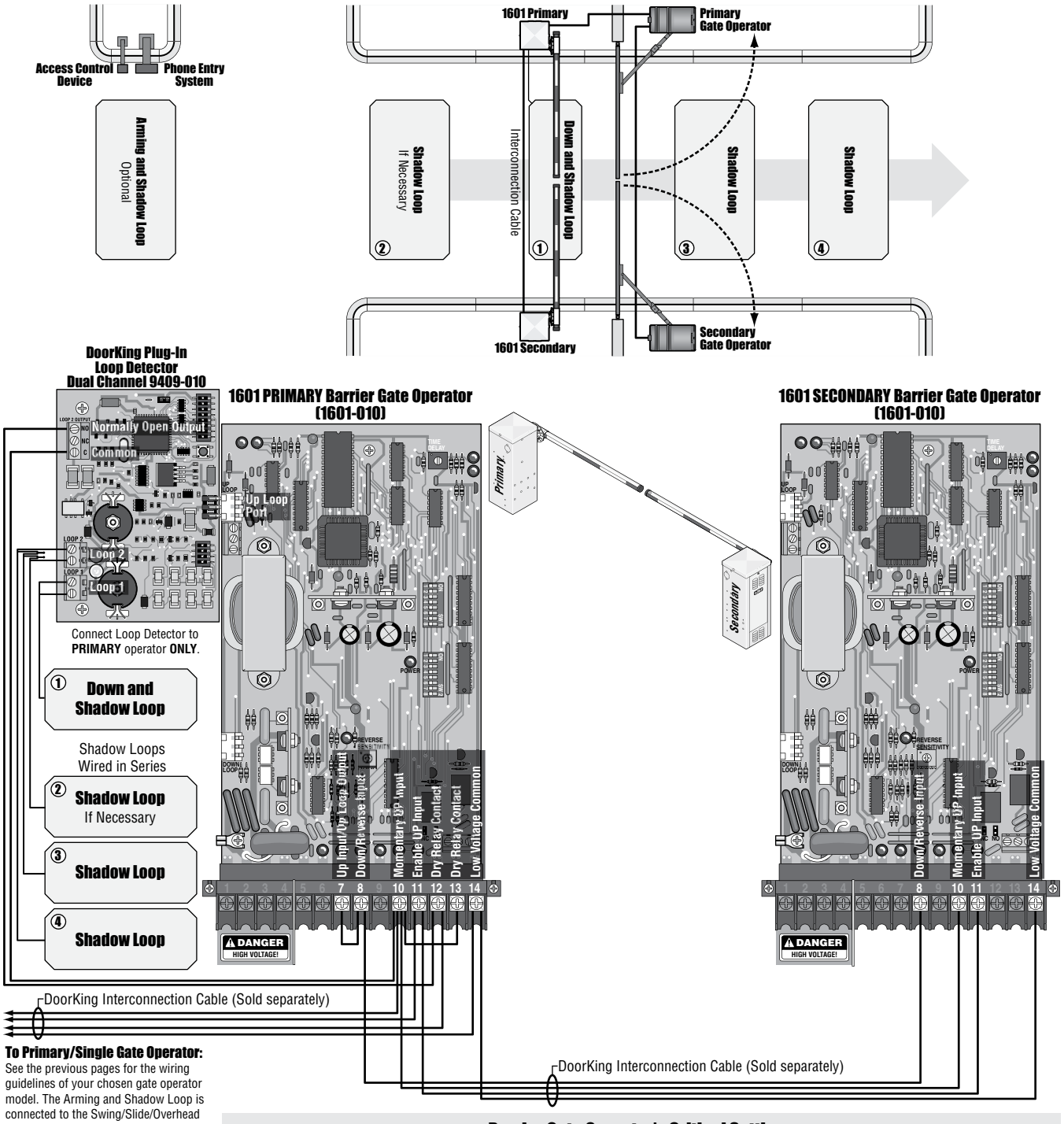
DoorKing offers a full line of aluminum, wood or plastic folding arm kits for the 1601 barrier gate operator. They are recommended for low headroom applications.

Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Set the Up input function (SW 1, switch 6 OFF). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the 1150.
Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

1150 Overhead Gate Operator:
Auto-Close Timer (SW 1, switch 2 ON). Set timer long enough that the 1601 will lower arm **BEFORE** the 1150 starts to close in **ALL** situations.
Set Reverse/Shadow input (SW 1, switch 7 OFF) for **REVERSE** function, **DO NOT set for Shadow function.**
Set 1150 Dry Contact Relay to activate when gate is in **Full Open Position** (SW 1, switches 4 & 5 OFF). Set relay to Normally Open (NO).
Set Slide/Overhead gate type for Overhead Gate (SW 2, switch 3 ON).

Dual 1601 Barrier Gate Operators Wiring - Bi-Parting



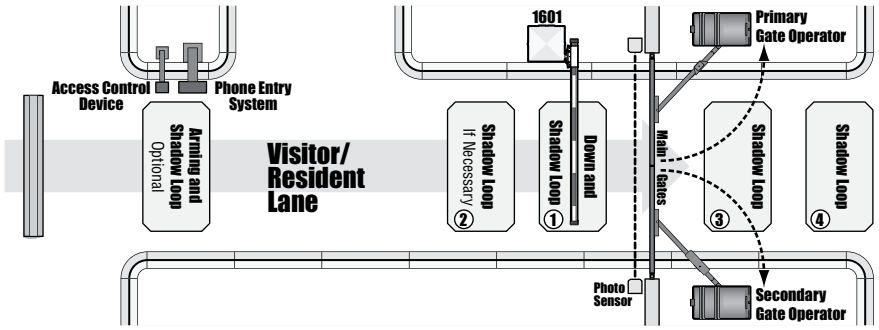
To Primary/Single Gate Operator:
See the previous pages for the wiring guidelines of your chosen gate operator model. The Arming and Shadow Loop is connected to the Swing/Slide/Overhead gate operator.

