**FENCES and GATES OPERATORS / GATE OPERATORS**

**SECTION 32 31 11**

**INDUSTRIAL VEHICULAR SLIDE GATE OPERATOR**

**DoorKing 9200 Series**

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PART 1 GENERAL

This specification is based on products from DoorKing, Inc.

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The purpose of this specification is to describe the DoorKing 9200 Series industrial vehicular slide gate operator system for the purpose of providing architecture and engineering specification templates.

This section of this specification provides a top-level view of document administration and DoorKing requirements, including references, description, warranty, and maintenance.

Equipment names and model numbers included herein are those currently under production as of the writing of this specification and are subject to change without notice.

1. The Owner/Operator (End User) or facility architect shall assume responsibility for providing traffic and safety engineering, including all necessary safety features to be used at each automated vehicular gate location, including, but not limited to: sidewalks for pedestrian traffic, sufficient roadway lighting, entrapment protection devices, warning signage, traffic lights, audible warning alerts, visual warning alerts, secondary traffic control devices, guard/control booths (as required).
2. The 9200 series system shall consist of one (or multiple) 9200 industrial vehicular slide gate operator and additional optional items, as specified.

All vehicular automated gate systems should be carefully planned with safety as a paramount concern. The product is designed to control vehicle traffic; however, DoorKing, Inc., is not a traffic safety engineering firm and recommends that a system be reviewed before installation. It is recommended that all forms of safety equipment be utilized to the maximum extent possible. Such safety equipment includes, but is not limited to, entrapment protection devices, proper lighting, warning signs, traffic lights, gate arms and/or audible alarms.

* 1. SECTION INCLUDES

\*\*NOTE TO SPECIFIER\*\* Delete items below not required for project.

* + 1. Electric gate operators.
			1. DoorKing Model 9200 Series operators.
		2. Parking gates and operators.
		3. Sensors and controls.
	1. RELATED SECTIONS

\*\*NOTE TO SPECIFIER\*\* Delete items below not required for project; add others as required.

* + 1. Division 03 - Concrete
		2. Division 28 – Electronic Safety and Security
		3. Division 31 - Earthwork
		4. Division 32 – Exterior Improvements
		5. Division 34 - Transportation
	1. REFERENCES

\*\*NOTE TO SPECIFIER\*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Underwriters Laboratories (UL): UL 325 – Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.
		2. Canadian Standards Association (CSA): CSA C22.2 No. 247.
		3. Underwriters Laboratories (UL): UL 991 – Standard for Tests for Safety Related Controls Employing Solid-State Devices.
		4. American Society Testing Materials (ASTM): ASTM F2200 – Standard Specification for Automated Vehicular Gate Construction.
		5. National Electrical Manufacturers Association (NEMA): NEMA ICS 6 – Industrial Control Systems: Enclosures.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 – Administrative Requirements.
		2. Product Data: Manufacturers data sheets on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements.
			3. Installation methods.
		3. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including anchorage, edge connections, and accessories.
			1. Operation, installation, and maintenance manuals including wire diagrams.
			2. Risers, layouts, and special wiring diagrams showing any changes to standard drawings.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Deliver, store, and handle materials and products in strict compliance with manufacturer’s instructions and industry standards.
		2. Store products indoors in manufacturer’s original containers and packaging with labels clearly identifying product name and manufacturer. Protect from damage.
	3. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Substantial transformation and final assembly shall occur in the United States of America per Section 1605 of the ARRA-09.
		2. Installer Qualifications: Installation performed by factory authorized dealer contractor specifically trained in vehicular gate operator systems of the type found within this section.
			1. Provide documentation of maintenance and repair service availability for emergency conditions.
			2. Provide quarterly maintenance for one year following Substantial Completion of the Project.
	4. WARRANTY
		1. Manufacturers standard five (5) year warranty.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: DoorKing, Inc.; 120 S. Glasgow Ave; Inglewood, CA 90301; Toll-Free Tel: 800-826-7493; Tel: 310-645-0023; Fax: 310-641-1586; Email: ghendrix@doorking.com; Web: doorking.com.

\*\*NOTE TO SPECIFIER\*\* Delete one of the following two paragraphs.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements.
	1. SLIDING GATE OPERATORS

\*\*NOTE TO SPECIFIER\*\* The UL 325 Safety Standard, industry safety guidelines and the manufacturer’s installation instructions require that external entrapment prevention devices, such as photo-eyes and sensing edges, must be installed with this gate operator at locations where a potential for entrapment exist. One (or more) of these devices, or combination thereof, is required in each direction of travel. The type of device(s) and placement are dependent on the application and construction of the vehicular slide gate and is usually determined on-site by the vehicular gate operator system installer.

