

# **SPEEDGATE - PDDT**

## **Installation & Maintenance Manual**

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# Wallace International SpeedGate Product

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This installation & maintenance manual edition replaces all earlier versions.

The specifications contained in this document may be changed without prior notice.

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# READ THIS FIRST!

## Important Information

## Foreword

**THIS MANUAL SHOULD BE READ CAREFULLY PRIOR TO INSTALLING THE SPEEDGATE AND/OR PLACING IT IN OPERATION.**

This manual describes how the SpeedGate can safely be installed, used and maintained. The manual has been written for the use of those people responsible for the installation and maintenance of the SpeedGate.



The function of the PEVAC SpeedGate is to allow selective access. Make sure that the SpeedGate is clearly marked as a vehicular access control system, and is not intended for pedestrian use.

Children must never be allowed to play on or around the gate.

WALLACE INTERNATIONAL is not liable for damage arising from any manner of use of the SpeedGate.



**This System is applicable to a Class I, Class II, Class III or Class IV Gate System, and may only be installed at locations meeting the U.L. 325 definitions.**

The following definitions have been extracted from the Underwriters Laboratories (U.L.) 325 Standards for Door, Drapery, Gate, Louver, and Window Operators and Systems. They need to be reviewed by both the designer of the system and the installer in order to make an accurate determination as to the appropriate classification of the gate site. The WALLACE INTERNATIONAL PEVAC Gate System is designed and intended for Class I through Class IV.

**ENTRAPMENT:**

The condition of when an object is caught or held in a position that increases the risk of injury.

**EXTERNAL ENTRAPMENT PROTECTION DEVICE:**

A device, examples being an edge sensor, a photoelectric sensor, or similar entrapment protection device, which provides protection against entrapment when activated and is not incorporated as a permanent part of an operator.

**CLASS I: RESIDENTIAL VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or System) intended for use in a home of one-to four single family dwelling, or a garage or parking area associated therewith.

**CLASS II: COMMERCIAL / GENERAL ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other building servicing the general public.

**CLASS III: INDUSTRIAL / LIMITED ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

**CLASS IV: RESTRICTED ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

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## Key to symbols used in this manual to indicate important pieces of text



**Tip:** Gives the user suggestions and/or advice in order to make certain tasks easier to carry out.



**Information:** A comment containing important additional information.



**Attention:** Warns the user against hazards/risk of injury if the procedures are not followed carefully.

- This operator manual should be kept in the operating area.
- Make sure that the maintenance is carried out in accordance with the directions. Record all details, executed maintenance work etc. in the accompanying logbook located at the back of the manual.
- Follow the safety instructions contained in the manual.
- WALLACE INTERNATIONAL reserves the right to modify the SpeedGate operator manual without prior notification.

This manual has been written with the utmost care and attention. However, the possibility of errors cannot be excluded. WALLACE INTERNATIONAL is not liable for damage arising as a result of errors which occur in the manual. You are urgently requested to inform us immediately of any errors or omissions you may identify.

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# 1. Safety Information

## 1.1. Safety Information for SpeedGates

SpeedGates provide convenience and security to users. However, because these machines can produce high levels of force, it is important that all persons involved in the design, installation, and use of SpeedGates are made aware of the potential hazards associated with improperly designed, installed, or maintained systems. Keep in mind that the SpeedGate is a fast-moving bi-fold gate system; entrapment can cause serious injury or death.

## 1.2. Safety Considerations for designers, installers and users



ATTENTION

SpeedGates are not for pedestrian use. Always provide a separate pedestrian gate that is located away from the SpeedGate so as not to attract pedestrian use of the SpeedGate.

The operator is intended for installation only on gates used for vehicles. If Pedestrians are expected to enter through the fence line, then they must be supplied with a separate access opening other than this Gate System. If a Pedestrian Gate is supplied, locate it far enough away from this gate system so as not to have it entice pedestrians to make use of the vehicular gate, or travel near the moving gate panel, even when in the fully open position.

Always specify, as part of a complete gate system, the additional safety devices that can reduce the risk to pedestrians in the area of the SpeedGate.

All safety devices, namely photocell, gate edges and audible alarms that have been installed in the SpeedGate must remain functional for the life of the SpeedGate.



INFORMATION

### **Requirements of U.L. 325 Paragraph 31.1.18**

The audio alarm signal provided with this system is a buzzer (horns, sirens, or bell). The signal shall have a frequency in the range of 700 to 3400 Hz, a cycle of the sound level pulsation's of 1 to 2 per second, a sound level at least 100 dB 1 ft (305 mm) in front of the device, and not vary more than 8 dB over the voltage range of operation.

Install the hazard warning signs provided with the SpeedGate immediately adjacent to the SpeedGate on both sides of the opening. The four (4) warning signs provided with this system must be installed where visible in the area of the gate. (One is to be installed on each side of the gate and on either side of the gate.) The sign must be clearly visible to persons located on the side of the gate on which the warning sign is installed. These warning signs must be securely attached, and the End User advised of the U.L. 325 requirement to keep them on the gate.

SpeedGates are installed and operate so that there is sufficient clearance between the gate and adjacent structures, while both opening and closing, to minimize the risk of entrapment. There must be sufficient clearance between the moving gate panels and adjacent structures to prevent entrapment while both opening and closing. If the spacing is less than 16", additional safety devices should be employed to respond to possible entrapment conditions.

Bi-folding sections of the SpeedGate should move towards private property when opening (away from the public/un-protected area).

### **1.3. Important safeguards and instructions to communicate to owners/users**

**The following information is to be explained to the owners and users.**

Explain that a SpeedGate will sound an audible alarm for 2 seconds prior to any gate movement, and while the gate is in motion. Additional warning devices, both visual and audible, are available for integration into the gate controller.

#### **1.3.1. Instruct the owner/users as follows:**

- How to operate the SpeedGate correctly and safely.
- To not allow pedestrians and/or bicycles to use the SpeedGate.
- To never allow children to play around the gate, or to have access to controls of the SpeedGate
- How to disconnect power from the gate
- How to use the manual brake disconnect
- To contract a qualified service company for regular maintenance and safety checks to ensure correct function of the gate.

All access controls must be located far enough from the gate so that the user is prevented from coming into contact with the gate while operating the controls. Although this requires a site dependent evaluation, typically a distance of 6 feet between the controls and any portion of the SpeedGate should be considered as meeting these installation criteria. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use. It is strongly recommended that the Electrical Controls Enclosure be kept locked at all times, for which a locking door has been provided.

Following the complete installation and testing of the system, the installer must provide to the end user a thorough briefing and demonstration of the gate system. See the checklist provided for this purpose, and be certain to cover all of these warning instructions in detail. It is recommended that one copy of the checklist be signed by both the installer and end user, dated, and retained in a file by the installation company as a permanent record this briefing has been done.



## 2. Introduction

### 2.1. Product Description

The SpeedGate is a bi-folding gate that can be opened and closed within a short space of time (6 seconds). The SpeedGate has been designed to allow selective access and for security purposes.

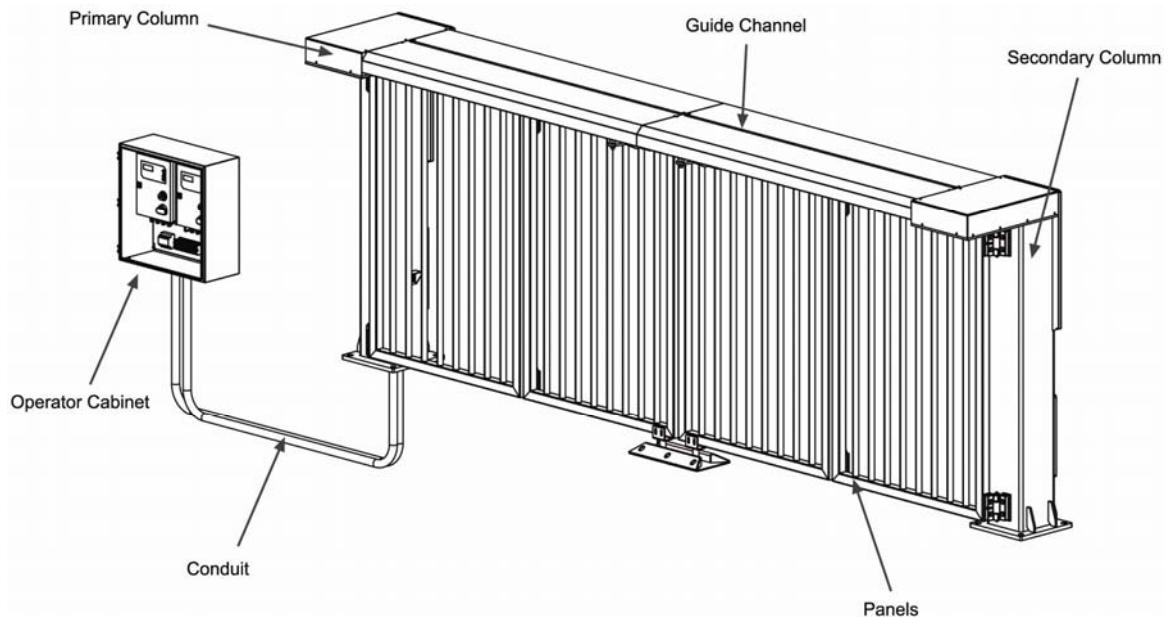


FIGURE 2.0

**Generally speaking, the SpeedGate consists of seven different components**

These are:

- Columns
- Panel(s)
- Drive Mechanism(s)
- Operator Enclosure
- Safety Devices for Obstruction Detection
  - Primary Safety Device
    - Reduced Speed Sensor
  - Secondary Safety Devices
    - Photocell
    - Audible Horn Device
  - Additional Optional Safety Devices
    - Sensing Edges
    - Vehicle Detectors

## 2.2. Description of Important Components

### The Columns

The columns support the guide channel and the panels. The columns also house all of the drive components for the gate. The columns are anchored to a concrete foundation with anchor bolts.

### The Drive Mechanism

The panels are driven by means of an electro-mechanical drive system. The drive mechanism is located in the column. In the event of a power failure, a manual brake disconnect can be used to manually open/close the gate.

### The Panel(s)

The panels (gate leaves) are attached to the columns using hinges. The minimum opening and closing time for the panels is approximately 6 seconds.

### Safety Devices – Open & Close Cycle

*Before any gate movements we need the gate to have a audible warning time (a minimum of 2 seconds), during which the horn is going off, the horn will also sound during any gate movement. The exception is of course if the gate reverses there will be no clear time.*

*“Renewed command” means that a command (such as an open or close command) that was present at the time of the obstruction detection must be ignored. An example of this could be a Cardreader that has a strike time of 8 seconds. If the gate begins to open and detects an obstruction, it is to reverse closed and remain there. The input from the Cardreader (assume it is still present) will be ignored. Only if the contact is released and then made again will a new open or close cycle be started.*

- Primary Safety Device
  - Reduced Speed Sensing device; the absolute encoder located on the motor in each column is used to sense the position of the gate for gate operation and for reduced speed sensing. Utilizing the parameters explained in the control manual, the force exerted by the gate leaf must be adjusted so that under normal operating conditions, the controller will sense when the gate has come into contact with an obstruction and will reverse as per U.L.325 regulations.
  - If the reduced speed sensor is activated while the gate is opening or closing, the gate will immediately go into a “soft shutdown” mode. In order to restore gate operation, a renewed open or close command must be given.
    - I. If the gate is opening and it encounters an obstacle (via the reduced speed sensor) it should reverse to closed position and wait for a renewed command.
    - II. If the gate is opening and it encounters an obstacle (via the reduced speed sensor) it should reverse to closed position; if it encounters an infrared beam (photocell) input during reversing = hard shutdown.
    - III. If the gate is opening and it encounters an obstacle (via the reduced speed sensor) it should reverse to closed position; if it encounters another obstacle during reversing (via the reduced speed sensor) = hard shutdown.
    - IV. If the gate is closing and it encounters an obstacle (via the reduced speed sensor) it should reverse to open position and wait for a renewed command. The automatic time to close must now be disabled.
    - V. If the gate is closing and it encounters an obstacle (via the reduced speed sensor) it should reverse to open position; if it encounters an infrared beam (photocell) input during reversing = hard shutdown.

- VI. If the gate is closing and it encounters an obstacle (via the reduced speed sensor) it should reverse to open position; if it encounters an obstacle (via the reduced speed sensor) during reversing = hard shutdown.

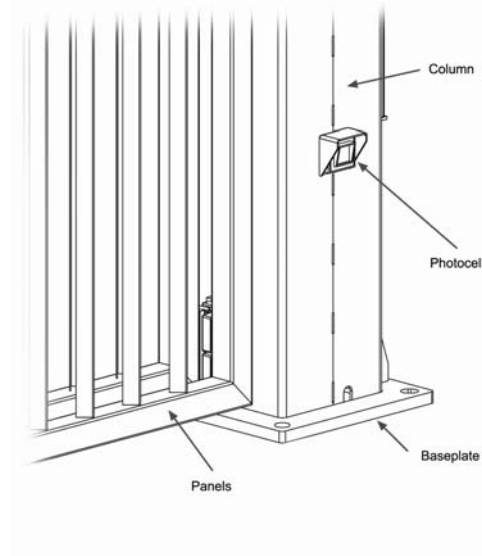


FIGURE 1.3

- Secondary Safety Device
  - Photocell – the Infrared Beam; the through-beam photocell (see figure 1.3) is used to detect physical objects in the gate travel path. If it is blocked during the opening or closing motion of the gates, the gates will stop and react in accordance with the U.L.325 regulations. The suggested height is 21” above grade and within 5” of the gate panels in the closed position.
    - I. If the gate is opening and it encounters an infrared beam (photocell) input it should reverse to the closed position and wait for a renewed command.
    - II. If the gate is opening and it encounters an infrared beam (photocell) input it should reverse to closed position; if it encounters another infrared beam (photocell) input during reversing = hard shutdown.
    - III. If the gate is opening and it encounters an infrared beam (photocell) input it should reverse to closed position; if it encounters an obstacle (via the reduced speed sensor) during reversing = hard shutdown.
    - IV. If the gate is closing and it encounters an infrared beam (photocell) input it should reverse to open position and restart the auto close timer.
    - V. If the gate is closing and it encounters an infrared beam (photocell) input it should reverse to open position; if it encounters another (renewed) infrared beam (photocell) input during reversing = hard shutdown.
    - VI. If the gate is closing and it encounters an infrared beam (photocell) input it should reverse to open position; if it encounters an obstacle (via the reduced speed sensor) = hard shutdown.
  - Audible Warning Device; this audible alarm will pulse for a minimum of 2 seconds before the gate will move. The audible alarm will continue to pulse during the movement of the gate.

- Sensing Edge; the gate edges are located on the outermost panels and the innermost panels. If any of these edges encounter an obstruction, the gate will stop and begin to reverse in less than 2 seconds. A normal command to operate the gate (open signal, card reader, close signal, vehicle presence on an Automatic Exit Loop) will return the Gate to operation. The time to close will not be functional until such a signal is received. This status is commonly referred to as a “Soft Shutdown” mode.

## 2.3. Application

The SpeedGate has been designed for use in allowing selective access and for security purposes for motorcycles, passenger vehicles and larger transport vehicles.

Please see the information below for the definitions of the Classes for Gate Systems.



**This System is applicable to a Class I, Class II, Class III or Class IV Gate System, and may only be installed at locations meeting the U.L. 325 definitions.**

The following definitions have been extracted from the Underwriters Laboratories (U.L.) 325 Standards for Door, Drapery, Gate, Louver, and Window Operators and Systems. They need to be reviewed by both the designer of the system and the installer in order to make an accurate determination as to the appropriate classification of the gate site. The WALLACE INTERNATIONAL PEVAC Gate System is designed and intended for Class I through Class IV.

### **ENTRAPMENT:**

The condition when an object is caught or held in a position that increases the risk of injury.

### **EXTERNAL ENTRAPMENT PROTECTION DEVICE:**

A device, examples being an edge sensor, a photoelectric sensor, or similar entrapment protection device, which provides protection against entrapment when activated and is not incorporated as a permanent part of an operator.

### **CLASS I: RESIDENTIAL VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or System) intended for use in a home of one-to four single family dwelling, or a garage or parking area associated therewith.

### **CLASS II: COMMERCIAL / GENERAL ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other building servicing the general public.

### **CLASS III: INDUSTRIAL / LIMITED ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not intended to service the general public.

### **CLASS IV: RESTRICTED ACCESS VEHICULAR GATE OPERATOR:**

A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

If Pedestrians are expected to enter through the fence line, then they must use a separate access opening other than this Gate System. The Pedestrian Gate should be located far enough away from this gate system so as not to have it entice pedestrians to make use of the vehicular gate, or travel near the moving gate panel, even when in the fully open position.

**The SpeedGate is not intended for allowing access to pedestrians and/or bicycles.**

## 2.4. SpeedGate Uses

The SpeedGate is commonly used for securing the following:

- Airports
- Banks and/or Financial Bodies
- Borders
- Correctional facilities
- Embassies
- Military installations
- Parking Lots
- Police Stations
- Transportation Logistics Facilities

## 2.5. Requirements of the Operator

The SpeedGate can be operated automatically or by hand.

The SpeedGate should only be operated by persons that were onsite for the final gate commissioning. For more information in regards to operating the operator please refer to the following paragraph; operating device. During the commissioning the individuals attending will receive the End User Briefing found in Appendix II.

## 2.6. Operating Device

The operators can be operated by a push button station, vehicle detector loops, card access system and any device which when given a command switches a dry contact relay (the relay common is supplied by the operator). There are also foil key pads on the outside doors of the operators, each key pad commanding the corresponding operator and gate.

## 2.7. U.L.325 Marking

The SpeedGate controller is provided with a marking (see figure 2.1).

The marking indicates that the product satisfies: The Underwriter's Laboratories (UL).