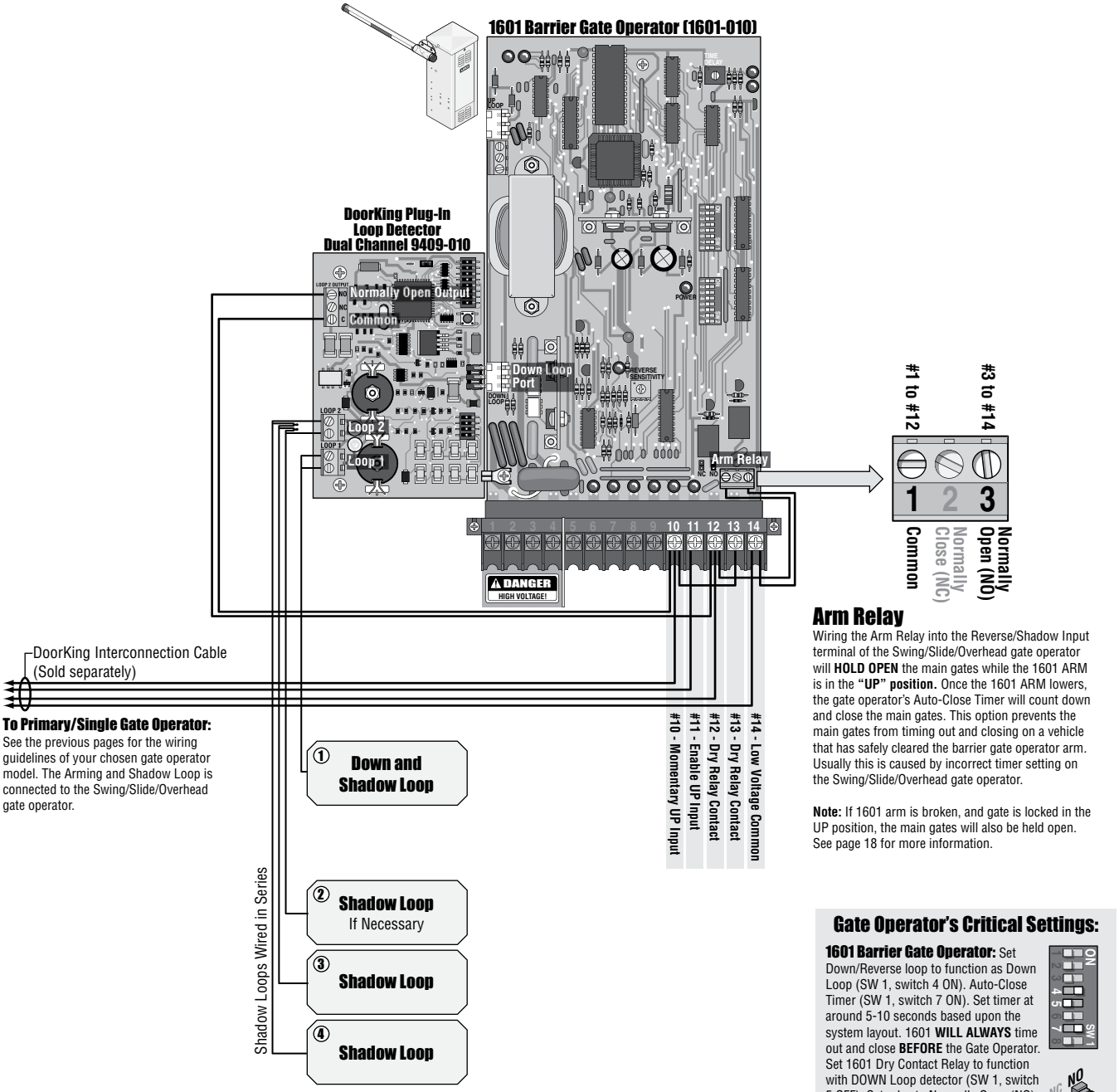
Barrier Gate Operator's Critical Settings:

1601 PRIMARY Barrier Gate Operator:
Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON).
Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **MUST** always time out and close **BEFORE** the gate operator.
Set SW 1, switch 8 to OFF (sends loop output to terminal #7).
Set 1601 Dry Contact Relay to function with Up Loop detector (SW 1, switch 5 ON). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

1601 SECONDARY Barrier Gate Operator:
Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON).
Auto-Close Timer (SW 1, switch 7 ON). Set timer to the same time as the primary barrier gate operator setting.
Set all the other DIP-switches (SW 1 and SW 2) the same as the PRIMARY Barrier Gate Operator based on personal preference.

1601 "ARM UP" will Hold Open Main Gates Wiring





To Primary/Single Gate Operator:
See the previous pages for the wiring guidelines of your chosen gate operator model. The Arming and Shadow Loop is connected to the Swing/Slide/Overhead gate operator.