* + 1. Microprocessor based solid-state control board interacting with card readers, RF transmitters, access control systems, ticket machines, other activating devices as required, external devices (photo-eyes, contact edges) for entrapment protection and vehicle (loop) sensing systems. Control board shall include built-in close timer (1-25 seconds), built-in ports for two (2) plug-in loop detectors, partial open input, programming switches to set various operating modes, inherent magnetic pulse obstruction sensing reverse system. System shall employ Fail-Safe operation upon primary (AC) power outage.
			1. Compliance: Compliant to UL 325, UL 991 and CSA C22.2 No. 247 and listed by Intertek Testing Laboratories NA, Inc. (ETL), a Nationally Recognized Testing Laboratory.
				1. These models are intended for use in Class III and IV vehicular slide gate applications.

2. Gate operator speed shall be adjustable and shall incorporate a slow-start and slow-stop function, except Model 9210, which has a fixed speed of 1-ft/sec. Variable speed operators shall be adjustable from 1-ft/sec to 2-ft/sec.; high speed operators shall be adjustable from 1-ft/sec to 4-ft/sec.

3. High speed operator (Model 9235) shall employ a spring-set, electrically released, self-adjusting disc brake with a manual release.

4. Motor shall be directly coupled to the primary gear reduction system.

5. Primary reduction and power transfer shall be provided by a heavy-duty worm gear running in a continuous oil bath.

6. Operator limit switches shall be internally driven and shall not be accessible, easily tampered with or activated from outside the operator cabinet.

7. Pulling medium shall provide a positive mechanical connection to the gate system. Friction driven rail type pulling mediums shall not be allowed. Roller chain pulling medium shall be minimum size #50.

8. Operator shall function as a fail-secure device and shall provide a positive gate lock without the need of additional hardware or equipment.

9. Operator shall be capable of being mounted at the front or center of the gate system and shall be designed for either left or right hand mount.

10.Operator housing shall be G90 galvanized steel painted charcoal gray, to protect internal components.

11.Operator shall have two 115 VAC convenience outlets available for accessory transformer power and shall have a built-in lockable power disconnect and reset switch.

B. Control Circuit:

1. A warn-before-operate function shall activate the internal operator alarm 3-5 seconds prior to gate movement.

2. Control board shall have connections for optional Gate Tracker board. Gate tracker shall record operator cycles (x100), input errors, loop detector errors, obstruction hits, and power up events. Record shall be time and date stamped.

3. Control board shall allow a stop or a stop and reverse function (settable) from a reverse related input.

4. Control board shall have two ports for plug in of vehicular loop detectors, (DoorKing, Models 9409 or 9410).

5. A dry set of relay contacts shall be available for external use, and shall have four programmable functions.

6. A special input shall allow the gate to be partially opened.

7. A timer override function shall cause an opening gate to stop and then reverse direction when the reverse loop(s) or reverse input is clear even if the gate has not reached the full open position, to help reduce tailgating.

8. Control board shall have separate inputs for external contact and non-contact entrapment protection devices.

9. Functions will be user programmable by DIP-switches located on the control board.

C. Fail-Secure Operation

1. To prioritize security, operator shall assume a fail-secure (gate remains locked) mode in the event of a power loss.

2.3 EQUIPMENT

 Delete five of the following six items (A-B-C-D-E-F).

A. Model 9210 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 2000 Lbs. with #50 chain; 3000 Lbs. with #60 chain – specify which.

2. Maximum gate length: 100 feet – Minimum gate length 10 feet.

3. Motor: 1 HP continuous duty.

 Delete five of the following six items (a-b-c-d-e-f).

a. 115 VAC Single-phase

b. 208 VAC Single-phase

c. 230 VAC Single-phase

d. 208 VAC Three-phase

e. 230 VAC Three-phase

f. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 30:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed approximately 1-ft / sec.

9. Adjustable partial open limit switch.

10.Anti-tailgate feature.

11.Dimensions: 35.50 inches high, 20 inches wide, 18 inches deep.

B. Model 9220 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 2000 Lbs. #60 chain.

2. Maximum gate length: 100 feet – Minimum gate length 20 feet.

3. 2 HP.

 Delete four of the following five items (a-b-c-d-e).

a. 208 VAC Single-phase

b. 230 VAC Single-phase

c. 208 VAC Three-phase

d. 230 VAC Three-phase

e. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 30:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed adjustable 1-2 ft / sec.