FIGURE 2.1

# 3. Safety

## 3.1. Introduction



This chapter discusses the safety considerations of the SpeedGate.  
**Read this chapter carefully prior to installing and using the SpeedGate.**

## 3.2. Safety and Health Hazards

The application of the SpeedGate is safe when used according to the stipulations of paragraph **1.3**. The positioning of the SpeedGate in a certain environment will give rise to new risks which will vary from installation to installation. The client should ascertain what risks will arise following installation. Generally speaking, the following risks can be identified. (The numbering refers to the paragraphs in which the risks are discussed):

### 3.2.1. Entrapment Protection and Pinch Points:

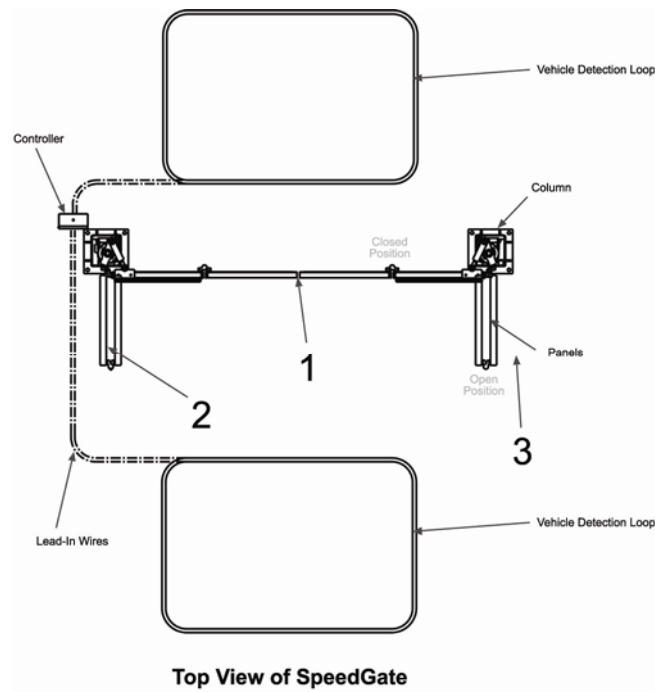


FIGURE 3.0

#### Gate Structure

1. Between the outermost panel sections
2. Between the innermost and outermost panel sections
3. Between the innermost panel section and a parallel wall or object

#### In the Gate Structure

- Between the moving parts in the drive box.
- Vehicles trapped between the panels of the SpeedGate.
- Possibility of injury because the Gate is operated by unqualified personnel.
- Collision with the SpeedGate because:

- the SpeedGate closes immediately in front of a moving vehicle



Safety measures have been taken in the design of the speed in order to reduce these risks as much as possible. These risks can be limited even further by taking the above-mentioned risks into account when positioning the gate and by observing the safety instructions.

### 3.3. Safety Devices for the SpeedGate

In order to ensure that the SpeedGate is operated as safely as possible, the following safety devices have been incorporated:

- Primary Safety Device
  - Reduced Speed Sensor device; the absolute encoder located on the motor in each column is used to sense the position of the gate for gate operation and for reduced speed sensing. Utilizing the parameters explained in the control manual, the force exerted by the gate leaf must be adjusted so that under normal operating conditions, the controller will sense when the gate has come into contact with an obstruction and will reverse to the cycle starting position. The gate will wait at this position for a renewed command.
- Secondary Safety Device(s)
  - Photocell; the through-beam photocell (see figure 3.1) is used to detect physical objects just in front of the gate travel path. If it is blocked during the opening or closing motion of the gates, the gates will stop and reverse to the cycle start position. If the gate is at the open position and the timer-to-close is activated, the gate will function as normally configured.

Photocells are placed in the SpeedGate column. If there is a person situated in between the columns, the light beam of the photocells is interrupted and the power supply to the SpeedGate is interrupted. The photocells are placed at a suggested height of 21" (600mm) from grade and 5" from the gate panels in the closed position.

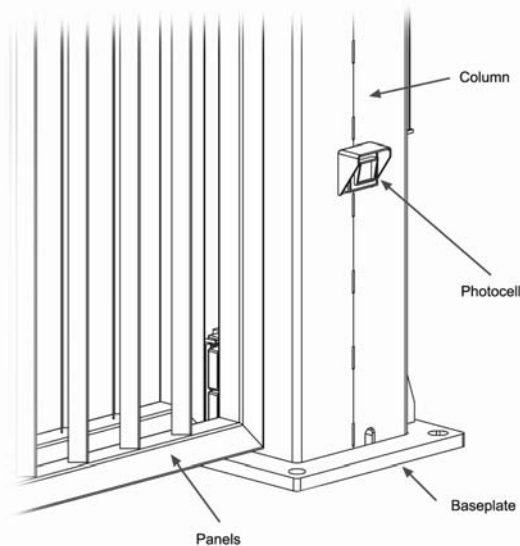


FIGURE 3.1



**Note: If a higher safety level is required,  
the SpeedGate can be equipped with several photocells.**

- Sensing Edges – The ends of the outermost panel sections are fitted with gate edges. When these gate edges are pushed, they transmit a signal which interrupts the power.
- Warning Signs – The hazard warning signs provided with the SpeedGate are mounted immediately adjacent to the SpeedGate on both sides of the opening. The four (4) warning signs provided with this system must be installed where visible in the area of the gate. One is to be installed on each side of the gate and on either side of the gate opening. The sign must be clearly visible to persons located on the side of the gate on which the warning sign is installed. These warning signs will be securely attached and it is a U.L.325 requirement to keep them on the gate.
- Vehicle Detector – the vehicle detector passes a small current flow through the in-ground laid “vehicle detection loop” which then becomes an inductive coil. When a vehicle passes over the loop the detector senses the resultant drop in the inductance, and this in turn stops the gate.
- The opening and closing force of the SpeedGate is restricted by a variable frequency drive. The opening and closing times are also regulated by the PLC in the operator cabinet.
- The access doors on the column are provided with locks so that unauthorized access to the drive can be prevented.



### 3.4. Recommended Safety Precautions for the Immediate Vicinity

To ensure the safe use of the SpeedGate, measures will need to be undertaken in the immediate vicinity. The necessary measures will differ according to the situation. In general, the following measures will make a considerable contribution to the reduction of obstructions or unsafe conditions.

- If pedestrians and/or bicycles regularly approach the SpeedGate once it has been installed, the risk of pedestrians and/or bicycles becoming trapped between the moving sections of the SpeedGate will increase. The following are several suggestions designed to reduce this risk:
  - By the installation of the provided warning signs the danger zone will be indicated, this can be further enhanced by having markings on the road surface.
  - If Pedestrians are expected to enter through the fence line, then they must use a separate access opening other than this Gate System. The Pedestrian Gate should be located far enough away from this gate system so as not to have it entice pedestrians to make use of the vehicular gate, or travel near the moving gate panel, even when in the fully open position.
  - If the presence of pedestrians and/or bicycles near the SpeedGate cannot be avoided, the SpeedGate must be kept under camera surveillance or direct surveillance by operating personnel. Someone **must be available to take action as soon as possible when a dangerous situation arises.**
- If there is a wall next to the SpeedGate with a gap of less than 16” (see figure 3.0 # 3), a gate edge or a photocell can be mounted on the wall. If someone becomes trapped between the wall and the panel as the Gate opens, the gate edge or the photocell will be tripped and the SpeedGate will stop.
- If the SpeedGate is to be operated manually, the primary power should first be disconnected. When the brake manual override is used it triggers an emergency stop via a micro limit switch so that the gate function is stopped. When operated manually, the SpeedGate should only be operated by adequately trained personnel who were onsite during the gate commissioning so that they are well acquainted with the operation of the SpeedGate.
- Traffic lights can be used to direct traffic through the gate opening. The SpeedGate operator provides contacts to control the switching of the traffic light.
  - The traffic lights must not turn green until the SpeedGate has fully opened. The traffic light must turn red several seconds before the SpeedGate closes in order to give road users



sufficient time to come to a stop. The traffic light must turn red whenever the SpeedGate is closed or is in motion.

- Place a sign next to the traffic light with the text: "One Vehicle Only per Cycle".
- Adequate lighting can be placed near the SpeedGate to ensure good visibility on both sides of the gate.
- A maximum height sign must be indicated on the SpeedGate. A height signaling system can also be installed.
- You are advised to place a security camera near the SpeedGate. This has the following advantages:
  - Continual surveillance of the SpeedGate so that appropriate measures can be undertaken if a dangerous situation arises.
  - A collision will be noticed.
    - It is possible to show clearly what the cause of the collision was.
  - Sabotage of the SpeedGate will be noticed immediately.

### 3.5. Safety Instructions for Maintenance



- On the first work day of every week, check that the SpeedGate is in good working order.
- On the first work day of every week, check that the lighting at the SpeedGate is in good working order.
- On the first work day of every week, clean the photocells and check that they are in good working order.
- Carry out the maintenance in accordance with the instructions in the logbook provided.
- Switch off the drive whenever assembly and maintenance activities are being carried out.

## 4. Installation

**This chapter describes how the SpeedGate is to be installed.**

The installation should only be carried out by personnel qualified by WALLACE INTERNATIONAL.

### 4.1. Required Facilities

The following facilities must be present at the installation site:

- Electricity for the operator cabinet (208 – 240v single phase, 2 hot wires, 1 ground wire)
- Control wiring to the central controls (depending on the chosen control system).

### 4.2. Installation

When carrying out all hoisting activities, make sure that the strength of the hoisting straps is sufficient to bear the weight to be hoisted. Pay attention to the angle of the hoisting straps. The greater the angle, the lower the drawing strength of the hoisting straps (**consult the strap manufacturer for more information**).



ATTENTION

*During installation, avoid damage to the coating layer of the SpeedGate if it is powder-coated.*

*Any accessories can be mounted onto guide channel when it is on the ground as long as they don't interfere with the lifting process. Please see section 4.2 for the accessories.*



TIP

**The following step-by-step instructions for the installation and connection of the SpeedGate should be followed:**

#### 4.2.1. Gate Installation

1. Footing/Foundation Details; the recommended pile depth is 168" with the top 72" encased in a sonotube or an equivalent product. If the conduit for the gate is being run through the footing the conduit should extend out of the footing by 12". The material ½" reinforcing steel, 10 pieces x 164" Vertical and 15 pieces 24" diameter ring with double rings on top of cage. The rebar cage should be 4" below the top of the footing. (see figure 4.0) To ease the drilling of the anchor holes 4 thin rods should be used at four equal points around the rebar cage 'rebar ring location stub ups' that extend beyond the footing so that location of the rebar rings can easily be located.

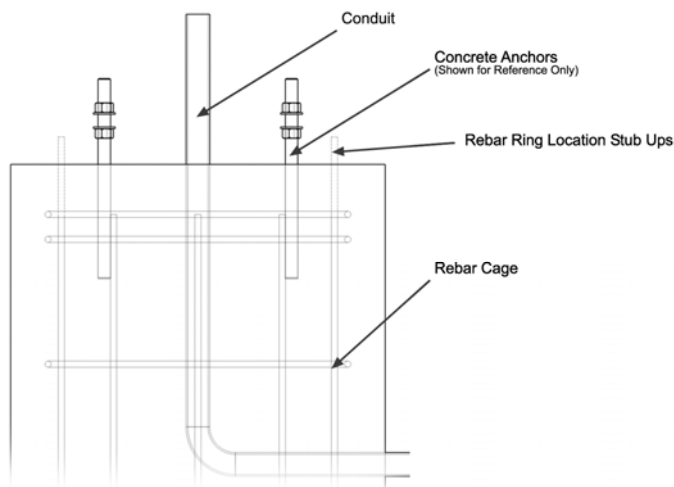


FIGURE 4.0

**INFORMATION**

***The footing details are a guideline and are only for reference, as local environment and soil conditions should be taken into account. Please contact WALLACE INTERNATIONAL for more information.***

- Using a leveling device, check to see that the foundations for the SpeedGate are level with each other. In case of foundations that have been set to different elevations, the anchor bolts will need to be lengthened to accommodate the inconsistency. SpeedGate columns should always be placed as close as possible to the concrete foundation, using leveling nuts in all cases.
- Place the steel anchor bolt template on the prepared foundations (See figure 4.1) making sure that the template is centered on the foundations. If the SpeedGate is being installed near a wall, object or pre-existing opening make sure that each side of the template is the same distance from the wall, object or pre-existing opening. See SpeedGate site specific drawings that are provided by WALLACE INTERNATIONAL for exact dimensions of the gate foundations.

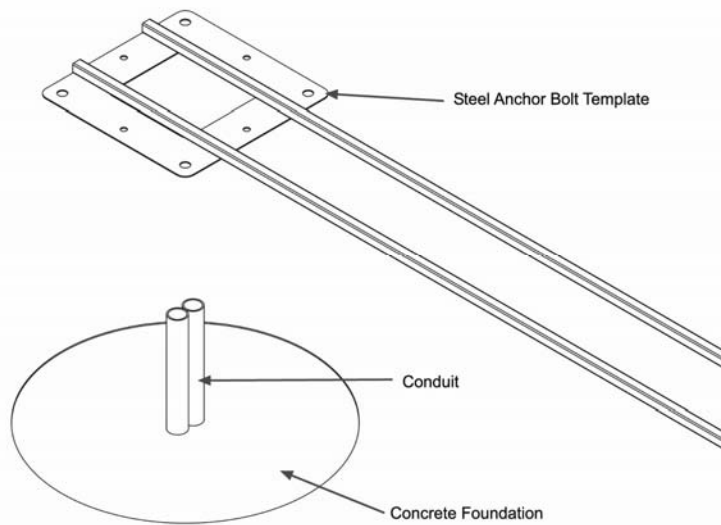


FIGURE 4.1

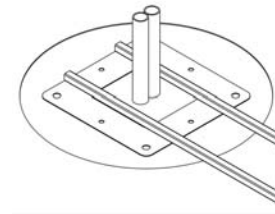


FIGURE 4.2

- Ensure that the required conduits (one for power, one for the control wiring) fit in the center of the anchor bolt template. (see figure 4.2) Using 1" grade 8 anchor bolts (or equivalent), imbed the anchors using epoxy chemical anchor (HILTI HIT150 or equivalent).

*The manufacturer's written instructions must be read and followed prior to using the HILTI epoxy system.*

- Ensure minimum of 4" thread exposed above foundation. See chemical anchor installation guide for depth of anchor holes. Anchors and epoxy are supplied by WALLACE INTERNATIONAL.

#### 4.2.2. Gate Installation



Use extreme caution when handling, moving, or slinging the panel sections. Black gate edges may be installed (one horizontal on bottom of outer panel section, 2 vertical on inner panel section). They are susceptible to damage if miss-handled. Always use blocking when working with panels to prevent damage to gate edges.

1. Using lifting device (forklift/Crane) and eye to eye (recommended 2" x 16' long) strap, raise column into place (See figure 4.3).

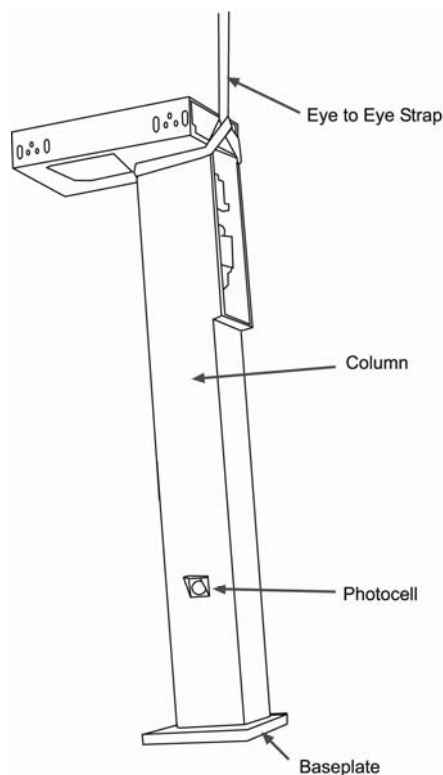


FIGURE 4.3

2. Place columns using leveling nuts/washers, maintaining base flange plate as close to the pile surface as possible.

*Columns are left/right side specific. Take note of the photocell plate and hinge mounting hole locations. Photocell location cut out should face towards the gate opening, the plates located on the column face should face towards the property's Secure Side (this will allow for the gate to swing into the property when opening). If you require the gate to open AWAY from the Secure Side, reverse the column. As per U.L. 325 a SpeedGate opening towards the Public Side must have the panels remain over the owner's property and not move out onto a public sidewalk or street.*



3. Secure both columns using nuts/washers. Column anchor bolts should be tightened firmly – they may need to be loosened during guide channel installation. All anchor bolts should be tightened to 210 ft/lbs. (See figure 4.5)

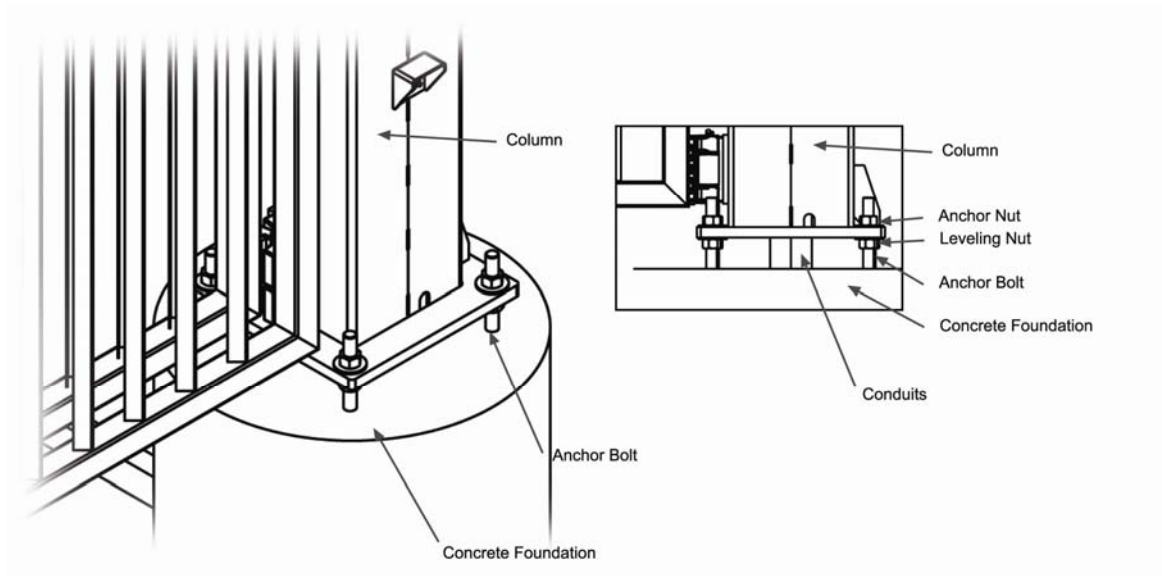


FIGURE 4.5

- Once the columns have been installed the guide channel must be installed. Using a forklift, either lift or strap the header so that it can be lifted into place (See figure 4.6). To ensure proper orientation there are 2 pieces of structural tubing that are 3" apart, they form the channel. The channel needs to be furthest away from the access doors. This allows for the guide wheel to be attached to the panel and run within the channel. Use the 1/2" bolts with washers/lock washers/nuts to secure the guide channel to the columns.