Arm Relay

Wiring the Arm Relay into the Reverse/Shadow Input terminal of the Swing/Slide/Overhead gate operator will **HOLD OPEN** the main gates while the 1601 ARM is in the **"UP" position.** Once the 1601 ARM lowers, the gate operator's Auto-Close Timer will count down and close the main gates. This option prevents the main gates from timing out and closing on a vehicle that has safely cleared the barrier gate operator arm. Usually this is caused by incorrect timer setting on the Swing/Slide/Overhead gate operator.

Note: If 1601 arm is broken, and gate is locked in the UP position, the main gates will also be held open. See page 18 for more information.

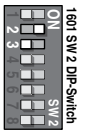
Gate Operator's Critical Settings:

1601 Barrier Gate Operator: Set Down/Reverse loop to function as Down Loop (SW 1, switch 4 ON). Auto-Close Timer (SW 1, switch 7 ON). Set timer at around 5-10 seconds based upon the system layout. 1601 **WILL ALWAYS** time out and close **BEFORE** the Gate Operator. Set 1601 Dry Contact Relay to function with DOWN Loop detector (SW 1, switch 5 OFF). Set relay to Normally Open (NO). Works only with DoorKing Plug-In Loop Detectors.

SECTION 5 - ADVANCED OPTION, INCREASE TRAFFIC FLOW

Override a "DOWN" Command for Barrier Gate Operator

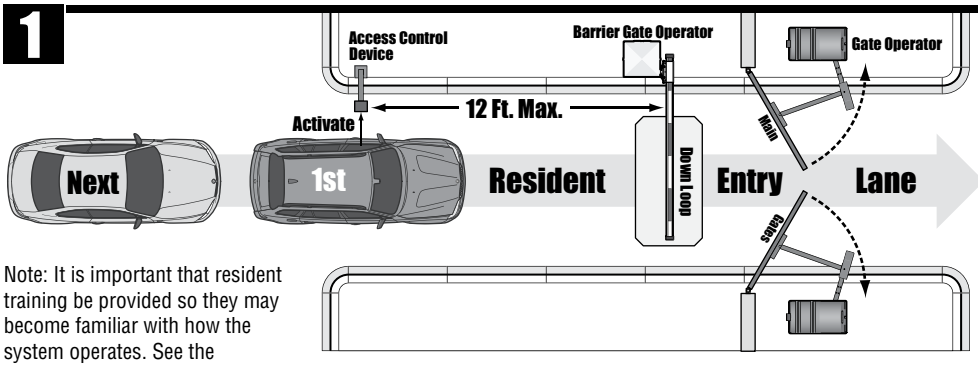
The "Basic" concept of P.A.M.S. is "One vehicle enters at a time". After the main gates open, the barrier gate operator will raise **AND** lower it's arm for **EACH** authorized vehicle entering the property. However, entry traffic flow can be increased by allowing the barrier gate operator arm to remain in the UP position to allow multiple authorized vehicles to enter the property before the arm is lowered again. Each vehicle entering **MUST** have an access device (Remote transmitter, access card, etc.) to quickly activate the access control device in the P.A.M.S. system. This option works well using remote transmitters for vehicles in the **Resident** entry lane. The remote transmitters will allow quick authorized access for **EACH** vehicle, much quicker than the UP/DOWN cycle of the barrier gate operator, which will eventually back up vehicles trying to enter in the resident entry lane.



The DOWN cycle of the barrier gate operator arm can be overridden **(DIP-Switch: SW 2, switch 2 ON and switch 3 OFF)** as vehicles are entering. The arm will remain in the up position allowing multiple **"Authorized Vehicles"** to enter before the arm lowers again. This will increase the traffic flow during heavier traffic periods.

This option **CANNOT** be used at distances **OVER 12 FEET** between the access control device and the barrier gate operator (See below). This could allow more than one vehicle to be in this specific area at the same time which the barrier gate operator **WILL NOT** be able to manage.

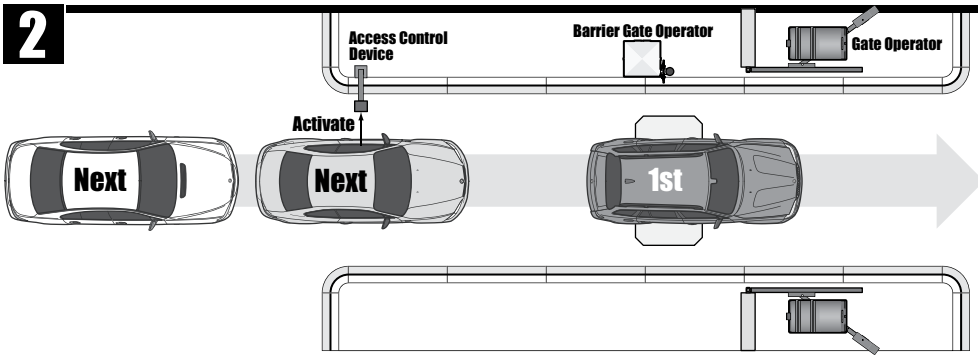
1



The 1st vehicle activates the access control device (Remote Transmitter, Card reader, etc.). The main gates respond first and open (Swing, slide, overhead). The barrier gate operator arm will quickly raise **AFTER** the main gates have **FULLY** opened.

