



**DASMA**  
Door & Access Systems  
Manufacturers Association  
International

GATE OPERATOR & ACCESS CONTROL POINT SYSTEMS DIVISION

# TECHNICAL DATA SHEET

## #366

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## Gate Operator Pre-Installation and Site Planning

### Introduction

Although each manufacturer's equipment has unique design characteristics and functions, gate operators are somewhat similar in many installation-related aspects. Knowledge of these common aspects can simplify most gate operator installations. This Technical Data Sheet outlines items such as preparation for installation, physical support, protection, mounting, adjusting, and coordination with installation of the actual gate.

### Preparing to Install the Operator

Read the installation manual before starting, paying close attention to the sections regarding safety and entrapment protection devices. Have a copy of the manual close at hand during the installation, and refer to it often.

### Wiring the Operator

1. As soon the job has been secured, immediately find out who the electrician will be. Find out before they have started digging trenches for conduit. Most gate operator projects, especially the larger ones, call for electrical work to be done "by others."
2. Provide the electrician with a checklist, including drawings if possible, for each gate operator project. If you cannot supply the electrician with this information, ask a distributor, gate operator manufacturer and/or accessory supplier for help.

The checklist should answer the following questions:

- How many conduits will be required?
- What size must the conduit be?
- Where will the conduits go?

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**Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.**

This Technical Data Sheet was prepared by the members of DASMA's Operator & Electronics Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

- How many wires should be pulled into each conduit?
  - What gauge wire will be required?
  - What voltage and phase does the primary power have to be?
  - Where will the conduits be stubbed up, to plan for pouring of concrete pad(s)?
3. Keep this list of rules handy:
- *Run high voltage primary power wires and low voltage control wires in separate conduits.*
  - *The National Electrical Code (NEC) limits the number of wires that can be placed in a single conduit. Refer to the NEC to obtain this information.*
  - *If conduit must cross a roadway, the best place is under the gate line (for cantilever and swing gates) when they are in the fully closed position. This keeps electrical wires away from magnetic vehicle detector systems (loop detectors) that may be used as free exit devices.*
  - *Use the highest voltage that is available, or that is compatible with the gate operator.*
  - *Manufacturer-specific special wiring needs may be required. For example, a manufacturer may have a data link from their operator to an access control system, where the operator sends data about itself to the system for analysis. A special shielded cable may be required to carry the data. Another example is where a manufacturer designs an operator for the inclusion of a phone line for troubleshooting.*

### **Supporting the Operator**

#### Pad Depth

When concrete pads are used on mounting bases for gate operators or accessories (such as card readers, keypads, intercoms, telephone entry systems, etc.), depth is typically dependent on soil conditions and local code. Operator size may also affect pad depth. In any case, concrete pad depth should extend at least 12 inches below the ground surface, or below the local frost line, whichever is greater.

#### Pad Level

In most cases, the pad should be level; however, there may be some applications where un-level pads may be necessary.

#### Pad Position

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The position of the pad is critical. For swing gate operators, follow the manufacturer's instructions carefully. Unless it is absolutely necessary due to some extenuating circumstance, slide gate operator pads do not have to begin at the centerline of the gate posts. In fact, the operator pad should be offset somewhere between one and three feet down the fence line (moving away from the traveled part of the road). By offsetting the pad, the operator will then be less likely to be hit than if it is situated closer to the roadway. For non-cantilever gates, the offset of the operator may create an aesthetic problem, which is greater than the protection intended for the operator.

### **Protecting the Operator**

It may be warranted to install bollards to protect the operator if the installation site is subject to high cycling and adverse weather conditions, such as snow and ice, which could result in the unnatural coupling of skidding automobiles and operators.

Even one or two pieces of 4-inch outside diameter posts, concrete filled or not, could reap a great benefit in protecting the operator, versus the investment.

### **Mounting the Operator**

Operator anchors should be located and drilled following the pad being poured and set, for the following reasons:

1. Pads are usually poured before the gate will be hung. The position of the gate operator is directly and strategically related to the position of the gate. If the gate is not in place, the anchor bolt holes cannot be positioned correctly.
2. If the gate operator is not mounted properly, the everyday operation will result in excessive wear and tear on the gate, operator, and (if it is a chain drive unit) on the chain.
3. It is far easier to position the gate operator relative to the gate after the gate is hung, as opposed to attempting to lay out and mark "theoretical" locations.

If the manufacturer does not supply a pad-mounted operator, but rather one mounted on posts, I-beams or C-channels, the same caution applies as with anchor bolts. Wait until after the gate has been hung to position the posts, beams or channels.

One recommended procedure for mounting a gate operator is:

- Hang the gate and adjust it per the manufacturer's installation instructions.

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- Attach the drive rail or chain attachment brackets to the gate. For the chain drive operator, tie a string between the chain attachment brackets and pull it taut to show the path of travel for the chain.
- Place the gate operator on the pad and position it so that the drive wheels line up with the drive rail (in the case of a hydraulic operator) or the sprockets line up with the chain (in the case of a chain drive operator).

Be certain that the operator is parallel with the gate line. This can be checked by moving the gate into the fully open and then the fully closed position.

- Mark the positions of the mounting holes on the pad.
- Set the operator off the pad and out of the way
- Using the hammer drill, drill all the necessary holes and position expansion bolts in the holes.
- Adjust and set the limit switches and/or limit switch stops.

### **Coordinating the Gate with the Operator**

No gate operator can compensate for a poorly installed, poorly adjusted, or poorly designed gate. Make sure that the gate is properly installed and working satisfactorily before hooking up an operator. See DASMA Technical Data Sheet #352, *Automated Vehicular Gate Operating Systems – Guidelines for Specifiers, Designers, Dealers, Installers and End Users*, for a list of items installers should consider in promoting safe operation.

### **Pedestrian Access**

For pedestrian access in the vicinity of an automated vehicular gate, separate pedestrian access shall be provided or available. The pedestrian access shall be in a location such that a pedestrian shall not come in contact with a moving vehicular access gate during the entire path of travel of the vehicular gate. A pedestrian gate shall not be incorporated into an automated vehicular gate panel.

### **Compliance with UL 325**

When reviewing a gate operator manufacturer's installation instruction, an installer should pay particular attention to instructional requirements for installation in order for a gate operator system to be compliant with UL 325, the American National Standard for door, drapery, gate and louver operators. The instructional requirements extend to the various aspects of gate construction, including the installation of placards.

See DASMA Technical Data Sheet #353, *Gate Operators and the UL 325 Standard*, for more information. In addition, obtain a copy of the brochure entitled "Gate Systems Safety Guide", which can be found at [www.dasma.com](http://www.dasma.com) along with more information.

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