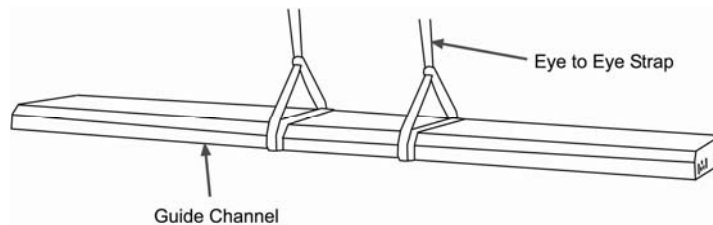


FIGURE 4.5



**TIP**

**Note: Don't tighten down bolts until all bolts have been installed. Once all the bolts are in the guide channel, tighten all bolts and level off the entire structure.**

- Once the guide channel has been installed the gate panels can be installed. Determine the top of the gate panel, the top will have mounting plates with holes for the drive pin and guide wheel. Open up gate panel on the ground and lay the template used for installing the anchor bolts diagonal across the 2 panels. (See figure 4.6) One end of the anchor template should be in the bottom corner by the hinge and the other corner should stick out the top of the panel. Since you are bringing the panel in on an angle you do not have to worry about how far the template sticks out at the top. Secure the template in place with C-clamps. This will insure the panels will stay flat as you lift them in the air. Run eye to eye strap under the center of the 2 panels and up and through the second hinge from the top. Then noose it over the top hinge. This will allow for movement when it is secured to the column. You will need the provided 1/2" socket cap bolts. It is important to get the topmost hinge bolts installed and hand tightened before the subsequent hinge bolts are installed. Once you have all hinge bolts in hand tight, tighten them to 85lbs.

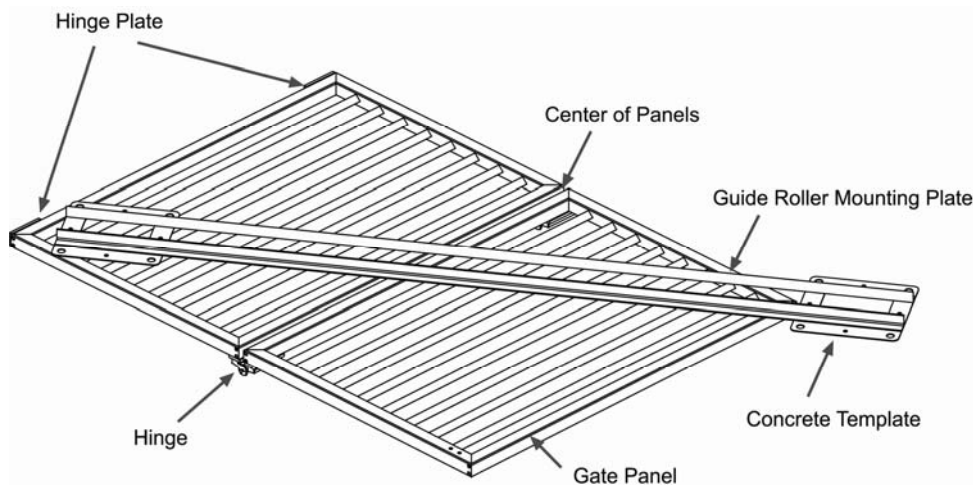


FIGURE 4.6

- Once the gate panels have been installed the guide wheel and the drive pin can be installed. Install the drive pin before the guide wheel is installed (See figure 4.7). The attached gate panel should be moved so that the drive pin can be installed (See figure 4.9). Once the drive pin is installed the gate panel will have to be moved with the motor brake disconnected (See Section Manual Operation). Move the outer gate panel under guide track, once you have moved the panel insert wheel into the guide channel track and bolt it to the guide roller mounting plate using the provided  $\frac{1}{2}$ " bolts. (See figure 4.8)

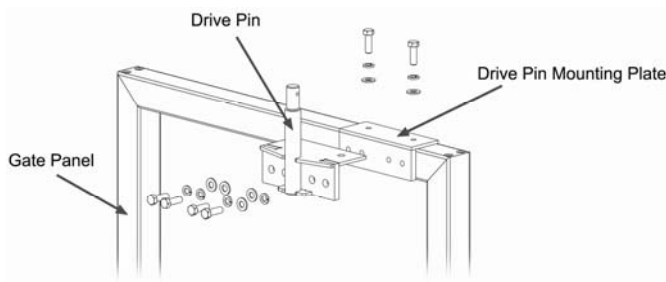


FIGURE 4.7

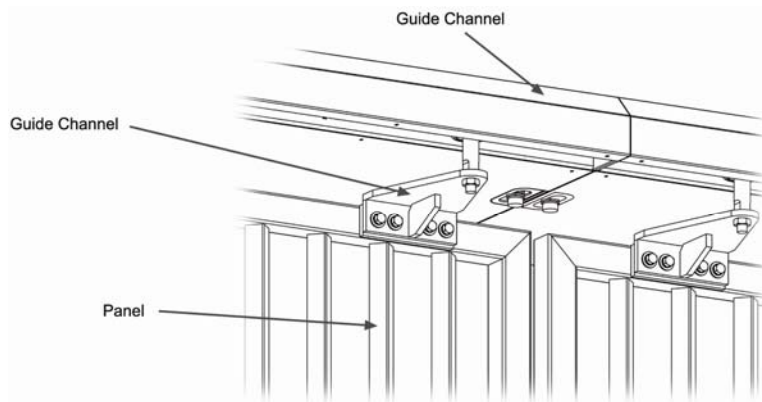


FIGURE 4.8

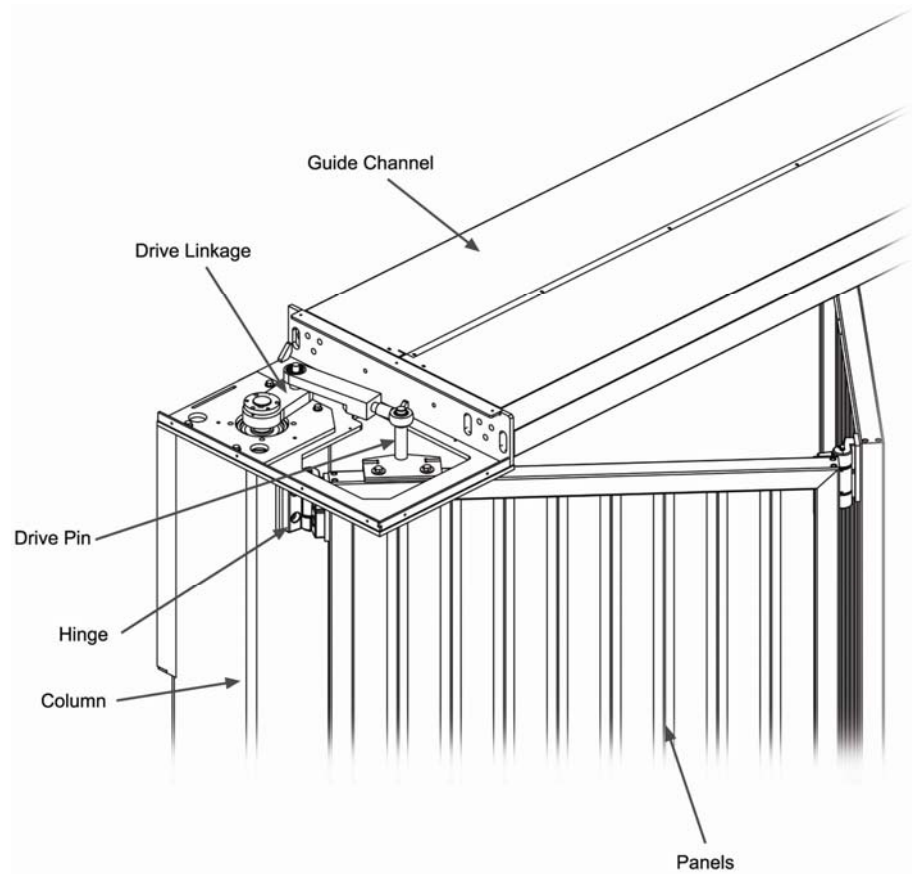


FIGURE 4.9

7. Once all gate components have been assembled and installed, double check all components for level/square fitting. Using non-shrink grout, fill the area between the SpeedGate column base plates and the concrete foundation.

#### 4.2.3. Operator Cabinet Installation

*For mounting the Operator Cabinet you are advised to consider the following:*

*The Operator Cabinet's dimensions and mounting holes are shown on Figure. 5.1*

- 1.1. Mount the Operator Cabinet in a secure location (It is recommended to be mounted on the secure side of the fence line)
- 1.2. Mount the Operator Cabinet in a location as near as practical to the SpeedGate so as to minimize the electrical wiring requirements between the SpeedGate and the Operator Cabinet.

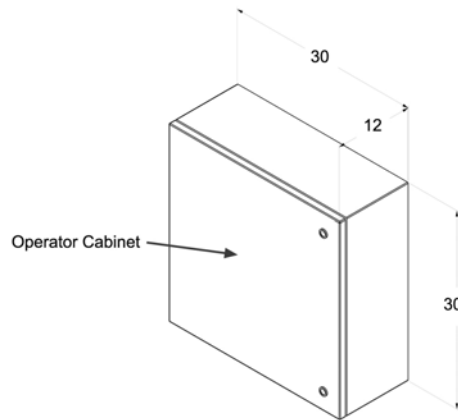


FIGURE 5.1

- 1.3. Mount the Operator Cabinet in a location that allows a direct line of sight between it and the SpeedGate so that prior to any operation of the gate the area can be scanned for obstruction considerations.
- 1.4. Mount the Operator Cabinet in a location which allows adequate work space around it and will not place the installer within reach of either the moving gate panels or vehicle traffic. A minimum distance of 6 feet is set forth in UL 325 for all controls which can operate the gate; with the exception of controls internal to the control cabinet that is intended for the sole use of the installer and/or service technicians.
- 1.5. Mount the Operator Cabinet in a location that facilitates the wiring of the vehicle detector loop leads to the Operator Cabinet.



# 5. Wiring Installation

## Primary & Secondary Operator for a Standard Post Drive Gate SpeedGate

Supplying a gate operator with the right electrical service is crucial to the performance of the operator, the life of its electrical and mechanical components. If the wire size used is too small the resulting voltage loss, especially during motor starting will prevent the motor from attaining it's rated horsepower. The percent of horsepower lost is far greater than the percentage of the voltage loss. A voltage loss could also cause the control components to chatter while the motor is starting, substantially reducing their life due to the resultant arcing. There is no way to restore the lost performance resulting from undersized wires, except to replace them; therefore it is much more economical to choose a sufficient wire size at the initial installation.

The tables on the following page are based on copper wire and allow for a 5% voltage drop. The ampere values shown are the service factor ampere rating (maximum full load at continuous duty) of the motor. Power supply and control wiring to the operator should be installed in compliance with the local electrical code.

***Always connect in accordance with the National Electrical Code, article 430, and other local codes that may apply.***

The maximum distance shown is from the gate operator to the power source; assuming that the source power is from a panel box with adequate capacity to support the addition of this motor load. The values are for one operator, with no other loads applied to the branch circuit. For two operators applied to one circuit, reduce the maximum allowed distance by half.

### Pushbutton Control Wiring

*Use this chart to determine maximum allowable control wiring distance. If the location required exceeds the distances listed on the chart at the right, addition of a long interface will be necessary.*

16 Gauge	125' Maximum
14 Gauge	200' Maximum
12 Gauge	300' Maximum
10 Gauge	500' Maximum

## USE COPPER WIRE ONLY!

### Power Wiring - Single Phase

Volts & HP	Max Distance		Wire Gauge
	Single	Dual	
<b>208V 3/4 HP</b>	604	302	12 AWG
	958	475	10 AWG
	1526	763	8 AWG
	2424	1212	6 AWG
<b>230V 3/4 HP</b>	2856	1928	4 AWG
	710	355	12 AWG
	1128	564	10 AWG
	1796	898	8 AWG
	2852	1426	6 AWG
	4538	2269	4 AWG

**2. The electrical connections for a SpeedGate are as follows:**

- 2.1. Conduit Between Primary and Secondary Columns
  - 2.1.1. Low voltage wiring to Post Termination Box excluding the Encoder Cables
- 2.2. Between the SpeedGate and the Operator Cabinet
  - 2.2.1. Variable Frequency Drive (VFD) motor cables
    - VFD motor cables are to be kept a minimum of 18 inches from the secondary (control) wiring
  - 2.2.2. Multi-Conductor low voltage cable
  - 2.2.3. Encoder Cables
- 2.3. Between the Vehicle Loops and the Operator Cabinet
  - 2.3.1. Vehicle Detector loops leads
- 2.4. From Operator Cabinet to Building
  - 2.4.1. Power Supply (2 hots, 1 ground @ 208-240v Single Phase)
  - 2.4.2. Control Wiring

3. **The Post Termination Box (see figure 5.2)** is located in the column that is located nearest to the Operator Cabinet. All of the gate safety inputs except for the vehicle detector loop leads terminate into the post termination box. The multi-conductor low voltage cable connects the post termination box to the Operator Cabinet. All wires from the secondary column terminate into the Post Termination Box located in the Primary Column.

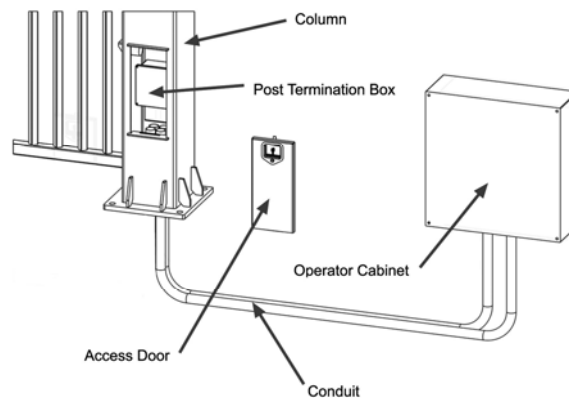


FIGURE 5.2

4. Photocells are shipped pre-wired and terminate into the post termination connection board.
5. In order to test alignment, photocell must be installed in columns. When the photocells are powered, the relay in the "Receiver" photocell will have a yellow LED will be on when powered and will drop out when aligned, the "Transmitter" photocell will have a green LED that will be lit when powered. Use the LED's to align the photocells. If 2 pairs of photocells have been supplied with a gate, ensure that the transmit/receive photocells are mounted accordingly – transmitter above receiver on one column, receiver above transmitter on the opposing column. The suggested height is 21" above grade and within 5" of the gate panels when fully closed.

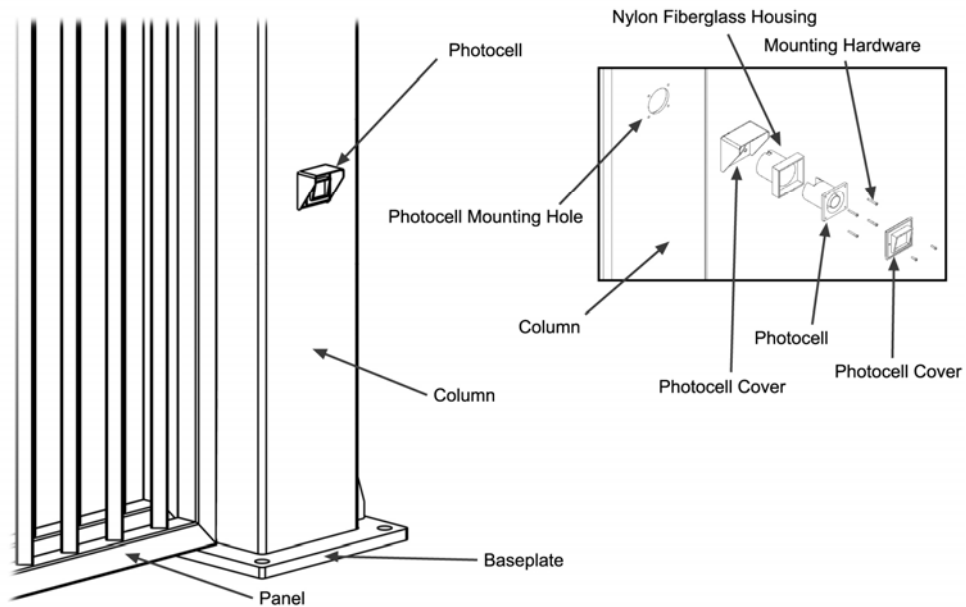


FIGURE 5.3

## 6. GATE OPTION – GATE EDGES

- 6.1. Connect gate edge leads from each panel to post termination connection board. Two conductors from each gate panel are terminated on the post termination connection board. Blue/Brown wires in heavy black jacketed gate edge lead are terminated on the connection board. Make sure gate edge wiring is not pinched/kinked in communication hinge at panel to column connection.
- 6.2. Connect post termination connection board to operator cabinets using 18 gauge multi-conductor cable. See schematics supplied with controller for connection details.

## 7. GATE OPTION – VEHICLE DETECTORS

- 7.1. Install ground loops, inside and outside, as indicated on ground loop installation instructions. The ground loop(s) size and dimension are to be determined by type of vehicle using gate.
- 7.2. Ground loops shall be at least 3' from the face of the gate on the public side, at least 3' away from the panels in the open position on the private side of the gate.
- 7.3. If the ground loops are placed too close to the gate, the panels may activate the loop when they are opening. Ground loop "home run" leads should be saw-cut/trenched to operator cabinet. If the operator cabinet is remotely located, the ground loops can be installed to the SpeedGate columns, and then wired to the operator. Ensure that the ground loop leads are twisted as per the manufacturer's specifications.

*\*Remote cabinet location kit must be specified at time of gate order\**

## 8. GATE OPTION – GATE STATUS

- 8.1. Gate status proximity sensors and mount plates are shipped in the parts crate(s) to lessen the chance of damage during shipping. The mounting plates are to be mounted after the gate is installed. Once the switches have been mounted and fastened with the provided self tapping screws. For wiring of the proximity switches please follow the wiring diagram provided in the following section wiring installation.

## 9. GATE OPTION – STROBE / TRAFFIC LIGHTS

- 9.1. Strobe / Traffic light(s) are mounted using the provided self threading fasteners. The mounting location is determined by the customer, but the bottom of the strobe/traffic light must be mounted no lower than 7'. The wiring must be pulled to the post termination box. Holes for wiring must be drilled after mounting location has been determined. The wiring passes through the bottom of the base plate.