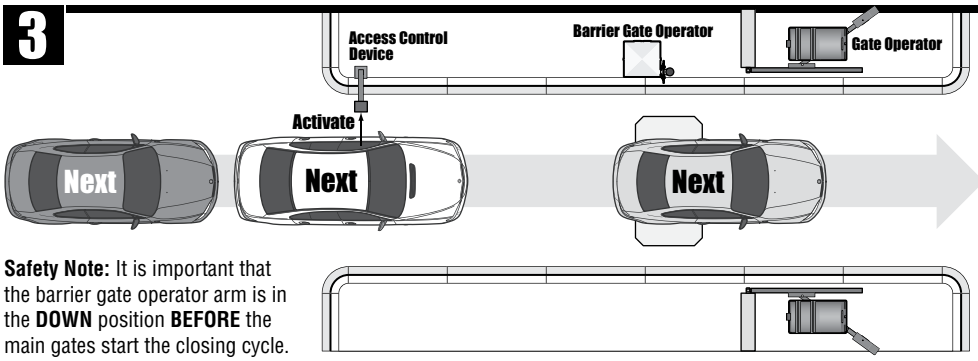
Note: It is important that resident training be provided so they may become familiar with how the system operates. See the "Resident Instructions" in the back of this manual.

2



When 1st vehicle gets to the DOWN Loop, the next vehicle can activate the access control device which **will keep** the barrier gate operator arm in the **raised position.**

3



This process can continue for every vehicle waiting to enter the property.

Safety Note: It is important that the barrier gate operator arm is in the **DOWN** position **BEFORE** the main gates start the closing cycle.

After all authorized vehicles have entered the property, the system will "Time Out" and close the gates.

SECTION 6 - TROUBLESHOOTING

In all of these situations below, it is important that the Dealer and the Management Co. fully understand how the P.A.M.S. system is designed to operate. Ask what "Resident Training" has been provided (See "Resident Instructions" in the back of this manual). In many cases, the residents are not properly utilizing the gate system.

The Gate Hit My Car

This is probably the most common complaint from a P.A.M.S. System. It is important to identify which gate operator is involved; the 1601 Barrier Gate Operator **OR** the Swing/Slide/Overhead Gate Operator. See the next two sections below for specific information about each type of problem that may be encountered.

Barrier Gate Operator Arm Hits Vehicle:

In most cases, the P.A.M.S. system is operating as it has been designed, with the Arm closing behind **EACH** authorized vehicle, hitting the second vehicle that was attempting to enter. (Always check the system wiring, equipment locations and loop operations to ensure the system has been setup properly). We want to address this with the customer, explaining to them that **A VEHICLE WILL HIT THE ARM** if it attempts to follow (tailgate) another vehicle through the gated entrance. Advise them that this is part of the system design, not a defect with the operators. See next page for additional suggestions.

You Also Want to Determine When and Where the Resident is Activating Their Transmitter: Example: A vehicle activates the gate system. The main gates open and the barrier gate operator arm raises. While the first vehicle is passing under the barrier gate operator arm (and is still over the down loop), a second vehicle approaches the gate area and activates their transmitter, expecting the barrier gate operator arm to remain up, they accelerate towards the barrier gate operator. However, after the first vehicle clears the DOWN Loop, **the Arm WILL come down.** The second vehicle may not have enough time to stop, hitting the Arm.

Things you can try:

- Make certain Speed Bumps or Roll Overs are placed properly to help minimize this situation.
- Set 1601 DOWN Loop for "DOWN / STOP" Function. (SW 2 switch 4 ON)
- Set 1601 for the Advanced Option (See previous page). (SW 2, switch 2 ON, SW 2 switch 3 OFF)

Swing/Slide/Overhead Gate Hits Vehicle:

This is a more serious situation. Remember, the safety for the Swing/Slide/Overhead gate **IS** the 1601 Barrier Gate Operator's arm in the lowered position. In all situations, the 1601 **MUST** have the arm completely lowered **BEFORE** the Swing/Slide/Overhead gate **starts** its closing cycle.

Things to check:

- **Close Timing:** Make sure the 1601 Auto-Close Timer will lower the arm **prior** to the Swing/Slide/Overhead Gate timing out.
- **Loops:** Make sure all loops are wired correctly which will link them to the Swing/Slide/Overhead gate. Activation of any loop will reset the Auto-Close Timer on the gate operator, making sure that the vehicle will clear the main gates before the timer "Times Out" and closes the main gates.
- **Broken Barrier Arm:** If the Arm is broken, **shut down the system.** Since all loops are Shadow Loops, you have a situation where the main gates could start their normal closing cycle just as a slower vehicle approaches.

High Bed Vehicles / Vehicles with Trailers

Most DOWN Loops are 4' x 6-8'. This gives you about 2 - 3' in detection height with a field about 8' along the path of the roadway. A high bed delivery truck may experience a detection dropout between the front and rear axles, which will result in the Arm coming down. A vehicle with a boat trailer may experience a detection drop between the rear bumper and the Trailer, again closing the Arm. DoorKing offers a free "Loop and Loop-Detectors Information Manual" PDF located at Doorking's web site for more information. www.dkaccess.com