9. Adjustable partial open limit switch.

10.Anti-tailgate feature.

11.Dimensions: 35.50 inches high, 20 inches wide, 18 inches deep.

C. Model 9230 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 5000 Lbs. #60 chain.

2. Maximum gate length: 100 feet – Minimum gate length 20 feet.

3. 3 HP.

 Delete one of the following three items (a-b-c).

a. 208 VAC Three-phase

b. 230 VAC Three-phase

c. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 30:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed adjustable 1-2 ft / sec.

9. Adjustable partial open limit switch.

10.Anti-tailgate feature.

11.Dimensions: 47 inches high, 31.5 inches wide, 18 inches deep.

D. Model 9235 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 3000 Lbs. #60 chain.

2. Maximum gate length: 100 feet – Minimum gate length 30 feet.

3. 3 HP.

 Delete one of the following three items (a-b-c).

a. 208 VAC Three-phase

b. 230 VAC Three-phase

c. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 10:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed adjustable 1-4 ft / sec.

9. Emergency close input.

10.Adjustable partial open limit switch.

11.Anti-tailgate feature.

12.Dimensions: 47 inches high, 31.5 inches wide, 18 inches deep.

E. Model 9240 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 10,000 Lbs. #80 chain.

2. Maximum gate length 100 feet – Minimum gate length 25 feet.

3. 3 HP.

 Delete one of the following three items (a-b-c).

a. 208 VAC Three-phase

b. 230 VAC Three-phase

c. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 30:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed adjustable 1-2 ft / sec.

9. Adjustable partial open limit switch.

10.Anti-tailgate feature.

11.Heavy-duty mounting pedestal.

12.Dimensions: 47 inches high, 31.5 inches wide, 18 inches deep.

F. Model 9245 Maximum Security Vehicular Slide Gate Operator

1. Maximum gate weight: 8,000 Lbs. #80 chain.

2. Maximum gate length 100 feet – Minimum gate length 25 feet.

3. 3 HP.

 Delete one of the following three items (a-b-c).

a. 208 VAC Three-phase

b. 230 VAC Three-phase

c. 460 VAC Three-phase

4. UL Class of Operation III, IV.

5. 10:1 heavy-duty gear reducer running in a continuous oil bath.

6. Enclosed tamper proof limit switches.

7. Solid-state motor control.

8. Gate speed adjustable 1-2 ft / sec.

9. Adjustable partial open limit switch.

10.Anti-tailgate feature.

11.Heavy-duty mounting pedestal.

12.Dimensions: 47 inches high, 31.5 inches wide, 18 inches deep.

PART 3 - EXECUTION

3.1 INSTALLATION

A. It is preferred that this product be installed by a qualified gate operator technician who is certified by the Institute of Dealer Education and Accreditation (IDEA) or the American Fence Association (AFA).

B. Model 9200 Series shall be mounted, firmly secured, plumb and level, as required.

C. Wiring shall be uniform and in accordance with national electric codes and manufacturer’s instructions.

D. All splices shall be in easily accessible junction boxes or on terminal boards.

E. All cable runs in all junction boxes shall be tagged and identified.

F. Coordinate all work with other effected trades and contractors.

3.2 SYSTEM INITIALIZING AND PROGRAMMING

A. System shall be turned on and adjustment made to meet requirements of specifications and on-site conditions.

B. System shall function as specified.

3.3 SYSTEM TEST PROCEDURES

A. System shall be completely tested to assure that all components and accessories are hooked-up and in working order.

B. System shall be pre-tested by contractor and certified to function in accordance with plans and specifications.

C. System shall be tested in presence of owner's representative.

3.4 OWNER INSTRUCTIONS

A. Installation contractor shall conduct up to (1) hour of instruction in use and operation of the system to designated owner representatives, within (30) days of acceptance.

B. Installation contractor shall conduct up to (1) hour of technical training, in troubleshooting and service of the system, to designated owner representatives within (90) days of system acceptance.

3.5 MANUALS AND DRAWINGS

A. Contractor shall provide owner with (2) copies of standard factory prepared operation, installation and maintenance manuals. Manuals shall include typical wiring diagrams.

B. Contractor shall provide owner with (2) copies of any risers, layouts, and special wiring diagrams showing any changes to standard drawings, if required on project.

3.6 MAINTENANCE

A. The manufacturer recommends periodic maintenance at three-month intervals as described in the installation and maintenance manual.

B. External reversing devices should be checked at least once a month.

END OF SECTION