# 6. Wire Install

**THIS SECTION OF THE MANUAL SHOULD BE READ CAREFULLY PRIOR TO INSTALLING THE SPEEDGATE AND/OR PLACING IT IN OPERATION.**

## 6.1. Installation Instructions for Optional Gate Edges

### 6.1.1. Gate Edge Basics

1. The sensing Edges consist of 1 gate edge rubber section and 1 vertical section for each gate panel set. Along with each rubber section there will be an accompanying aluminum channel section of the same length.
2. In a single bi-fold SpeedGate there will be a total of 1 horizontal section. In a double bi-fold gate there will be a total of 2 horizontal sections.
3. On the bottom of each gate panel with a communication hinge between the panels and between the panel and the column. (see figure 6.0) To see a detail of the wire being run through the hinge please see figure 6.1.
4. For each gate panel set the horizontal gate edge rubber section will have a wire pigtail on either end. Of the 2 verticals sections one will have a wire pigtail on either end, the remaining gate edge will have a wire pigtail on one end only. The other end will have the resistor (no wire pigtail).

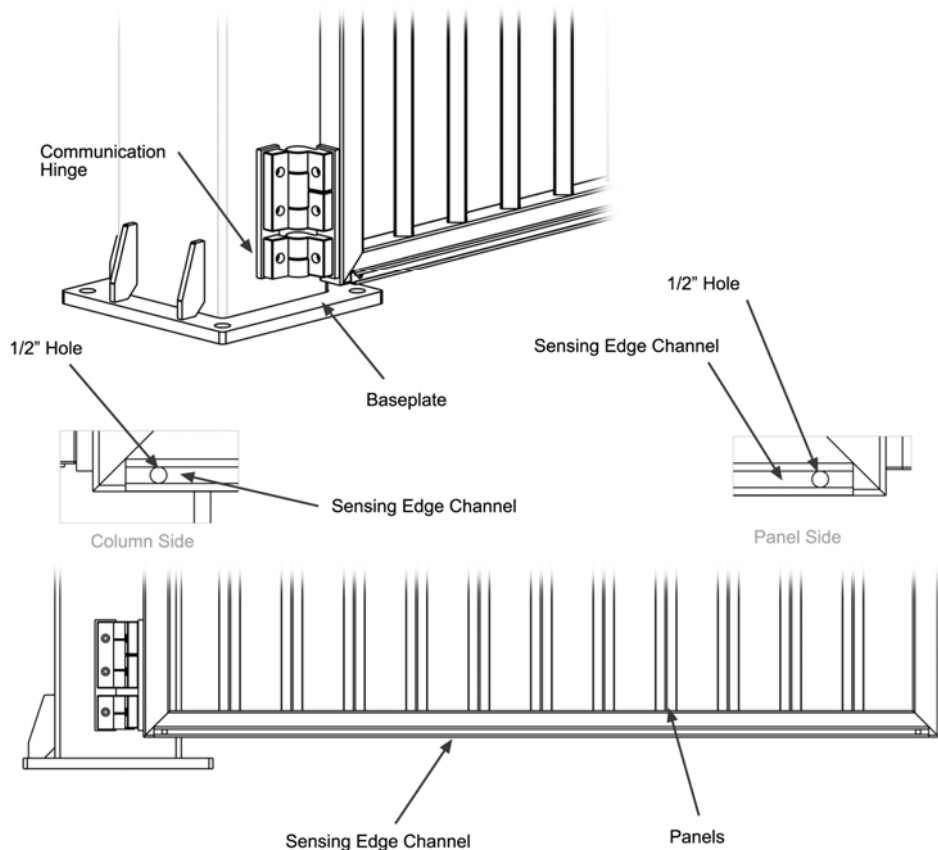


FIGURE 6.0

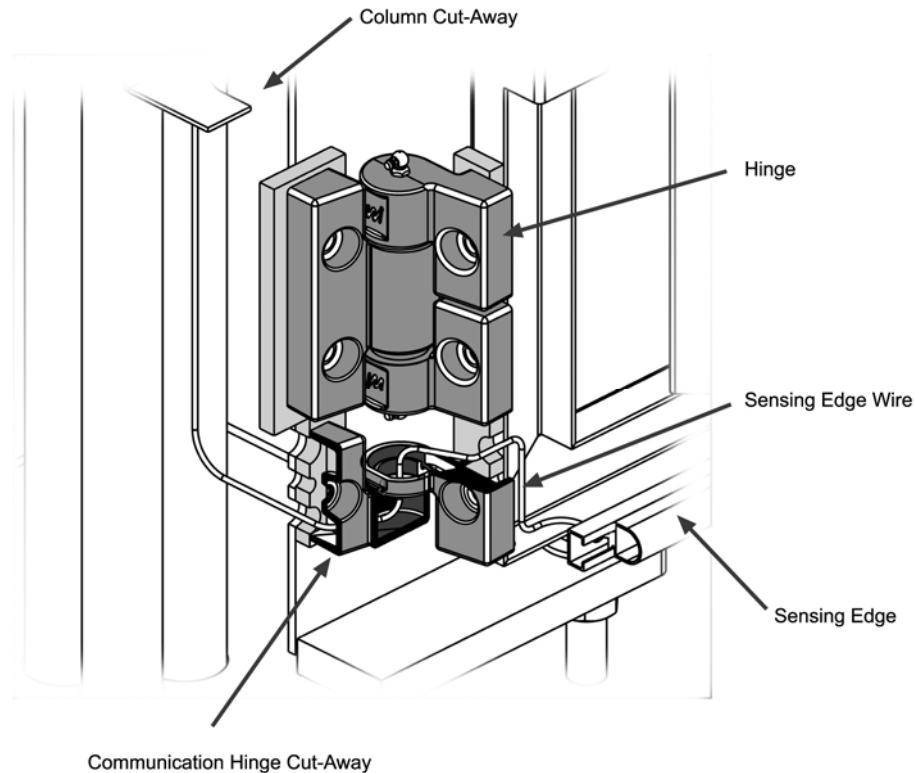


FIGURE 6.1

### 6.1.2. Sensing Edge Installation

1. Securely fasten the aluminum channel to the gate panel leading edge, using the provided self-tapping screws.
2. A hole must be drilled  $\frac{1}{2}$ " in size 1" from end of the each side of the aluminum channel into the gate frame. (see figure 6.0)
3. Lubricate the edge outer lips with soap and water, this will allow the rubber edge to slide smoothly into the aluminum channel. When the water dries the edge will no longer slide.
4. Once the edge has been slid into the aluminum channel each end that has a pig tail must be fed into the  $\frac{1}{2}$ " hole that was drilled into the aluminum channel and gate frame. The gate edges should be connected in series.
5. These wires must run inside the gate frame through the communication hinge and terminate into the post termination box.
6. Test the gate edges once they are connected in series for 8.2K ohms, readings from 8.0k to 8.5k are acceptable.

### 6.1.3. Sensing Edge Testing

Test the operation of the reversing edge to be certain that it is functioning. Advise the user of the gate to be certain to retest this vital function weekly. Refer to the Cleaning and Maintenance section of this manual for more information.

## 6.2. Photocell Installation

### 6.2.1. Photocell Basics

The photocell is constructed to throw a single-pole relay when an object interrupts the beam. The photocell comes in 2 parts, the transmitter and the receiver.

#### Technical Characteristics

- Nylon fiberglass reinforced enclosures
- Transmitter: Modulated pulsing Gallium Arsenide Infrared diode
- Heaters are incorporated in both the transmitter and receiver lenses to eliminate dampness
- The maximum operating range is 165 feet
- The receiver has two relays incorporated in parallel to avoid product failure by one relay
- Relay rating 1A at 120v
- Power 12-24v AC/DC. Polarity does not matter regardless of using AC or DC power
- Transmitter: Green LED ON shows power applied and transmitter functioning
- Receiver: Yellow LED ON shows power applied; LED drops out when aligned

### 6.2.2. Photocell Installation

1. Mount nylon fiberglass body sandwiching the photocell cover between the nylon and the column into hole in column with provided hardware. (see figure 6.1)

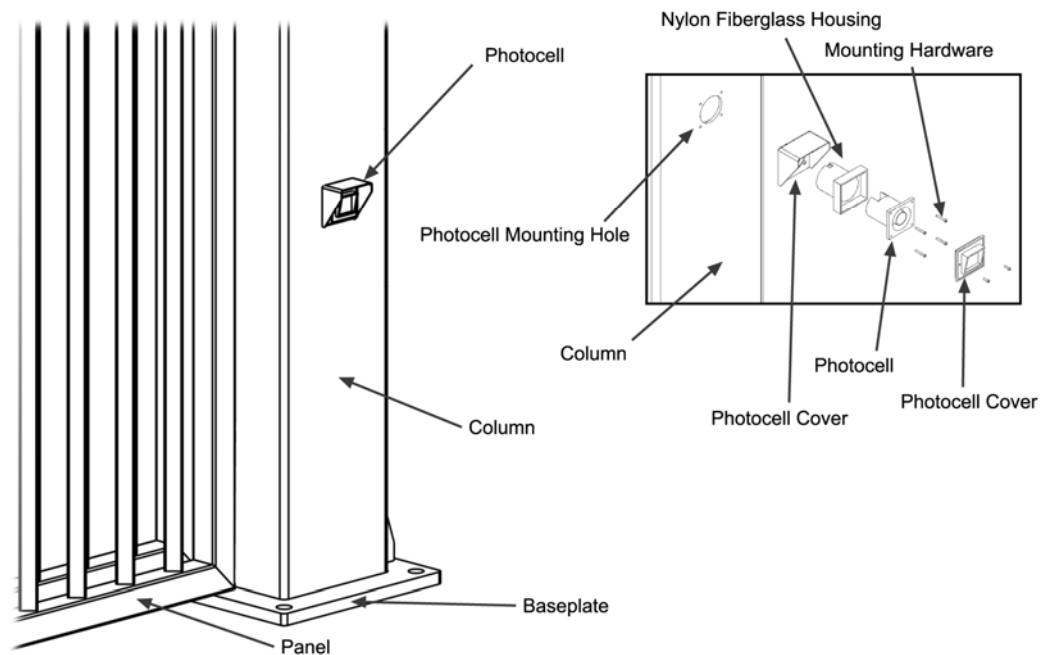


FIGURE 6.1

2. Remove photocell from the nylon fiberglass housing by removing the 4 corner screws. (see figure 6.1) The photocell should slide out of the housing.
3. Check power line voltage with a meter to ensure correct power; it should be 24vdc.

### 6.2.3. Photocell Alignment

1. Place the photocell back into the nylon fiberglass housing. The cover should not be placed on photocell until the photocells are aligned.
2. Remove front cover and when necessary loosen the two alignment screws. Aim transmitter toward receiver until red receiver LED turns off. (Make sure the green transmitter LED remains lit.)
3. Tighten the three alignment holding screws in both the receiver and transmitter. Use the alignment test strip supplied to test alignment at different ranges.

***If alignment is not satisfactory, repeat above procedure '6.2.3. Photocell Alignment.'***

4. Once the photocell is aligned place the photocell cover back on.

## 6.3. Installation Instructions for Vehicle Detector Loops

### 6.3.1. Vehicle Detector Loop Basics

The vehicle detector passes a small current flow through the in-ground laid "loop" which then becomes an inductive coil. When a vehicle passes over the loop the detector senses the resultant drop in the inductance, and this in turn actuates its output relay.

### 6.3.2. Vehicle Detector Loop Configurations

Configurations differ depending on the application. For SpeedGates using vehicle detectors, they are only to be used for vehicular traffic and the loops should not be less than 60 feet square.

### 6.3.3. Saw Cut Loop Installation

1. Mark the loop layout on the pavement. Be aware that sharp inside corners can damage the loop wire insulation.
  - 1.1. Set the saw to cut to a depth (typically 1.5" to 3") that insures a minimum of 1" from the top of the wire to pavement surface. The saw cut width should be larger than the wire diameter to avoid damage to the wire insulation when placed in the saw slot. Cut the loop and feeder slots. Remove sharp inside corners. Remove all debris from the saw slot with compressed air. Check that the bottom of the slot is smooth. A greater depth should be used in softer pavement materials to better protect the loop wire insulation for a longer period of time against damage from surface erosion and wear.
  - 1.2. Care should be taken to avoid cutting all the way through the pavement material. If possible, the saw cut depth should not exceed one half the thickness of the pavement material.
2. It is highly recommended that a continuous length of wire be used to form the loop and feeder to the detector. Loop wire is typically 14, 16, 18, or 20 AWG with cross-linked polyethylene Insulation which is very resistant to moisture absorption and provides good abrasion resistance.
  - 2.1. The wire used in the loop should have an insulation rated for direct burial. Since moisture can cause significant changes in the dielectric constant of the wire insulation, which results in excessive loop (frequency) drift, choose a wire with an insulation which is impervious to moisture. Wires with Polyvinyl chloride (PVC) insulation (i.e. those labeled TFFN, THHN, and THHN-THWN) should not be used since they tend to absorb moisture and crack easily.
  - 2.2. The loop wire must be held securely in the bottom of the slot by means of a plastic foam type material called backer rod. The recommended method of securing the loop wire in the slot is to use a series of one (1) inch long pieces of backer rod spaced approximately one (1) foot apart along the entire length of the saw cut. Make certain to press the backer rod tightly into the slot. Use a wooden stick or other blunt instrument to avoid potential damage to the loop wire. If the backer rod is not pressed tightly into the slot, the loop wires will be loose in the slot. Loose wires can cause false calls due to vibration or sudden movement.
3. In most cases, the saw cut will end at the edge of the pavement or at a stub out for a conduit. Where the wires leave the saw cut they must be twisted together with a minimum of six (6) twists per foot. (see figure 6.2)

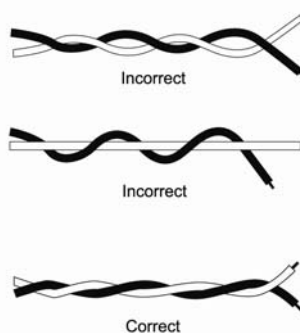


FIGURE 6.2



4. The “loops leads” cable used to extend the lead-in to the cabinet should consist of a shielded twisted pair of wires with high density polyethylene insulation. The shield should be floated (left unconnected and insulated) at the splice point between the loop wires and the feeder cable and should be grounded to earth ground at the cabinet end only. Any other grounding arrangement can lead to grounded loops and cause erratic system operation.

#### Number of Turns Required

Loop Perimeter	Number of Turns
14 feet to 26 feet	4
27 feet to 45 feet	3
46 feet to 100 feet	2
101 feet and up	1

5. All splices MUST be soldered, even when initially formed with crimp type splices.
  - 5.1. **CAUTION:** when soldering, use only enough localized heat to adequately flow the solder through the connection without melting or burning the surrounding insulation. Each splice point must be protected with a moisture proof seal. Failure to observe these two precautions are the two most common causes of loop related problems in this type of system.
  - 5.2. Another common problem is caused by loose connections at the terminal strip in the cabinet. Crimp type terminals should be soldered in the crimp sleeve and the screws securing the terminals to the terminal strip securely tightened down. Adding lock washers is a further deterrent to the screws loosening up due to vibration or the passage of time.
6. Choose a sealant carefully to match the application and the pavement type. Hard setting epoxies should not be used with asphalt. Caution should be observed when using hot sealants, as high temperatures can damage or destroy wire insulation. Please refer to the state's department of transportation specs for traffic light loop sealant.
7. When properly applied, the sealant should completely cover the loop wire(s) and backer rod. Since the sealant forms a barrier between the wire and the environment, it is essential that the wire(s) are completely covered. See the below diagram for the proper end result. (see figure 6.3)

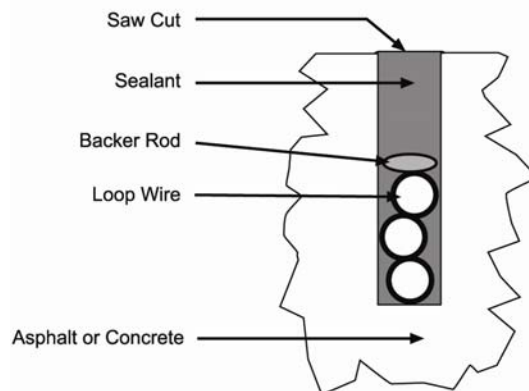


FIGURE: 6.3

8. There MUST be no voids which might allow water to collect within the slot. The water will freeze and expand during freezing conditions. Freeze/thaw cycling will eventually push the loop wires up and out of the slot, resulting in a loop failure.

### 6.3.4. Detector Logic

1. WALLACE INTERNATIONAL recommends that vehicle detectors be used for **Automatic Exit and Obstruction Sensing Only**.

### 6.3.5. Loop Diagnostics

1. The following tests cannot guarantee a functioning loop, but failure of either test means that the loops is definitely suspect, even though it may still be functioning at the time.
  - 1.1. **TEST 1** - Resistance of the loop and loop lead wires should not exceed 4.0 Ohms.
  - 1.2. **TEST 2** - The resistance to earth, as measured with a 500V "Megger", should be 100 Megohms or more. Loops may function at 10 Megohms or less but will not be reliable (e.g. when the ground is wet from rainfall). Low resistance indicates broken or moisture saturated insulation. This is common if inappropriate wire insulation has been used.

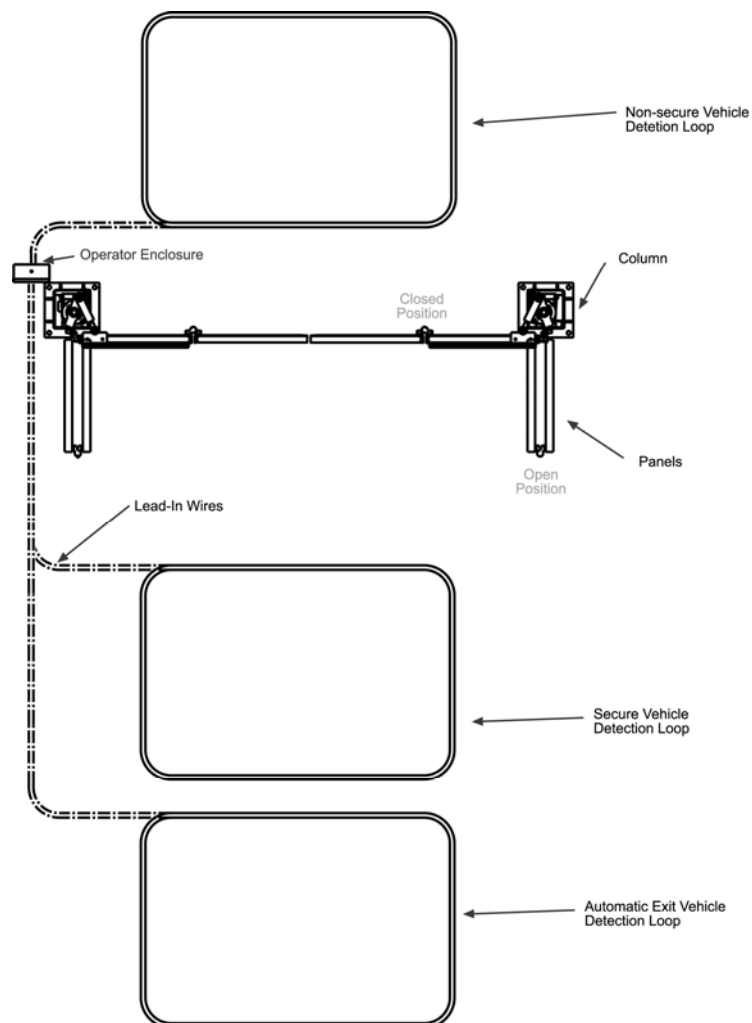


FIGURE: 6.4

## 6.4. Electrical Circuit

Applies to SpeedGate Operator

Please refer to the drawing below for controller orientation and post relation.