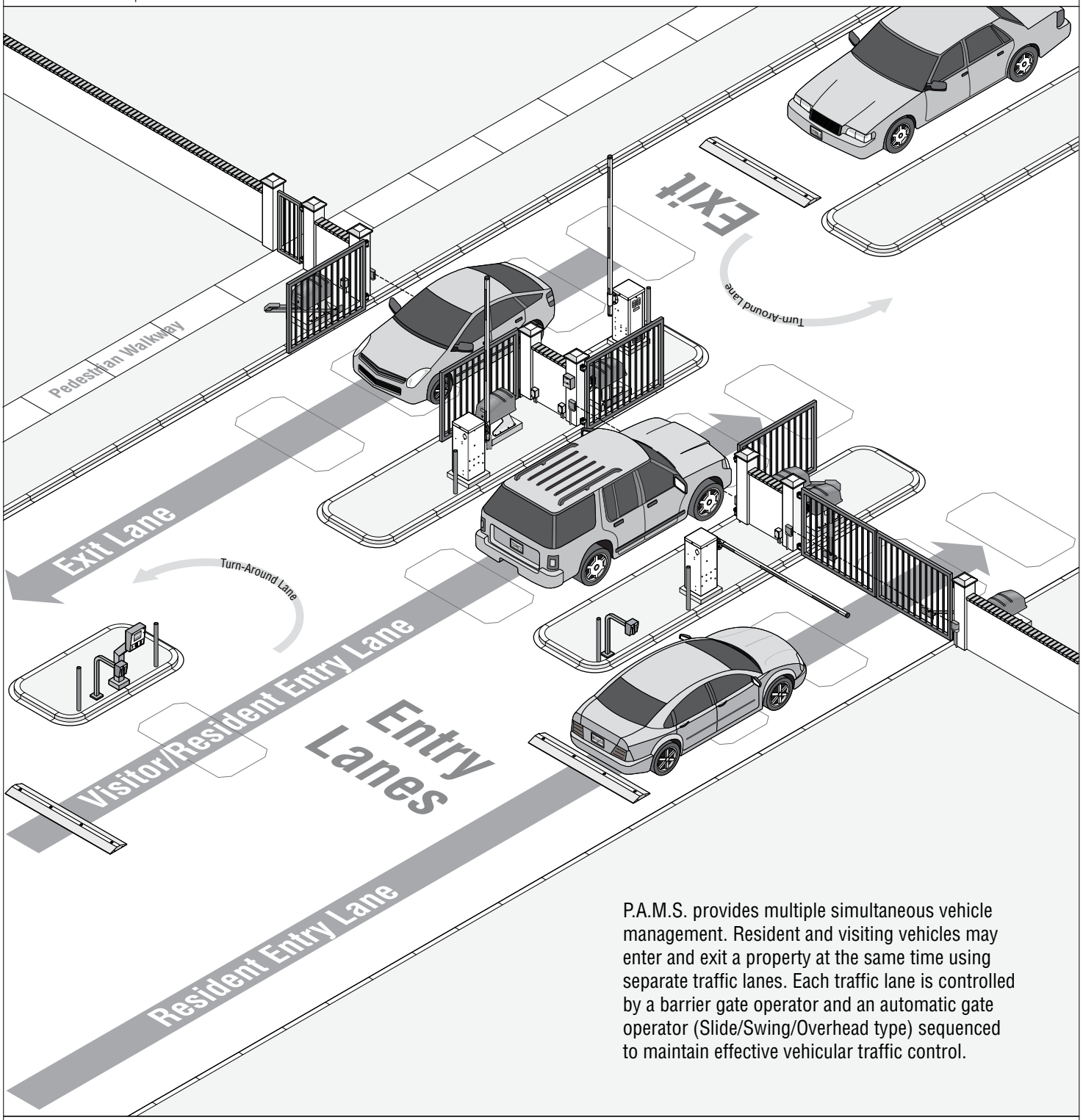
Things you can try:

- Try utilizing a 2nd Down Loop inside the gate, or configure a longer Down loop, extending lengthwise with the flow of traffic.
- Set 1601 DOWN Loop for "DOWN / STOP" Function. (SW 2 switch 4 ON)

Resident Instructions

P.A.M.S.
Perimeter Access Management Solutions

DOORKING Systems Access Control Solutions ™ PAMS-T-8-15

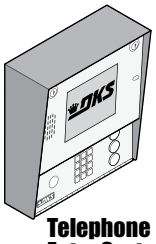


P.A.M.S. provides multiple simultaneous vehicle management. Resident and visiting vehicles may enter and exit a property at the same time using separate traffic lanes. Each traffic lane is controlled by a barrier gate operator and an automatic gate operator (Slide/Swing/Overhead type) sequenced to maintain effective vehicular traffic control.

Typical 3 - Lane Traffic Operation

DOORKING®

Visitor Access - Telephone Entry System



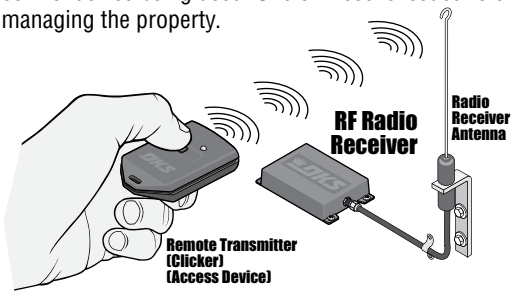
Telephone Entry System

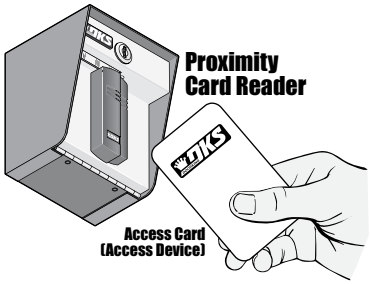
A visitor can **ONLY** gain entry through the Main Gates by using the Telephone Entry System. This provides communication from the Telephone Entry System to a Resident's apartment or home telephone.

