**FENCES and GATES OPERATORS / GATE OPERATORS**

**SECTION 32 31 11**

**VEHICULAR OVERHEAD GATE OPERATOR**

**DoorKing Model 1175**

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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 1175 Series vehicular overhead 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 1175 series system shall consist of one (or multiple) 1175 vehicular overhead 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.

1.1 SECTION INCLUDES

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

* + 1. Electric gate operators.
			1. DoorKing Model 1175.
		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 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.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

* + 1. A. 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.

2.2 SYSTEM DESCRIPTION

A. Overhead Gate Operator:

1. The overhead gate operator shall use a microprocessor based solid-state control board that controls all functions of the overhead gate operator. Operator shall be rated for use in multi-family residential, commercial and industrial applications.

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

3. Primary reduction and power transfer shall be provided by worm gear running in a continuous oil bath.

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

5. Pulling medium shall provide a positive mechanical connection to the gate system. Roller chain pulling medium shall be minimum size #40 and shall be guided in three (3) inch galvanized steel channels.

6. Operator shall include shock mounts to reduce noise and vibration.

7. Operator frame shall use 12-gauge G90 galvanized steel to avoid rusting. Operator cover shall use polyethylene finished in charcoal gray, suede texture.

B. Control Circuit:

1. 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.

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

3. Control board shall have two ports for plug in of vehicular loop detectors, (DoorKing, Models 9409, 9410 or 9411).

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

5. 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.

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

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

C. Manual Release

1. The trolley assembly shall be designed so that a simple release can be initiated to place the gate in a manual mode of operation.

2. The manual release shall disconnect the trolley from the pulling medium, and shall be able to sustain manual operation until manually reset for automatic operation.

3. Once manually reset, the trolley shall automatically engage the pulling medium when the operator commences normal operation.

4. The disconnect system shall be capable of being locked to prevent tampering.

D. Primary Electronic Reverse

1. Electronic Reverse: The vehicular gate operator shall be equipped with an inherent electronic current sensor. The electronic reverse shall automatically cause the gate operator to stop and reverse if an obstruction is sensed during the open or close cycle.

E. Entrapment Prevention - Required

 See Section 2.3B

1. Non-contact sensors, or contact sensors, or combination thereof, shall be utilized to prevent persons from becoming entrapped in the gate system.

2. Warning signs shall be installed in accordance with manufacturer’s installation instructions and UL 325 guidelines.

F. A complete operational system shall be provided.

2.3 EQUIPMENT

A. Model 1175 Vehicular Overhead Gate Operator

1. 40:1 worm gear reducer running in a continuous oil bath directly coupled to the motor.

2. Solid-state control circuit and motor control.

3. Direct driven limit switches.

4. UL Class of Operation: II, III and IV.

5. #40 roller chain.

6. Shock mounts are included with the operator.

7. 1/2 HP, 115 VAC, 5.4 Amps (typical).

8. Power head dimensions 21 inches wide, 10.5 inches high. Overall length of operator is dependent on rail assembly.

9. Maximum Gate Height is dependant on the rail assembly:

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

a. P/N 1150-120 for gates up to 8-ft high, 147 inches overall length.

b. P/N 1150-121 for gates up to 10-ft high, 171 inches overall length.

c. P/N 1150-122 for gates up to 12-ft high, 195 inches overall length.

d. P/N 1150-123 for gates up to 14-ft high, 219 inches overall length.

B. Entrapment Prevention

\*\*NOTE TO SPECIFIER\*\* At least one (1) external entrapment protection device must be installed, otherwise the gate operator will not run.

1. Photo-electric eye (non-contact sensor).

2. Sensing edge (contact sensor).

C. Options

The following paragraphs are optional items. Delete if not required.

1. Vehicle Loop Detectors

Loop detectors prevent the gate from closing on any vehicle in the path of the gate. The type and number of loop detectors is dependant on the application and desired operation of the vehicular gate operator system.

a. P/N 9410-010 Single channel detector.

b. P/N 9409-010 Two channel detector.

c. P/N 9411-010 Single channel detector with auxiliary relay.

2. Powerhead cover – required if powerhead is less than eight (8) feet above the ground.

3. Red/Green traffic signal (P/N 1603-208).

4. Gate Tracker: The vehicular overhead gate operator shall have output for connection to Gate Tracker control board (P/N 2351-010). Gate Tracker shall maintain a detailed electronic record of cycles, input errors, loop detector errors, obstruction hits, and each time power is applied to the operator, time and date stamped.

 Data can be analyzed using the DoorKing Remote Account Manager for Windows software. A DoorKing 1830 series telephone entry or access control system is required for Gate Tracker operations. Contact manufacturer for details.

D. A complete operational system shall be provided.

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 1175 shall be mounted, firmly secured, plumb and level, as required.

C. Wiring shall be uniform and in accordance with national electric codes and manufacturers 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