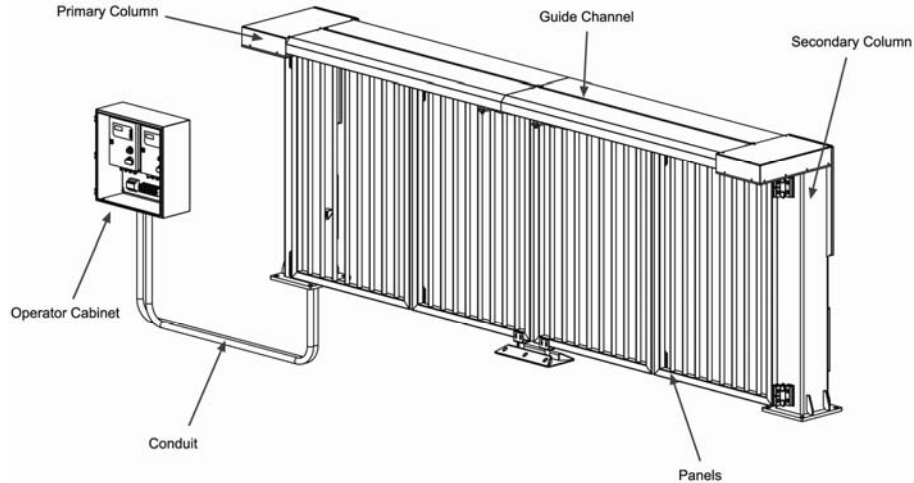


FIGURE: 6.5

*The Operator Cabinet location must be pre-determined so that the Post Termination Box will be able to be installed into the column that will be nearest the Operator Cabinet.*

## 6.5. Electrical Circuit Post Termination Box

(See figure 6.7)

### 1. Photocell

This input allows for the photocell as a secondary safety device which monitors the path between the gate. The transmitter photocell uses terminal (-) #11, onto terminal (+) #4. The receiver photocell uses terminal (-) #7, terminal (+) #1, Common onto terminal #2 and NC onto terminal #13.

### 2. Motor Brakes

2.1. Each column motor has a 24vdc brake which must be disengaged to allow motor operation. The brake is mechanically engaged and must have power to disengage. The primary column motor brake uses terminals (+) 17 & #18. The secondary column motor brake uses terminals #19 (+) & #20 (-). Please refer to figure 6.8 for terminal block locations.

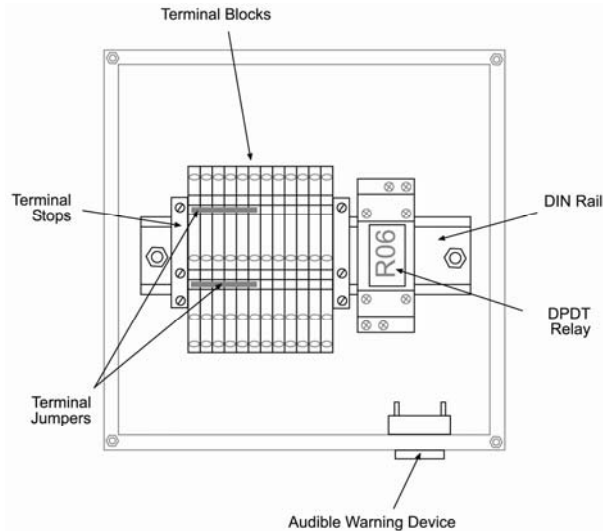


FIGURE 6.7

**3. Audible Warning Device/Strobe**

**3.1.** This output allows connections for either a 24vdc audible warning device and/or strobe light to be used as a pre-warning to gate movement. The audible warning device connections should be terminals (-) #8 & (+) #14 and the strobe connections should be terminals (-) #10 & (+) #15.

**4. Traffic Light**

**4.1.** This output allows for a red and green traffic light as an additional precautionary device. This will allow greater control over the vehicle movements in and around the SpeedGate. Connect the 24vdc traffic light inputs into the following terminals. Terminal (-) #9, red light into Relay 06 terminal #1 and the green light into Relay 06 terminal #3.

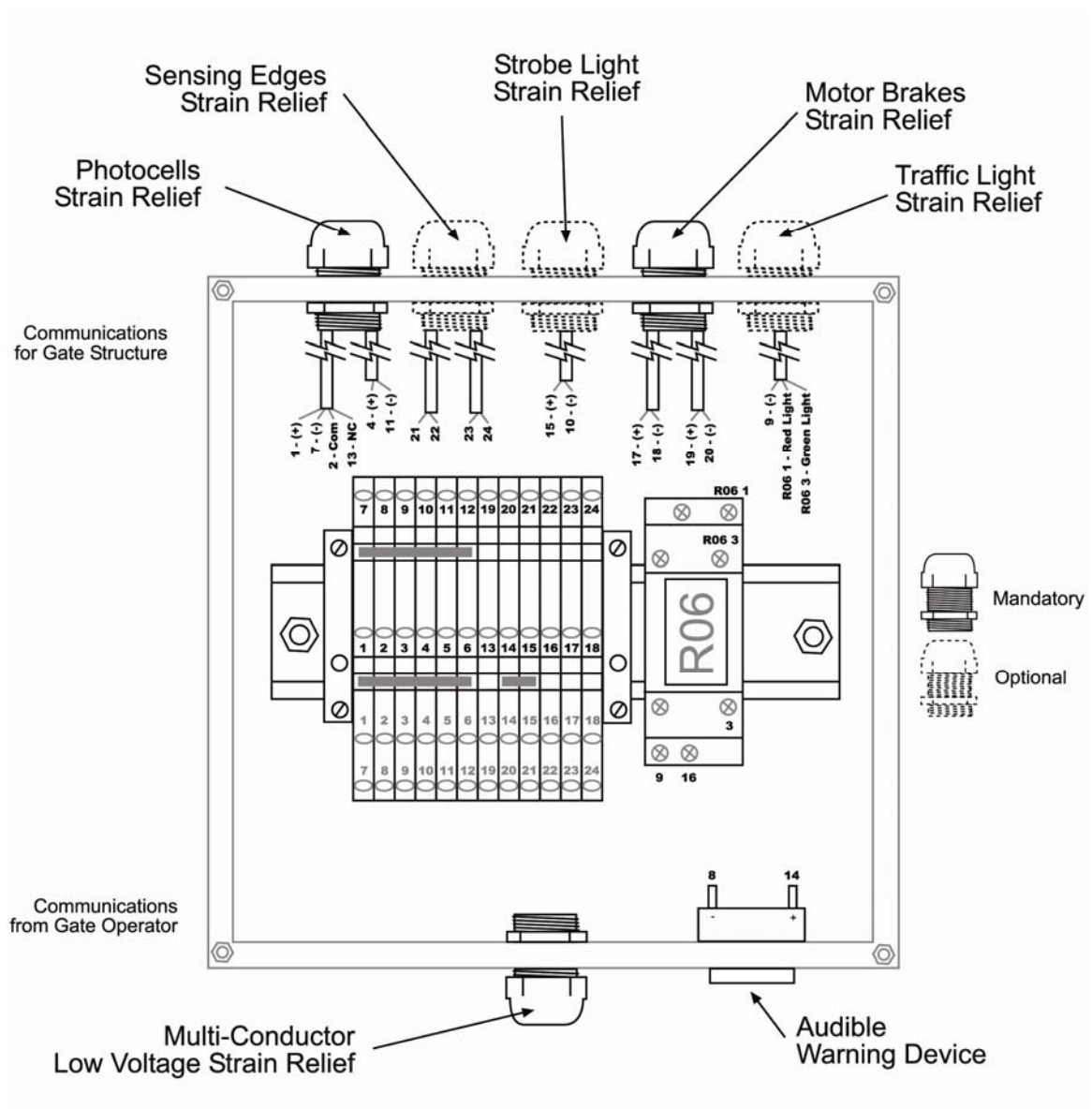


FIGURE 6.8

## 6.6. Electrical Circuit

### Please see the following SpeedGate – Operator Drawings

#### 1. Any Open Device

1.1. Any device used to open the gate, such as a pushbutton, key switch or access system connects to terminals **#5 and Relay 01 #8** in the primary operator.

#### 2. Any Close Device

2.1. Any device used to close the gate, such as a pushbutton, key switch or access system connects to terminals **#7 and Relay 02 #8** in the primary operator.

#### 3. Any Stop Device

3.1. Any device used to stop the gate during movement, such as a pushbutton key switch or access system connects to terminals **#13 and Relay 03 #8** in the primary operator.

#### 4. Emergency Stop Device

4.1. Any N.C. maintained pull-to-release, maintained twist-to-release and maintained twist-key-to-release device used for an emergency stop, which when used, shuts down all gate functions. There is 1 (N.C.) emergency stop inputs, emergency stop 1 terminals #1 to #2. To install a emergency device the corresponding jumper needs to be removed.

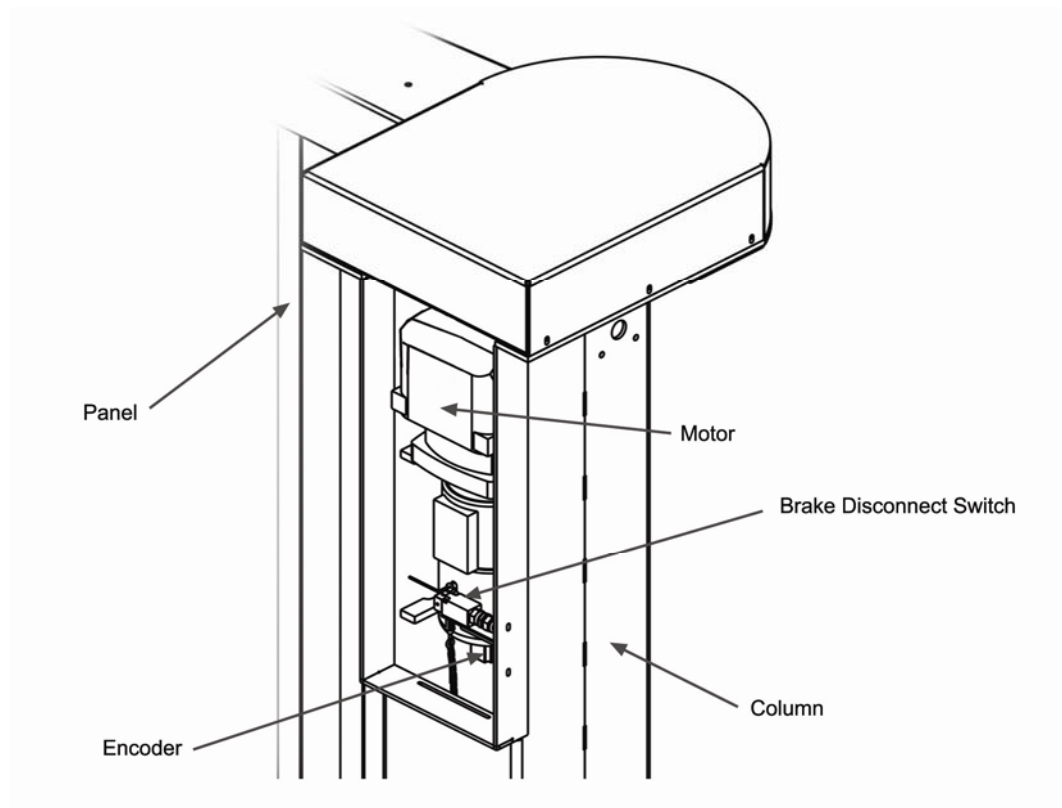


FIGURE 6.9

**5. Encoders**

5.1. Each motor, which is housed in each column, has an encoder. The encoder is used to track the motors position.

5.1.1. The primary columns encoder terminates into the Primary Operator terminals Black - #27, Black/White - #28, White - #29, White/Black - #31 and the encoder ground into the ground strip.

5.1.2. The secondary columns encoder terminates into the Secondary Operator terminals Black - #27, Black/White - #28, White - #29, White/Black - #31 and the encoder ground into the ground strip.

**6. Interlock and Indication Lights**

6.1. To interlock two SpeedGates the jumper from the Secondary Operator terminals #88 to terminals Secondary #16 and Primary #16 must be removed in both Operator Cabinet (OP1) and the other Operator Cabinet (OP2). Once the jumpers have been removed, OP1 Secondary terminal #88 will go to the OP2 into terminals Secondary #16 and Primary #16. The OP2 Secondary terminal #88 will go to the OP1 into terminals Secondary #16 and Primary #16.

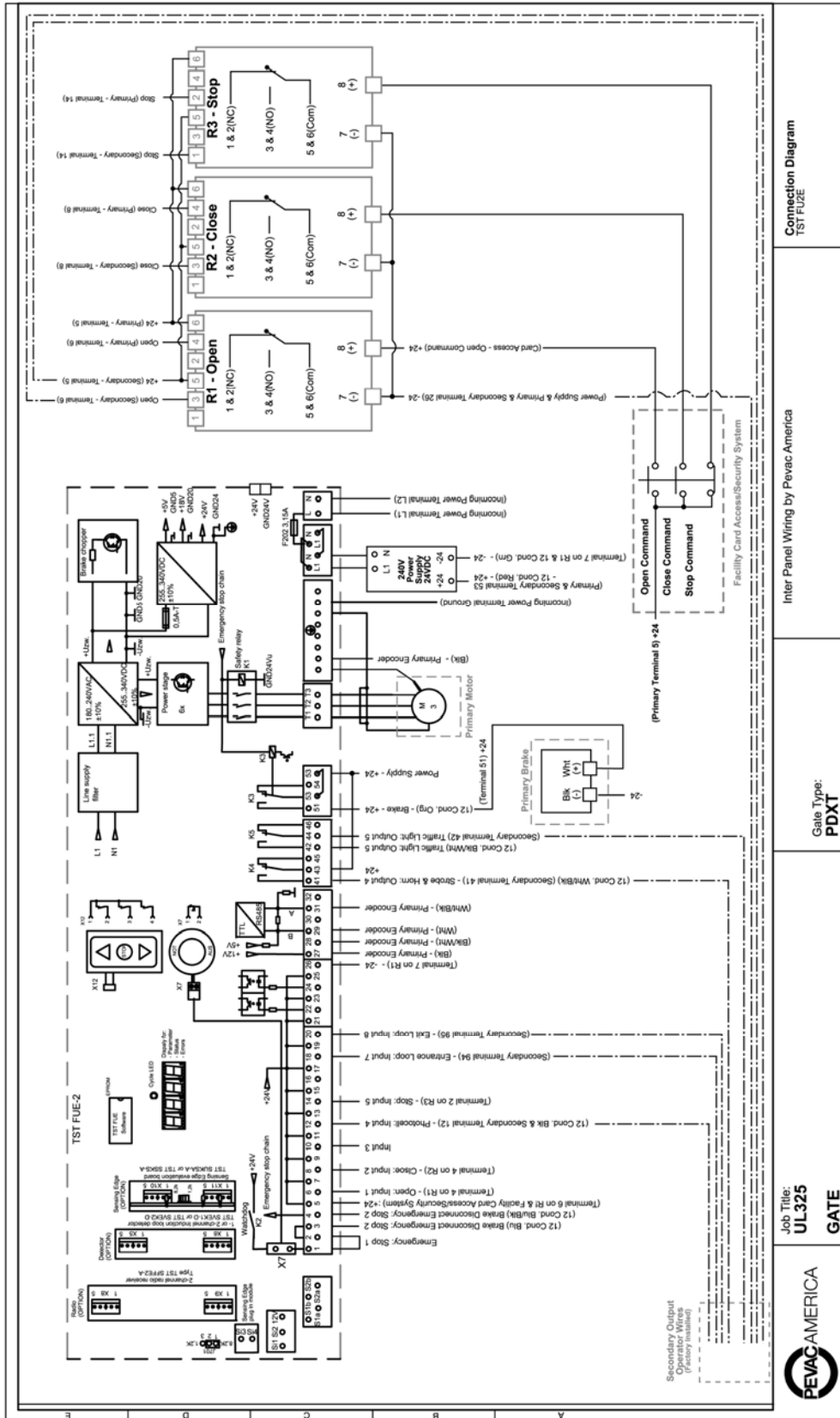
**7. Heater**

7.1. We recommend a self-regulating heater be installed in colder climates; one rated for the supplied voltage 208-240v. Connect to terminals L1 & N. This option can be specified when the SpeedGate is ordered from WALLACE INTERNATIONAL.