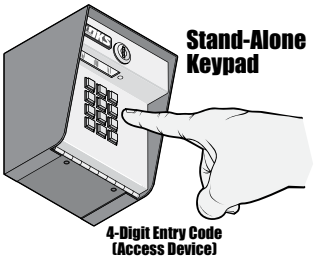
The Visitor **MUST** use the Telephone Entry System to contact the resident (A "personal" cell phone call to contact the resident **WILL NOT** allow the resident to operate the gates). The visitor can look up the resident using the "Entry System Directory" on the telephone entry system and then push the **"CALL BUTTON"**. Once the resident is connected to the telephone entry system, they can **Grant Access** by dialing **"9"** on their telephone and open the main gates or **Deny Access** to the visitor by simply hanging up their telephone.

Resident Access - Access Control Device

A resident can **ONLY** open the Main Gates by activating the **"Access Control Device"** (RF Radio Receiver, Proximity Card Reader or Stand-Alone Keypad) by using their **"Access Device"** (Remote Transmitter (Clicker), Access Card or 4-Digit Entry Code) depending on the access control device being used. One of these is issued to every resident by the Management Company or Home Owners Association (HOA) that is managing the property.







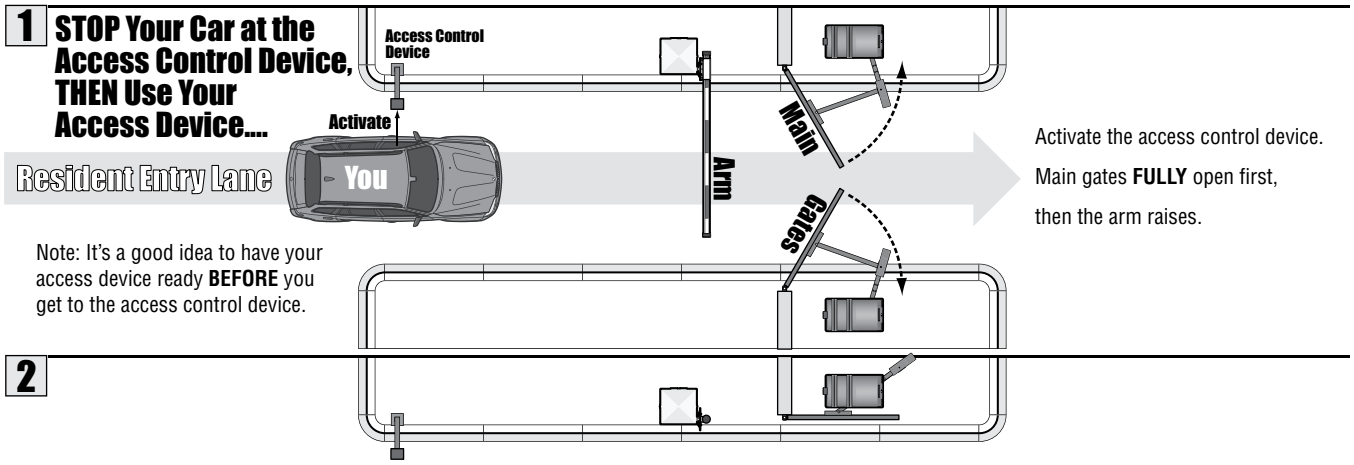
Resident Entry Procedure

Stop your car at the Access Control Device. Simply use your issued **"Access Device"** (Remote Transmitter (Clicker), Access Card or Entry Code) to activate the access control device and open the gates. **You MUST use your Access Device every time you enter.** The main gates will fully open followed by the barrier gate operator arm raising. Drive forward through the gates, **DON'T STOP or BACK-UP!** The arm and gates will automatically close after you have entered.

There are two ways you can enter the property (See **A** below and **B** on the next page):

A If you are the first car entering.....

1 **STOP Your Car at the Access Control Device, THEN Use Your Access Device....**



Activate the access control device.

Main gates **FULLY** open first, then the arm raises.

Note: It's a good idea to have your access device ready **BEFORE** you get to the access control device.

2 **....THEN Drive Forward, DON'T STOP or BACK-UP!**

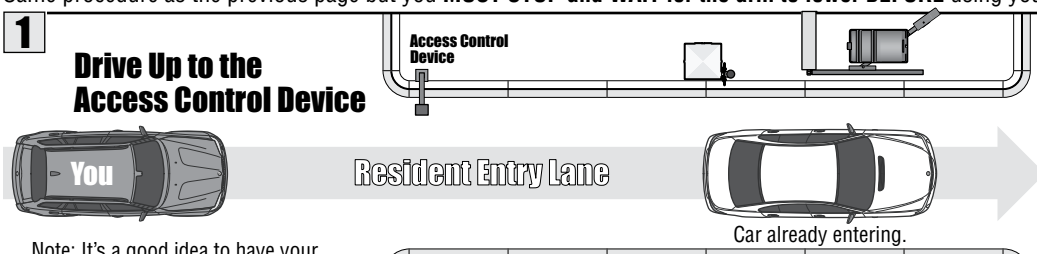
The arm and gates will automatically close after you have entered.

B If you are behind a car already entering.....

Same procedure as the previous page but you **MUST STOP and WAIT for the arm to lower BEFORE** using your access device.