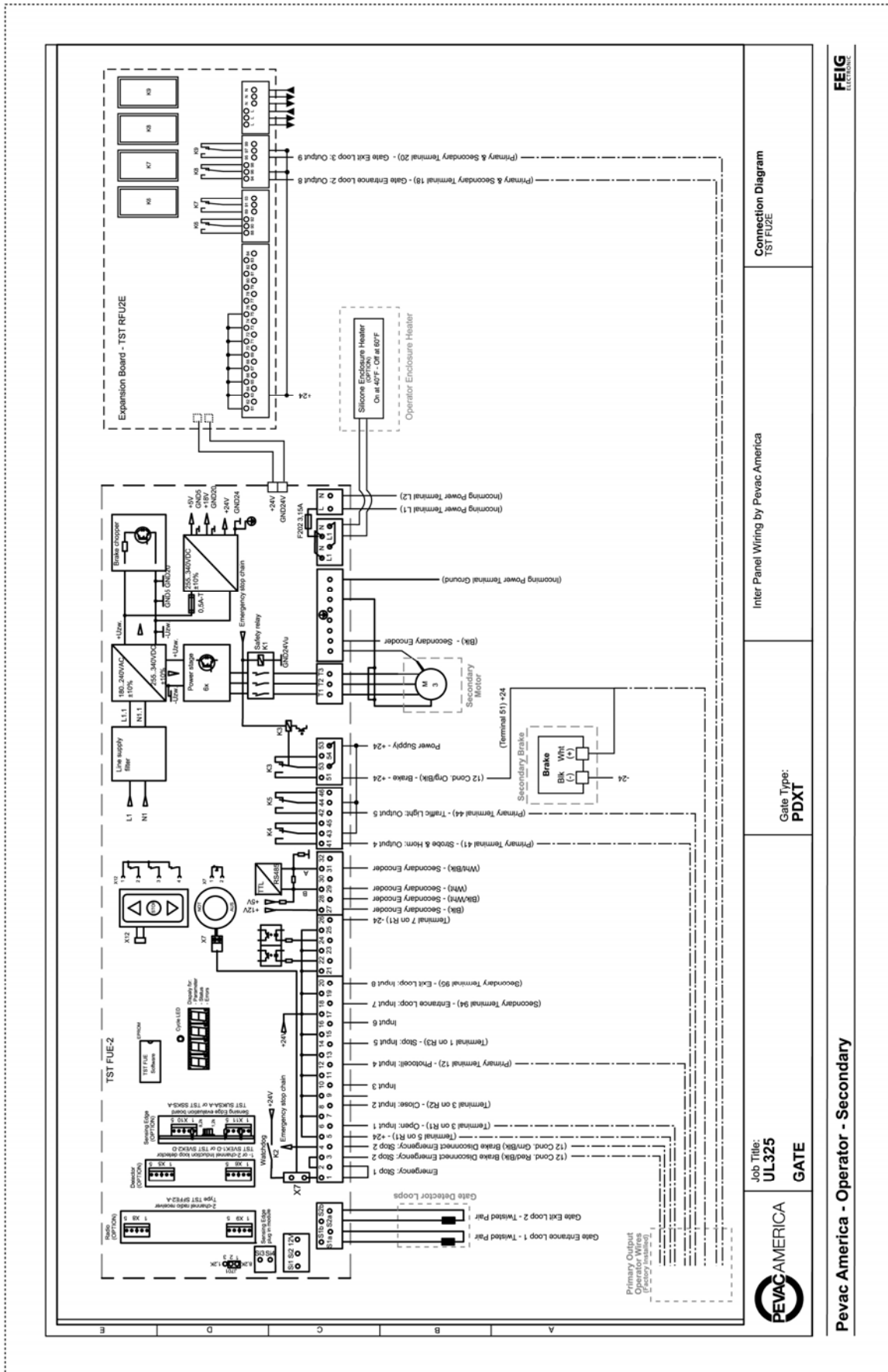
**8. Vehicle Loops**

8.1. The loop leads from the vehicle loops will need to run directly into the Operator Cabinet. The secure side vehicle detection loop will terminate into S1a and S1b and the Non-secure side vehicle detection loop will terminate into S2a and S2b.

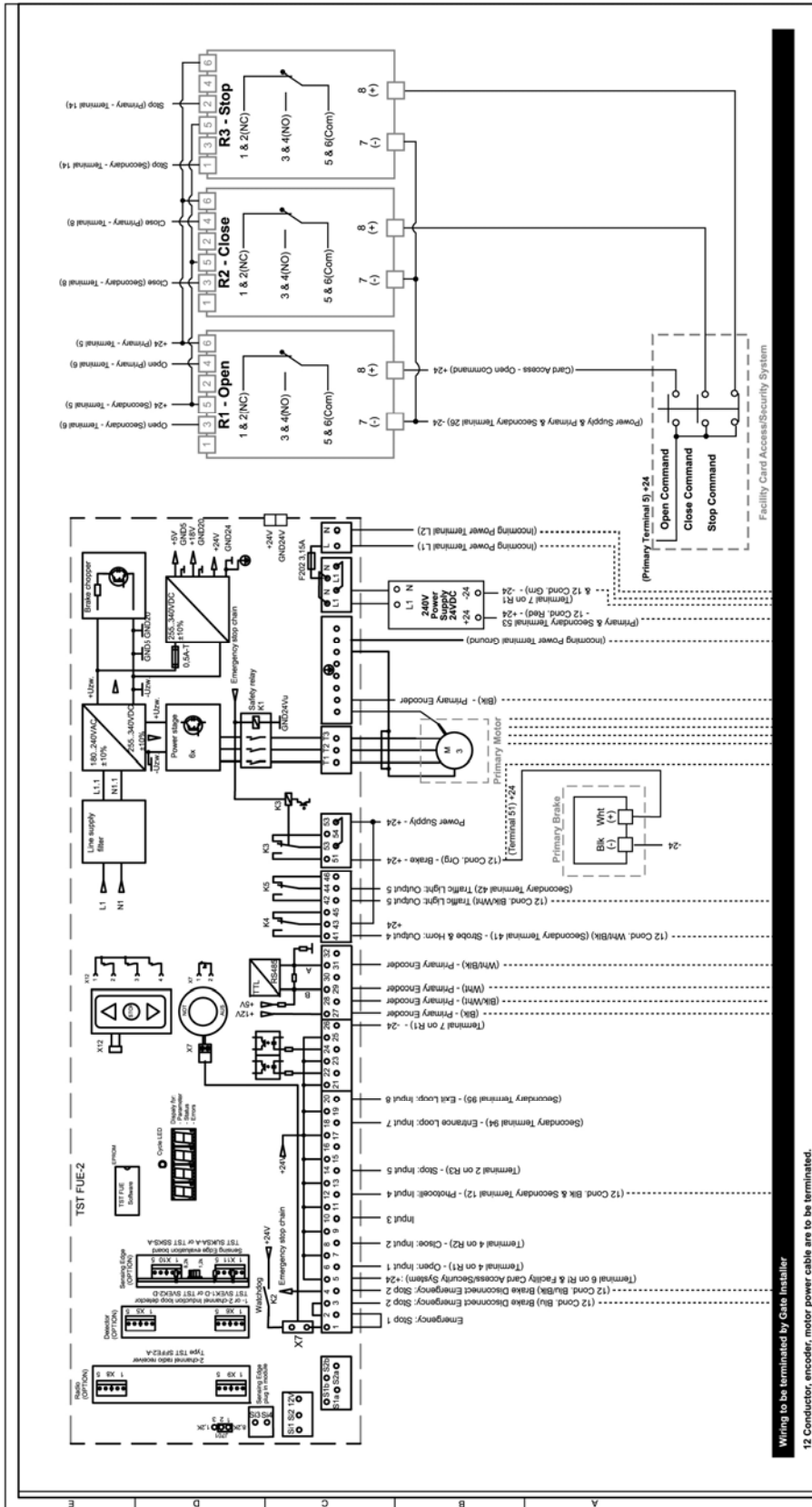
8.2. If an automatic exit loop is required, a third detector relay will be required. This auxiliary detector should be powered from terminals (+) #85 and (-) #26 in the Secondary Operator and a pulse output on detection should be wired as a N.O. contact to terminals 81 & 82.



	<b>Job Title:</b> UL325 GATE	<b>Gate Type:</b> PDXT	<b>Inter Panel Wiring by Pevac-America</b> TST FUSE
<b>Pevac America - Operator - Primary</b>			







**Wiring to be terminated by Gate Installer**

12 Conductor, encoder, motor power cable are to be terminated.



Job Title:  
**UL325**  
GATE

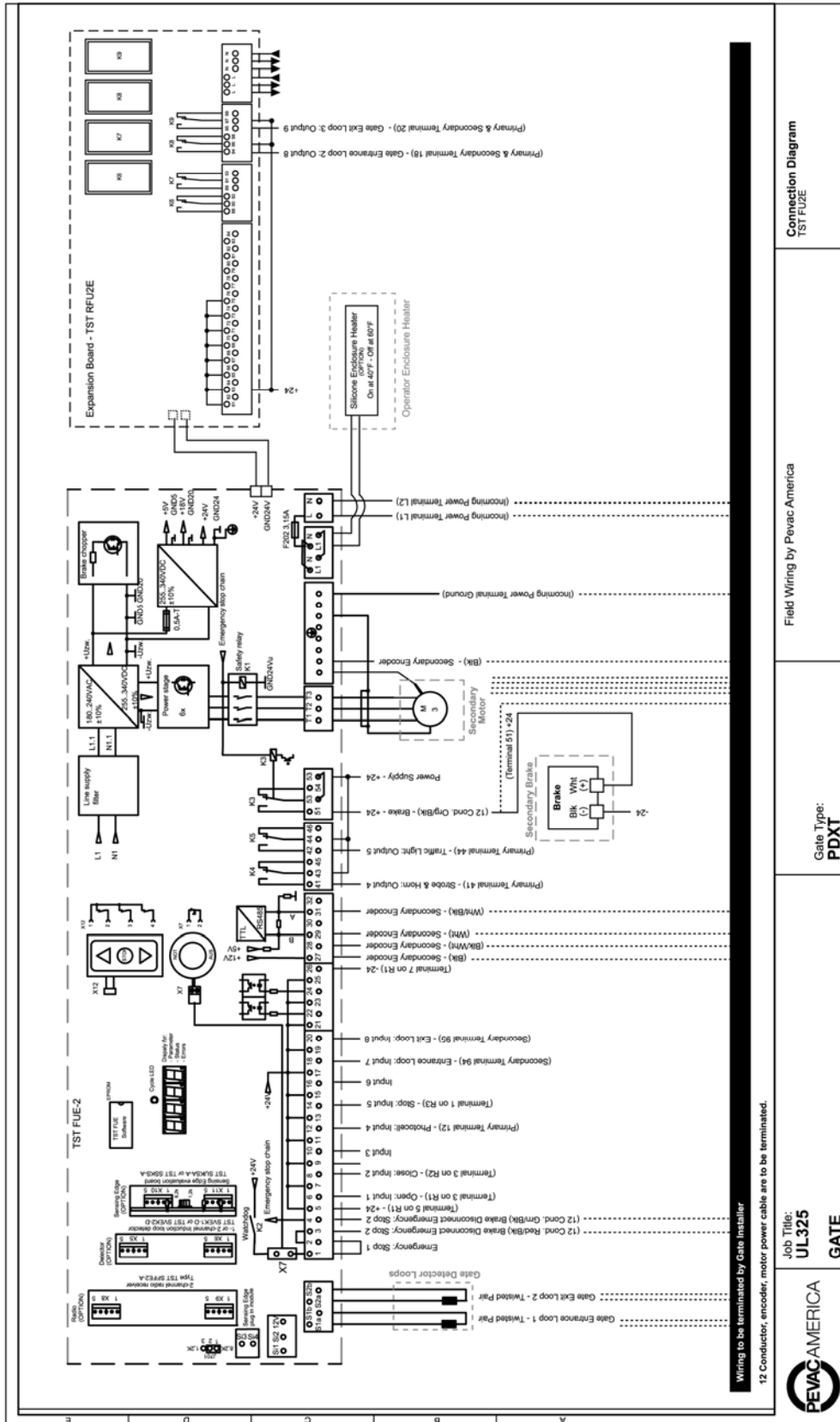
Gate Type:  
**PDXT**

Field Wiring by Pevac America

Connection Diagram  
TST FUEZ

**Pevac America - Operator - Primary**

**FEIG**  
ELECTRONIC



**FEIG**  
ELECTRONIC

**Pevac America - Operator - Secondary**

# 7. Setting the Reduced Speed Sensor

## 7.1. Only adjust the parameters listed below.

### 7.1.1. Refer to the commissioning section of this manual for a description of using the Operator and setting/changing parameters.

The reduced speed sensor has a number of parameters that can be adjusted to fine tune the gate for its final installation location. Environmental factors, such as wind load and snow can determine how the obstruction detection functions as well as the gate's height and width.

1. Parameter P.451 adjusts the percentage of the drive speed that the gates must deviate before the reduced speed sensor is activated. Therefore, a higher parameter value will allow more deviation from the expected speed. This parameter is factory set and should not have to be changed in the field.
2. Parameter P.452 is used to filter out any deviations in speed at the beginning and the end of the gate's movement. When the gate begins a movement it may have a slight pulse when ramping up to normal speed, this can also be the case when the gate starts slowing down. These factors are determined by the gate's size. Parameter P.452 will help minimize false detections when accelerating and decelerating. The lower the value of parameter P.452 the later the deviation is detected. This parameter is factory set and should not have to be changed in the field.
3. Parameter P.143 is the output voltage for traveling open. The value of the parameter is the percentage of the total available voltage that is output to the motor. The higher the parameter is set the more sensitive the reduce speed sensor. Parameter P.143 and P.148 should be adjusted in the field to fine tune the reduced speed sensor. A higher parameter value will result in increased sensitivity of the reduced speed sensor.
4. Parameter P.148 is the output voltage for traveling closed. The value of the parameter is the percentage of the total available voltage that is output to the motor. The higher the parameter is set the more sensitive the reduce speed sensor. Parameter P.143 and P.148 should be adjusted in the field to fine tune the reduced speed sensor. A higher parameter value will result in increased sensitivity of the reduced speed sensor.

# 8. Commissioning

## The installation commissioning

Once the mechanical and electrical portions of the SpeedGate have been installed, check the following (before powering up the controller):

- All fasteners for proper tension.
  - Hinge bolts at 85 ft/lbs
  - Drive pin bolts at 90 ft/lbs
  - Security bolts, which secure the drive housing should be ½ a turn past hand tight.
  - All anchor bolts should be tightened to 210 ft/lbs.
- Safety devices for proper wire termination.
- (Sensing edges, loop detectors, photocells)
- All wiring secure in wiring loops in motor drive housing, no straining at motor drive housing/column connection, no wires near drive mechanisms.
- Grease rod end bearings (drive linkage) and all gate hinges with lithium grease or synthetic grease (as provided).
- Drive housing covers have been re-installed
- Any tools shipped with the gate (tamper-resistant drivers, etc.) have been stored in a secure place and gate users/maintenance personnel have been made aware of their location.



Using the manual brake disconnect, move the gates panels to the halfway point between the open and closed position. Clear the gate travel area of all obstructions and apply power to the gate controller. The LCD board on the top left hand corner of the controller will display a “boot-up.” Using the foil keypad buttons on each operator cabinet press the up arrow and observe the gate panels. If the corresponding gate panel opens the VFD motor wiring is correct. If the gate panels are not moving in the desired direction you must switch 2 of the three wire leads where they are terminating in the motor disconnect switch.

Once the gate has been installed and all wires terminated properly the gate limits need to be set. Please follow the instructions below in the order that they are given.



**Warning:** Do not change any other parameters than the ones listed in the instructions below. Doing so might cause the gate not to function properly possibly causing damage, injury and/or death.

### STEP 1

- With the operator power on press the emergency stop mushroom button in.
  - This will put the operator into programming mode.

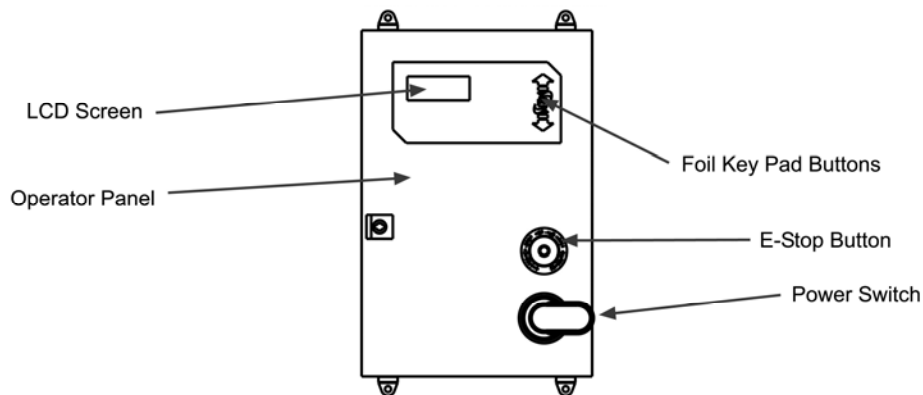


FIGURE 6.9

### STEP 2

- Using the foil key pad buttons (up arrow, down arrow, stop button) which are located to the right of the LCD display.

- On the LCD display there will be a description of the parameter on the top left, the parameter number located on the bottom left and the parameter value located on the bottom right.
  - Using the down arrow scroll down until parameter number 999 is located. This parameter is used to input the password to be able access the parameters which need to be changed.
  - At parameter 999 use the stop button by pressing it once to move the underscore to the parameter value on the right.
  - At the 999 parameter value; use the up and down arrows to scroll to the master password. (\_\_\_\_\_ Gate's Master Password)
  - Once you've reached the master password use the stop button to lock the parameter in. To do this you must hold the stop button down until a check mark appears by the master password. Once the parameter value for the master password is locked in press the stop button to return the underscore to the parameter 999 on the left.

### STEP 3

- Pull break disconnect chains located inside each column and lock into place using designated chain link.
- Move gate panels to halfway point between open and closed positions!
- Release chains to allow gate to be moved under power.
- Clear the gate travel area of all obstructions/persons, and place appropriate warning / signaling devices to allow for automatic gate movement.
- If the operator power is on and emergency stop buttons are engaged, you are now in programming mode.
- Use the foil key pad buttons (up arrow, down arrow and stop button), which are located to the right of the LCD display, to cycle through the available parameters.
- Hold the up arrow to scroll to parameter 210 and change the value to 5. This parameter is used to set/reset the open and closed limits. Push stop button and hold for two seconds to lock in the new parameter setting. Repeat on the other operator and check to make sure a checkmark appears on the right hand side of the screen.
- Disengaged the emergency stop buttons and follow the instructions on the LCD display, one operator at a time.
- Press stop to begin setting the limits.
- Push the down arrow to close the gate. If the gate panel opens, it means the motor is turning in the wrong direction. This will require changing the direction of the motor rotation. Please refer to the motor direction (rotation) paragraph.
- Once the motor direction is correct, press stop to begin setting the limits.
- "Push the down arrow until the gate panels are in the fully closed position. Be certain to check that the gate panels are closed so that the gate panels are aligned and bowed in about an inch.
- Set both gate panels to the closed position so that you can ensure the panels are aligned together.
- Hold the stop button to enter this position as the "closed limit."
- Hold the up arrow to begin moving the gate into the open position. The display should show a counter rapidly increasing while the gate is moving to the fully open position.
- The gate bumpers should be touching each other. If they are then press and hold the stop button to enter this value as the "open limit."
- Once the limits have been set, the screen will return to "FEIG Electronic" or "Pevac America" or "Wallace International" depending on the version of software. Cycle the gate 15 times to ensure that it is not going beyond or stopping short of the fully open position (bumpers should be ½" to ¼" of touching) or closed position (panels should all be aligned . If it is, see section on Adjusting limits.

### STEP 4

- Parameter P.221 adjusts the close limit, which is a value of "0" increments when the limits are first established.
- If the gate is closing too much then the value must be increased (+).
- If the gate is not closing enough then you must decrease the value (-).
  - Take note that parameter P.221 (close limit adjustment) can only go to -60 increments. If the gate is not at the fully closed position when P.211 = -60, the limits should be reset.
- Parameter P.230 adjusts the open limit.
- If the gate is opening too far, then the value must be decreased (-).