1

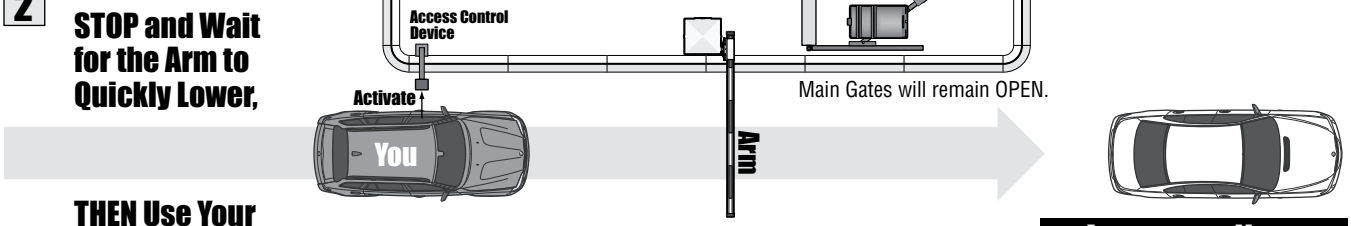
Drive Up to the Access Control Device



Note: It's a good idea to have your access device ready **BEFORE** you get to the access control device.

2

STOP and Wait for the Arm to Quickly Lower,

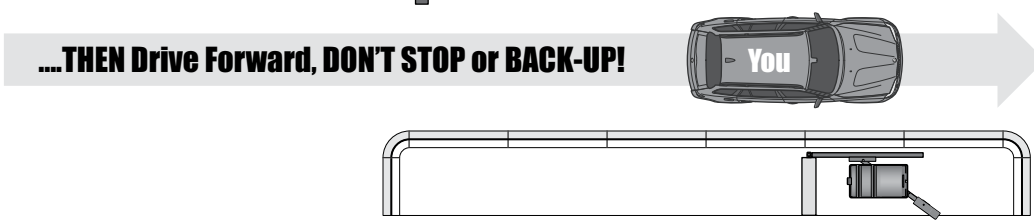


THEN Use Your Access Device to Raise the Arm....

Important Note

Only **ONE** car is allowed during an open/close cycle of the arm.

3



The arm and gates will automatically close after you have entered.

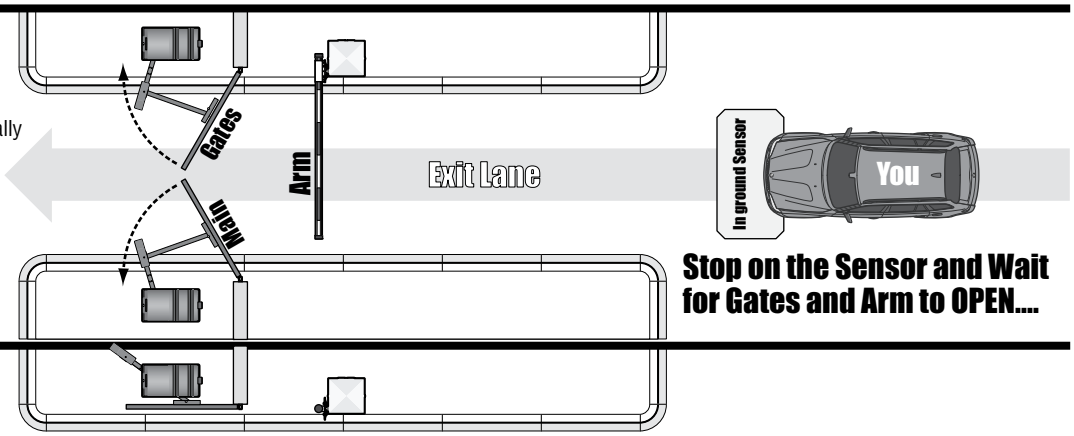
Exit Procedure

1

In ground sensor will automatically activate the gates.

Main gates **FULLY** open first,

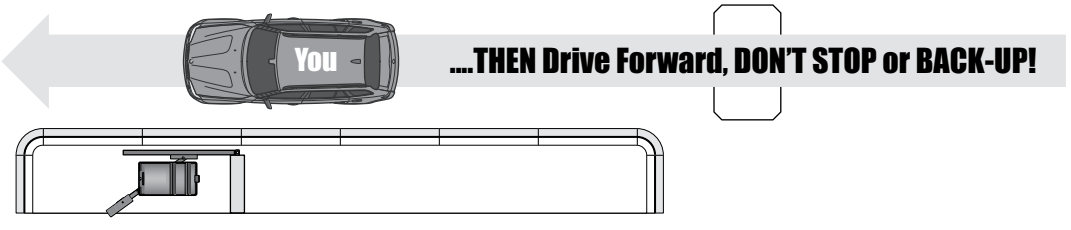
then the arm raises.



Stop on the Sensor and Wait for Gates and Arm to OPEN....

2

The arm and gates will automatically close after you have exited.

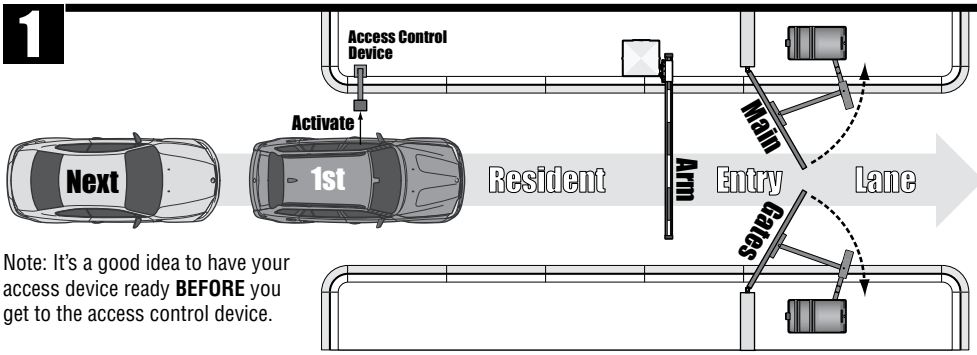


Advanced Option - Increase Entry Traffic Flow

This sequence can only be achieved if the P.A.M.S. System has been **specifically setup** to perform this advanced option and there are **multiple** cars waiting to enter the property in the **Resident Entry Lane ONLY.** The scenario below demonstrates how multiple cars will enter the property.