- 
- If the gate is not opening far enough, then you must increase the value (+).

**IMPORTANT**

*After approximately 1 hour the panel will automatically reset so that the parameters cannot be changed. This ensures that the panel parameters cannot be changed once it resets. To return to the password parameter the panel must be shut off and turned back on.*

# 9. Troubleshooting

## Details on how to troubleshoot the gate



**The gate pathway and surrounding areas should be cleared of any and all obstructions before operation is resumed.**

### Operator Fault Codes

Faults can be acknowledged provided they are not reset automatically. Some errors can not just be acknowledged and cleared; they must be dealt with before resuming gate operation.

### Common Faults

Error	Description	Solution
<b>F.031</b>	Motor Stall	Either there is an obstruction blocking the gate movement or the motor brake (24vdc) is not getting power, thus not releasing and stalling the motor.
<b>F.211</b>	E-Stop circuit #1	In the operator terminals 1 and 2 are for the e-stop circuit #1. These terminals are normally jumped. Ensure that the jumper is seated properly in both terminals.
<b>F.212</b>	E-Sop circuit #2	In the operator terminals 3 and 4 are for the e-stop circuit #2. These terminals are used for the manual brake disconnect. There is a N.C. limit switch that is tripped when the manual brake disconnect is used. Make sure the manual brake disconnect is released on the corresponding column. If you are still see the error check the following: the wires in terminals 3 and 4 are not seated properly, the wires in the N.C. limit switch are not seated properly or there is a short in the wire.
<b>F.369</b>	Sensing Edge Fault	Either there is an obstruction tripping the sensing edge or the operator was not parameterized properly. The following parameters must be set to the following values P.460 = 0 and P.462 = 2. If this still does not clear the error the wiring or sensing edge might have become damaged and must be replaced
<b>F.530</b>	Temperature Fault	The operator is below the operating temperature -10 °C (14° F). The operator(s) enclosure will either require a heater or a thermal blanket.
<b>F.752</b>	Encoder Fault	The encoder has an internal fault and must be replaced. If the replacement of the encoder does not clear the error the encoder cable must also be replaced.

### Inputs on the Operator

Input	Terminal(s)	LCD Display
E-Stop 1	1 & 2	F.211 External E-Stop 1 tripped
E-Stop 2	3 & 4	F.212 External E-Stop tripped
Open Input	6	Open Input T06
Close Input	8	Close Input T08
Infrared Beam Input	12	Photoeye Input T12
Stop	14	Stop Input T14
Loop Stop Input	18	Stop Input T18
Loop Close Input	20	Close Input T20

**For a complete list of faults, please see the following fault log.**



**The cause of the fault must be resolved first before the corresponding message is acknowledged.**



**INFORMATION**

To acknowledge an error and clear it from the LCD screen you must press the STOP button and hold for approximately 5 seconds.

Improper end positions		
<b>F.000</b>	Door position too far up	<ul style="list-style-type: none"> <li>Too small a parameter value for upper emergency limit switch</li> <li>Upper limit switch range (limit switch band) too small</li> <li>Mechanical brake defective or improperly set</li> </ul>
<b>F.005</b>	Door position too far down	<ul style="list-style-type: none"> <li>Too small a parameter value for lower emergency limit switch</li> <li>Lower limit switch range (limit switch band) too small</li> <li>Mechanical brake defective or improperly set</li> </ul>

Implausibility's in door movement		
<b>F.020</b>	Run time exceeded (during opening, closing or deadman)	<ul style="list-style-type: none"> <li>current motor run time has exceeded set maximum run time, door may be sticking or is blocked</li> <li>If using mechanical limit switches, one may not have tripped</li> </ul>
<b>F.030</b>	Lag error (position change of the door is less than expected)	<ul style="list-style-type: none"> <li>Door or motor is blocked</li> <li>Too little power for lift torque</li> <li>Too little speed</li> <li>Mechanical limit switch was not left or is defective</li> <li>Absolute or incremental encoder not tightened sufficiently in its mounting</li> <li>Wrong positioning system selected (<b>P.205</b>)</li> </ul>
<b>F.031</b>	Detected rotational direction deviates from expected	<ul style="list-style-type: none"> <li>When using incremental encoders: Channel A and B reversed</li> <li>Motor rotation direction reversed compared with calibration setting</li> <li>Too much „pancaking“ when starting, brake releases too soon, or too little torque, adjust boost as necessary.</li> </ul>
<b>F.043</b>	Pre-limit switch fault (light barrier)	<ul style="list-style-type: none"> <li>The pre-limit switch for the light barrier remains activated even in the middle end position or upper end position.</li> </ul>

Error messages for incremental encoder		
<b>F.050</b>	Reference switch position deviates from permissible range. During cyclical synchronization	<ul style="list-style-type: none"> <li>Reference switch constantly tripped (defective)</li> <li>Reference switch trips too far from the selected reference.</li> <li>Reference switch trips in the limit switch band</li> <li>P270 and P280 are both at the reference switch</li> </ul>
<b>F.051</b>	Reference switch position deviates from permissible range.	<ul style="list-style-type: none"> <li>Reference switch lies in the limit switch band</li> <li>Reference switch is beyond 15% EO</li> <li>Reference switch defective</li> </ul>
<b>F.052</b>	Reference switch not recognized	<ul style="list-style-type: none"> <li>The reference switch is not recognized within 20% EO during automatic synchronization after power-on</li> <li>The reference switch is not recognized in the associated end position.</li> </ul>

Maintenance counter exceeded		
<b>F.080</b>	Fault: Maintenance is required	<ul style="list-style-type: none"> <li>Service counter has expired</li> </ul>

Parameters not set		
<b>F.090</b>	Controller not parameterized	<ul style="list-style-type: none"> <li>The basic parameters (P.205, P.100 to P.103) for the TST FUE controller have not yet been set.</li> </ul>

Safety chain faults		
<b>F.201</b>	Internal E-Stop „push-button“ tripped or Watchdog (computer monitor)	<ul style="list-style-type: none"> <li>E-Stop chain was interrupted starting at input „internal E-Stop“ without parameterizing mode having been selected</li> <li>Internal parameter or EEPROM checks defective, pressing the STOP key provides additional information about the cause</li> </ul>
<b>F.211</b>	External E-Stop 1 tripped	<ul style="list-style-type: none"> <li>E-Stop chain was interrupted starting at Input 1</li> </ul>
<b>F.212</b>	External E-Stop 2 tripped	<ul style="list-style-type: none"> <li>E-Stop chain was interrupted starting at Input 2</li> </ul>



Faults in the safety chain		
<b>F.360</b>	Short circuit detected on edge input	<ul style="list-style-type: none"> <li>Short circuit detected on edges with normally closed contact</li> </ul>
<b>F.361</b>	Number of edge trips for closing has reached set limit	<ul style="list-style-type: none"> <li>Parameterized, maximum number of safety edge trips during a door cycle was exceeded</li> </ul>
<b>F.362</b>	Redundancy error with short circuit	<ul style="list-style-type: none"> <li>One of the processing channels for short circuit detection does not react identically with the second channel. → Controller board defective</li> </ul>
<b>F.363</b>	Interruption on edge input	<ul style="list-style-type: none"> <li>Connection cable defective or not connected</li> <li>Termination resistor incorrect or missing</li> <li>Jumper J600 incorrectly set</li> </ul>
<b>F.364</b>	Safety edge testing failed	<ul style="list-style-type: none"> <li>Safety edge was not activated as expected when requesting a test.</li> <li>The time between request for testing and actual testing not in agreement</li> </ul>
<b>F.365</b>	Redundancy error with interruption	<ul style="list-style-type: none"> <li>One of the processing channels for interruption detection does not react identically with the second channel. → Controller board defective</li> <li>Dynamic optical system connected but not set in Parameter P.460</li> </ul>
<b>F.366</b>	Too high a pulse frequency for optical safety edge	<ul style="list-style-type: none"> <li>Defective optical safety edge</li> <li>Defective input for internal safety edge</li> </ul>
<b>F.369</b>	Internal safety edge incorrectly parameterized	<ul style="list-style-type: none"> <li>An internal safety edge is connected but deactivated</li> </ul>
<b>F.371</b>	Number of edge trips for external safety edge has reached set limit	<ul style="list-style-type: none"> <li>Parameterized, maximum number of safety edge trips during a door cycle was exceeded</li> </ul>

Faults in the safety chain		
<b>F.372</b>	Redundancy error with short circuit	<ul style="list-style-type: none"> <li>One of the processing channels for short circuit detection does not react identically with the second channel. → Controller board defective</li> </ul>
<b>F.373</b>	Fault in the safety edge (message comes from module)	<ul style="list-style-type: none"> <li>Cable break to safety edge, no edge connected, edge termination resistor incorrect or defective</li> <li>Jumper for termination resistor definition in wrong position.</li> <li>Safety edge processing selected with Parameter <b>P.470</b>, but module not plugged in or wrong module.</li> </ul>
<b>F.374</b>	Safety bar testing failed	<ul style="list-style-type: none"> <li>Pre-limit switch for safety edge incorrectly set or defective</li> <li>Processing module defective</li> <li>Safety edge defective</li> </ul>
<b>F.379</b>	Safety edge detection defective (coding pin or parameter setting)	<ul style="list-style-type: none"> <li>No module plugged in but was reported as present by a parameter</li> <li>The controller was started up with another module than the one currently plugged in</li> </ul>
<b>F.385</b>	Fault in pre-limit switch for safety edge	<ul style="list-style-type: none"> <li>Pre-limit switch for turning off the safety edge or reversing after safety edge tripping remains tripped even in the upper end position.</li> </ul>

General hardware faults		
<b>F.400</b>	Controller hardware reset detected	<ul style="list-style-type: none"> <li>Excessive noise on supply voltage</li> <li>Internal watchdog tripped</li> <li>RAM error</li> </ul>
<b>F.401</b>	Watchdog Error	<ul style="list-style-type: none"> <li>Internal Watchdog has released</li> </ul>
<b>F.40A</b>	Software Exception	<ul style="list-style-type: none"> <li>Internal Error</li> </ul>
<b>F.410</b>	Over-current (motor current or intermediate circuit)	<ul style="list-style-type: none"> <li>Wrong motor data set (P100 – P103)</li> <li>Non-adjusted voltage increase / boost set (P140 or P145)</li> <li>Motor not properly dimensioned for door</li> <li>Door sticks</li> </ul>
<b>F.420</b>	Over voltage in intermediate circuit Limit 1	<ul style="list-style-type: none"> <li>Brake chopper interference / defective / missing</li> <li>Feed voltage much too high</li> <li>Motor feeds back too much energy in generator mode, door motion energy cannot be sufficiently brought down</li> </ul>
<b>F.425</b>	Over voltage line supply	<ul style="list-style-type: none"> <li>The supply voltage for the controller is too high</li> </ul>
<b>F.426</b>	Under voltage line supply	<ul style="list-style-type: none"> <li>The supply voltage for the controller is too low</li> </ul>
<b>F.430</b>	Temperature cooler outside of working range Limit 1	<ul style="list-style-type: none"> <li>Excessive load on final stages or brake chopper</li> <li>Ambient temperature too low for controller operation</li> <li>Clock frequency of final stage too high (Parameter <b>P.160</b>)</li> </ul>

<b>General hardware faults</b>		
<b>F.440</b>	Over current in intermediate circuit Limit 1	<ul style="list-style-type: none"> <li>• Boost not adjusted</li> <li>• Motor incorrectly dimensioned for door</li> <li>• Door sticks</li> </ul>
<b>F.510</b>	Motor / intermediate circuit over current Limit 2	<ul style="list-style-type: none"> <li>• Wrong motor data set (P100 – P103)</li> <li>• Non-adjusted voltage increase / boost set (P140 or P145)</li> <li>• Motor not properly dimensioned for door</li> <li>• Door sticks</li> </ul>
<b>F.515</b>	Motor protection function detected over current	<ul style="list-style-type: none"> <li>• Incorrect motor curve (motor rated current) set (P101)</li> <li>• Too much boost (P140 or P145)</li> <li>• Motor incorrectly dimensioned</li> </ul>

General hardware faults		
<b>F.519</b>	IGBT driver chip detected over current	<ul style="list-style-type: none"> <li>• Short circuit or ground fault on motor terminals</li> <li>• Motor rated current setting extremely wrong (P100)</li> <li>• Extremely too much boost (P140 or P145)</li> <li>• Motor incorrectly dimensioned</li> <li>• Motor winding defective</li> <li>• Momentary interruption of the E-Stop circuit.</li> </ul>
<b>F.520</b>	Over voltage in intermediate circuit Limit 2	<ul style="list-style-type: none"> <li>• Brake chopper interference / defective / missing</li> <li>• Feed voltage much too high</li> <li>• Motor feeds back too much energy in generator mode, door motion energy cannot be sufficiently brought down.</li> </ul>
<b>F.521</b>	Over voltage in intermediate circuit	<ul style="list-style-type: none"> <li>• Input voltage supply too low, usually at load</li> <li>• Load too great / final stage or brake chopper fault</li> </ul>
<b>F.524</b>	Ext. 24 V supply missing or too low	<ul style="list-style-type: none"> <li>• Overload but no short circuit</li> <li>• When 24V is shorted the controller voltage does not ramp up and glow lamp V306 comes on.</li> </ul>
<b>F.525</b>	Over voltage at the line supply input	<ul style="list-style-type: none"> <li>• The line supply for the Controller is too high</li> <li>• The line supply fluctuates extremely</li> </ul>
<b>F.530</b>	Temperature cooler outside of working range Limit 1	<ul style="list-style-type: none"> <li>• Excessive load on final stages or brake chopper</li> <li>• Ambient temperature too low for controller operation</li> <li>• Clock frequency of final stage too high (Parameter <b>P.160</b>)</li> </ul>
<b>F.540</b>	Over current in intermediate circuit Limit 2	<ul style="list-style-type: none"> <li>• Boost not adjusted</li> <li>• Motor incorrectly dimensioned for door</li> <li>• Door sticks</li> </ul>

Positioning system faults		
<b>F.700</b>	Position sensing defective	<p><b>For mechanical limit switches:</b></p> <ul style="list-style-type: none"> <li>• At least one limit switch does not correspond to the configured active status.</li> <li>• An implausible combination of at least 2 active limit switches</li> </ul> <p><b>For electronic limit switches:</b></p> <ul style="list-style-type: none"> <li>• After invoking activation of the factory parameters (Parameter <b>P.990</b>) the corresponding positioning system was not parameterized.</li> <li>• Calibration not completed or is incorrect and must be repeated.</li> <li>• When activating the intermediate stop the intermediate stop is implausible.</li> <li>• Synchronization not finished or reference switch defective.</li> </ul>
<b>F.720</b>	Synchronization error in position sensing with incremental encoder	<ul style="list-style-type: none"> <li>• Intermediate stop position is less than the minimum incremental value (25).</li> <li>• Synchronization was not finished.</li> <li>• The selected reference switch was not reached or is outside its tolerance</li> <li>• The incremental encoder is not counting or the door is blocked (also F.030, lag error)</li> <li>• Incremental inputs IN 9 and IN 10 are reversed (also F.031 rotation error)</li> </ul>
<b>F.750</b>	Protocol Transmission error	<ul style="list-style-type: none"> <li>• Defective hardware or electrically noisy environment</li> </ul>

Positioning system faults		
<b>F.751</b>	Synchronization FUE <-> absolute encoder	<ul style="list-style-type: none"> <li>Defective hardware or electrically noisy environment</li> <li>Absolute encoder processor electronics defective</li> </ul>
<b>F.752</b>	Timeout with protocol transmission	<ul style="list-style-type: none"> <li>Interface cable defective / interrupted</li> <li>Absolute encoder processor electronics defective</li> <li>Defective hardware or electrically noisy environment</li> <li>Take a control cable with shield</li> <li>Adjust a RC element (100Ω+100nF) at the brake</li> </ul>
<b>F.760</b>	Position outside of window	<ul style="list-style-type: none"> <li>Position encoder drive defective</li> <li>Absolute encoder processing electronics defective</li> <li>Defective hardware or electrically noisy environment</li> </ul>
<b>F.761</b>	Distance Channel 1 <-> Channel 2 outside allowed window	<ul style="list-style-type: none"> <li>Position encoder drive defective</li> <li>Defective hardware or electrically noisy environment</li> </ul>
<b>F.762</b>	Electronic limit switch positions incorrect	<ul style="list-style-type: none"> <li>Upper limit switch E0 or intermediate limit switch E1 has exceeded the valid limit range</li> <li>Controller not yet initialized</li> <li>Position values during calibration not correct or values are no longer plausible</li> </ul>
<b>F.763</b>	DES-B Error	<ul style="list-style-type: none"> <li>Position encoder drive defective -&gt; make a reset</li> </ul>
<b>F.770</b>	Door way is too high for the parameter set Encoder resolution	<ul style="list-style-type: none"> <li>The Value of the Parameter P.202 (set Encoder resolution) is too high for the combination Encoder and Door.</li> </ul>

Internal system faults		
<b>F.920</b>	Internal 2.5 V reference voltage incorrect	<ul style="list-style-type: none"> <li>Hardware defect</li> </ul>
<b>F.921</b>	Internal 15 V voltage incorrect	<ul style="list-style-type: none"> <li>Hardware defect</li> </ul>
<b>F.922</b>	E-Stop chain not complete	<ul style="list-style-type: none"> <li>Not all E-STOP inputs are <b>separately</b> jumpered although the entire E-Stop chain is jumpered</li> <li>Redundant checking of the E-Stop chain tripped</li> </ul>
<b>F.930</b>	External watchdog incorrect	<ul style="list-style-type: none"> <li>Defective hardware or noise-saturated environment</li> </ul>
<b>F.931</b>	ROM error	<ul style="list-style-type: none"> <li>Wrong EPROM code</li> <li>Defective hardware or noise-saturated environment</li> </ul>
<b>F.932</b>	RAM error	<ul style="list-style-type: none"> <li>Defective hardware or noise-saturated environment</li> </ul>
<b>F.935</b>	Stack error	<ul style="list-style-type: none"> <li>User Stack or System Stack overflowed</li> <li>Possible software error due to recursive invocations (e.g. profile)</li> </ul>
<b>F.960</b>	Wrong parameter checksum	<ul style="list-style-type: none"> <li>New EPROM version with different parameters</li> <li>Controller not yet initialized</li> </ul>
<b>F.961</b>	Checksum from calibration values etc.	<ul style="list-style-type: none"> <li>New EPROM version with different EEPROM structure</li> <li>Controller not yet initialized</li> </ul>
<b>F.962</b>	Converter parameters not plausible	<ul style="list-style-type: none"> <li>New EPROM version</li> <li>Controller not yet initialized</li> </ul>
<b>F.963</b>	Ramp parameters not plausible	<ul style="list-style-type: none"> <li>New EPROM version</li> <li>Controller not yet initialized</li> </ul>
<b>F.964</b>	Program version / manufacturer code	<ul style="list-style-type: none"> <li>New EPROM version</li> <li>Controller not yet initialized</li> </ul>
<b>F.970</b>	Plausibility Parameter block error	<ul style="list-style-type: none"> <li>New EPROM version</li> <li>Controller not yet initialized</li> <li>Some parameter is implausible</li> </ul>

# 10. Warning Signs/Labels

When the gate is installed in a French speaking region of Canada, the following warnings signs must also be installed.