The 1st car will activate the Access Control Device (Usually a Radio Receiver or Card Reader) using their issued access device (Remote Transmitter (Clicker) or Access Card). **The access device MUST be used every time you enter.** The Main Gates will fully open **FIRST** followed by the barrier gate operator arm raising. The 1st car will drive forward through the gates and the next car waiting to enter will stop at the access control device and activate it. **This will keep the arm raised and allow the car that activated the access control device to drive through the gates.** The next car waiting to enter will stop at the access control device and activate it. This process can continue for each car waiting to enter. After all authorized cars have entered the property the system will automatically lower the arm first and then close the main gates.

1



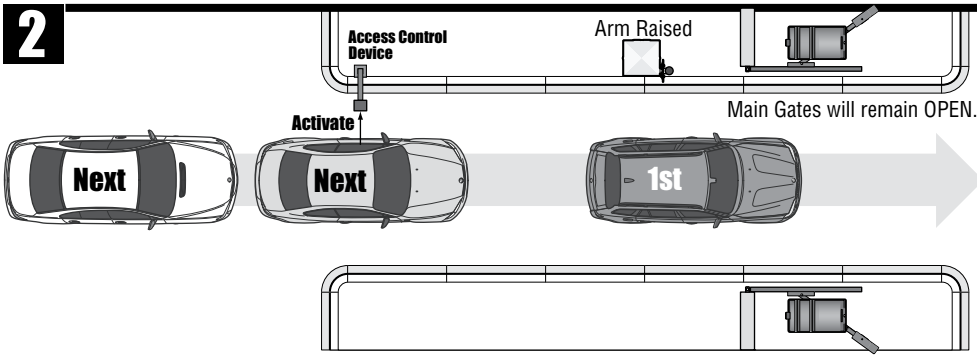
Activate the access control device.

Main gates **FULLY** open first,

Then the arm raises.

Note: It's a good idea to have your access device ready **BEFORE** you get to the access control device.

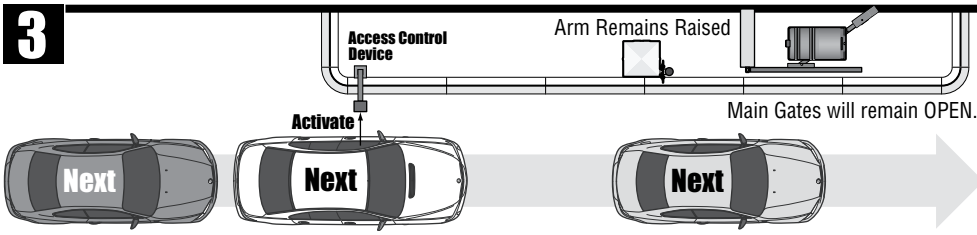
2



Activating the access control device **will keep** the arm in the **raised position.**

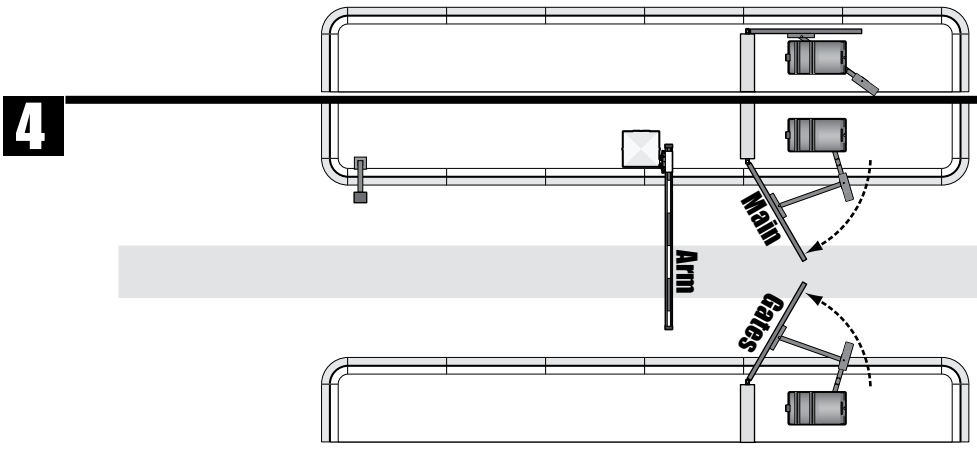
After Using Your Access Device, Drive Forward, DON'T STOP or BACK-UP!

3



Activating the access control device **will keep** the arm in the **raised position.**

4



The arm and gates will automatically close after all authorized cars have entered.

Information Manual

P.A.M.S.

Perimeter Access Management Solutions

DOORKING Systems Access Control Solutions ™

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www.doorking.com

DoorKing, Inc.
120 S. Glasgow Avenue
Inglewood, California 90301
U.S.A.

Phone: 310-645-0023
Fax: 310-641-1586