Section A labels are installed on the operator and operator cabinet.  
Section B labels are installed on the SpeedGate Structure.

## Section A

English	French
IMPORTANT SAFETY INSTRUCTIONS	IMPORTANT – MESURES DE SÉCURITÉ
SAVE THESE INSTRUCTIONS	CONSERVEZ CES INSTRUCTIONS
WARNING – TO REDUCE THE RISK OF SEVERE INJURY OR DEATH TO PERSONS	AVERTISSEMENT -- POUR RÉDUIRE LES REIQUES DE BLESSURES MORTELLES
WARNING – TO REDUCE THE RISK OF SEVERE INJURY OR DEATH	AVERTISSEMENT – POUR RÉDUIRE LES RISQUES DE BLESSURES MORTELLES
READ AND FOLLOW AND INSTALLATION INSTRUCTIONS	LISEZ CETTE NOTICE ET CONFORMEZ-VOUS AUX INSTRUCTIONS
LOCATE CONTROL BUTTON a) WITHIN SIGHT OF DOOR b) AT A MINIMUM HIEGHT OF 1.53 m (5 FT) SO SMALL CHILDREN CANNOT REACH IT; AND c) AWAY FROM ALL MOVING PARTS OF THE DOOR	INSTALLEZ LE BOUTON DE COMMANDE A) À UN ENDRIOT QUE L'ON PEUT VOIR CE L'EMBRASURE DE LA PORTE B) À UNE HAUTEUR MINIMALE DE 1.53 M (5 PI) DU SOL – AFIN QUE LES JEUNES ENFANTS NE PUISSENT PAS L'ATTEINDRE – ET C) À L'ÉCART DES PIÈCES MOUVILES DE LA PORTE
INSTALL ENTRAPMENT WARNING LABEL NEXT TO CONTROL BUTTON AND CONTROL ADJUSTMENT LABEL IN A PROMINENT LOCATION AS INSTRUCTED IN THE INSTALLATION INSTRUCTIONS	APPOSEZ L'ÉTIQUETTE DE MISE EN GARDE RELATIVE AU DANGER DE HAPPEMENT À PROXIMITÉ DU BOUTON DE COMMANDE ET L'ÉTIQUETTE RELATIVE AU REGLAGE DE LA COMMANDE À UN EMPLACEMENT EN ÉVIDENCE – OU SELON LES INSTRUCTIONS DE LA NOTICE D'INSTALLATION.
READ AND FOLLOW ALL INSTRUCTIONS	LISEZ CETTE NOTICE ET CONFORMEZ-VOUS AUX MIES EN GARDE

## Section B

NEVER LET CHILDREN OPERATE OR PLAY WITH DOOR CONTROLS	NE LAISSEZ JAMAIS LES ENFANTS MANOEUVRER LES COMMANDES DE LA PORTE.
ALWAYS KEEP MOVING DOOR INSIGHT AND AWAY FROM PEOPLE AND OBJECTS UNTIL IT IS COMPLETELY CLOSED. NO ONE SHOULD CROSS THE PATH OF THE MOVING DOOR	SURVEILLEZ LA COURSE DE LA PORTE JUSQU'À CE QUE CETTE DERNIÈRE SOIT COMPLÈTEMENT FERMÉE EN VEILLANT À TENIR À L'ÉCART TOUTE PERSONNE ET TOUT OVJET AVOISINANT. IL NE FAUT JAMAIS PASSER EN-DESSOUS D'UNE PORTE EN MOUVEMENT
CHILD MAY BE TRAPPED RESULTING IN SERIOUS INJURY OR DEATH. DO NOT ALLOW CHILDREN TO WALK OR RUN AROUND GATE.	UNE PORTE DE GARAGE À PEUT HAPPER UN ENFANT ET LUI CAUSER DES BLESSURES MORTELLES. NE PAS LAISER LES ENFANTS PASSER SOUS LA PORTE LORSQUE CELLE-CI EST EN MOUVEMENT. NE PAS LAISSER LES ENFANTS MANOEUVRER LES COMMANDES DE LA PORTE.

# 11. Operation

## Details on how to operate the gate



*Following a Hard Shutdown, and prior to resetting the system, it is the sole responsibility of the user to ensure the area is free of obstructions and that it is safe to operate the Gate. See the instructions located in this manual for more detailed information about resetting the gate operator and the definition of a Soft or Hard Shutdown. Please refer to the paragraph 2.2 in '2 Introduction.'*

**The gate pathway and surrounding areas should be checked for no obstructions before operation is resumed.**

### **Controlled Constant Contact Operation**

Controlled constant contact sustained operation requires a controlled constant contact open command with a controlled constant contact close command. When the gate is in manual automatic operation it is up to the user to ensure that the gate area is clear of obstacles. When the area is clear and safe only then should the gate be given a command.



### **Automatic Controlled Momentary Operation**

Automatic controlled momentary operation uses a controlled open command with a timer to close OR uses a controlled open command with a controlled close command. When the gate is in automatic operation it is up to the customer to provide adequate signage and road markings to indicate the unsafe zone of the gate.

# 12. Manual Operation

## Details on how to operate the gate

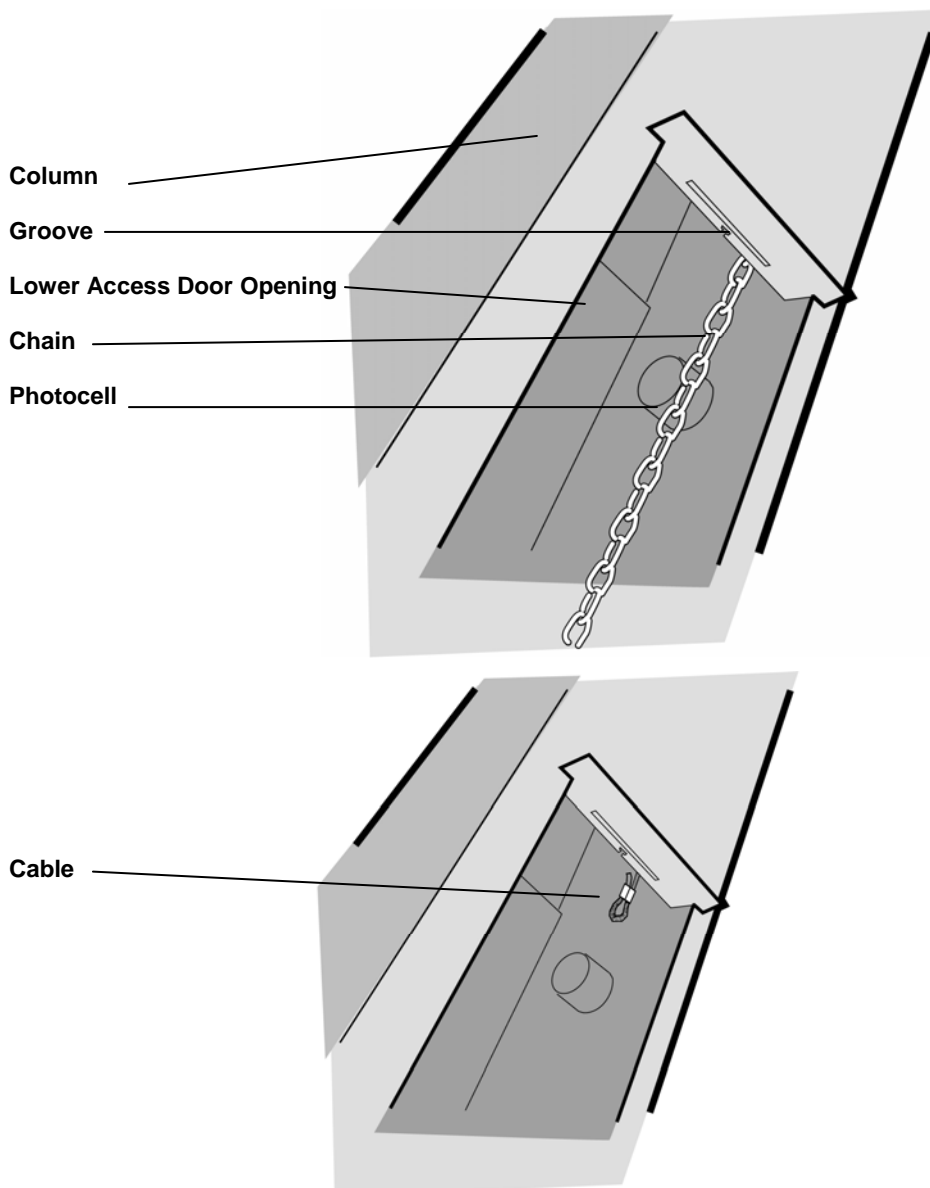
To manually move the SpeedGate by hand follow the instructions below. Ensure you have the access door keys, operator enclosure keys and the operator keys before beginning procedure.

### STEP 1

Ensure that both operators have their e-stop mushroom buttons depressed. If no automatic gate movement is possible then you may proceed to step 2.

### STEP 2

Remove the Lower Access Doors on both columns so that the brake disconnect chains/cable are visible. The chains/cables should be free hanging. Take note of the gate's position (needed for step 5). (See Fig. 1)

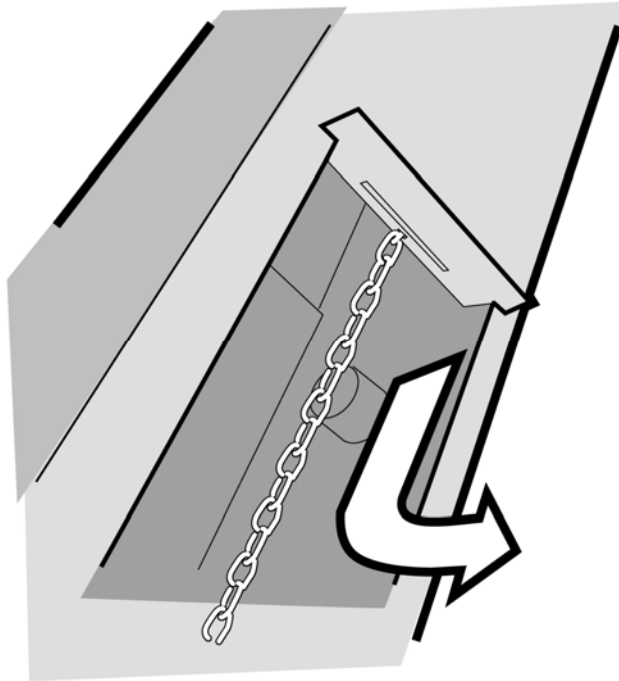


**(Fig. 1)**



### STEP 3

In one column pull down on the chain/cable until you see the indicated link/cable clamp and lock the link/clamp into the groove provided. Which is located on the inner edge in the center along the top edge of the Lower Access Door Opening. Repeat for the other column. (See Fig. 2)



(Fig. 2)

### STEP 4

Either side of the gate can now be manually moved. To move the gate for a column either push or pull on the inner (middle) hinged section between the gate panels for the corresponding column. Do Not Force, the panel should move freely with little force applied.

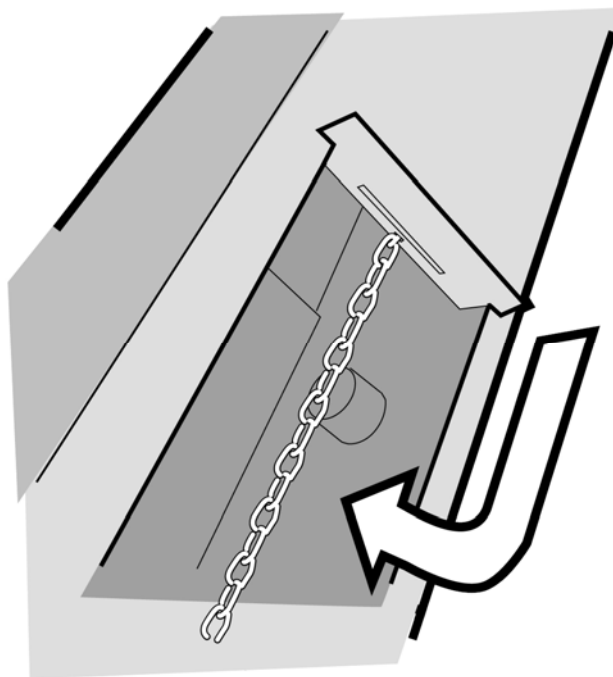
### STEP 5

Once all work/maintenance around and/or on the gate has been completed you may return the gates to their original position before they were manually moved (If the gates are to be left open proceed to step 6.)

### STEP 6

In one column pull down on the chain and remove it from the groove. It should now be free hanging. Repeat for the other column. (See Fig. 3)

*\* If the gates are to be manually operated or to be left open for an extended period of time it is recommend that the Lower Access Doors are placed back on the column so that the gates are secure.*



(Fig. 3)

### **STEP 7**

The Lower Access Doors may now be placed back on the gate.

### **STEP 8**

If the gates are to be placed back in to automatic operation the e-stop buttons on the operators may be pulled back out. The gate is now ready to be automatically operated.

# 13. Cleaning and Maintenance

## 4.1. How to maintain a SpeedGate for better operation and longevity



Maintenance should be only carried out by facility personnel or persons that are familiar with the SpeedGate. Please contact WALLACE INTERNATIONAL for a maintenance provider in your area. Repairs should only be carried out by personnel that were onsite during the gate commissioning and received adequate information in regards to repairs or are pre-approved by WALLACE INTERNATIONAL. No repairs should be carried out unless WALLACE INTERNATIONAL has been consulted first.

Alterations to the SpeedGate which could have a negative effect on the safety of the SpeedGate are not permitted.

***The SpeedGate owner is responsible to ensure that all personnel have received the end user briefing instructions, read and signed it found in Appendix II, personnel that have received the end user briefing are qualified to do the cleaning and maintenance.***



***The operators must be turn off whenever assembly and maintenance activities are being carried out. When the gate safeties are being checked for good working order in which case the gate should be check for any obstructions, if clear the operators can be turned back on.***



*Keep a record in the logbook of the repairs and the maintenance carried out.*

## 4.2. Repairs



*Repairs and/or modifications to the SpeedGate must not be carried out without consulting WALLACE INTERNATIONAL on the subject beforehand.*

***24 hour Emergency Support  
Phone: 1-866-300-1100wd  
Email: service@wallaceintl.com***

## 4.3. Periodic Maintenance to the Entire Installation

Maintenance is essential in order to guarantee the safety and the satisfactory operation of the SpeedGate. The following maintenance intervals should be observed for the SpeedGate:

1. Weekly maintenance to be carried out by end user;
  - The first work day of every week:
  - Check that the SpeedGate is in good working order
  - Check that the reduced speed sensor is in good working order
  - Check that the photocells are in good working order
  - ***If used in particular application:*** Check that the gate edges are in good working order
  - ***If used in particular application:*** Check that the vehicle detection loops are working
2. One month after installation, to be carried out by personnel.
3. Three months after installation, to be carried out by personnel in regards to maintenance or are pre-approved by WALLACE INTERNATIONAL.
4. Subsequently every four - six months (depending on usage), to be carried out by personnel that were onsite during the gate commissioning and received adequate information in regards to maintenance.

5. Maintenance should be carried out in accordance with the supplied logbook timeline:

- General visual inspection
- Cleaning of the SpeedGate and the mechanism
- Lubrication of all revolving parts (every 10,000 cycles)
- Inspection of fastenings using bolts and nuts, specifically those of revolving elements
- Cleaning of the photocells faces
- Checking of the operation of the photocells and the gate edges
- Check the movement of the gate
  - Make sure that the fully closed position is correct
  - Make sure that the fully open position is correct
  - Gate should be moving smoothly

The activities that have to be carried out every four - six months are listed in the supplied logbook. All maintenance activities and repairs carried out must be recorded in the supplied logbook.

#### 4.4. Maintenance of the Gate Drive System

Maintenance carried out by personnel:

- Remove covers
- Grease drive linkage rod end bearing with lithium grease or synthetic grease
- Visually inspect the drive linkage for wear
- Check torque on motor bolts (105ft/lbs)
- Check torque on motor mount plate(105ft/lbs)
- Check torque on drive pins(105ft/lbs)
- Visually inspect the motor and gearbox for wear and leaks
- Check brakes to see if they disconnect properly

All drive mechanism maintenance activities carried out must be recorded in the supplied logbook.

#### 4.5. Maintenance of the Controls

##### WARNING

- Wiring, testing and maintenance work on an open controller may be performed only without power.
- After turning off the controller, dangerous voltage levels remain present for up to 5 minutes.
- Touching electronic components is dangerous due to residual voltages.
- Never operate the controller while the cover is removed.

##### ATTENTION

- All controller voltage inputs are galvanic ally isolated from the supply by means of base isolation. All components connected to the controller must have additional isolation with a rated voltage of > 230 V.
- Only shielded, separate motor lines may be used, with the shield connected on both ends (motor and controller side) and no additional connections in the line. Maximum cable length: 100 feet.

Maintenance carried out by personnel.

- Visually inspect the Operator Cabinet for Moisture
- Visually inspect the Operators for Moisture
- Ensure that the Operator Cabinet is secured properly



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Appendix I

## Guarantee

**The guarantee period is 12 months from the date of delivery. Defective or damaged (see below “The guarantee will expire if:”) parts will be replaced at no cost to the customer. Labor involved to identify and replace the parts is not included in this warranty.**

*24 hour Emergency Support  
Phone: 1-866-861-5200  
Email: service@wallaceintl.com*

**The guarantee will expire if:**

- Parts become defective and/or damaged due to an improper voltage source, high voltage surges, or Acts of God.
- Repairs are carried out by personnel who have not been qualified by WALLACE INTERNATIONAL.
- Installation or maintenance is carried out by personnel who have not been qualified by WALLACE INTERNATIONAL.
- The SpeedGate is not maintained and no record kept in accordance with the maintenance schedule in the supplied maintenance and repair logbook located in this manual.
- Parts are replaced without prior authorization of WALLACE INTERNATIONAL.  
*If it is an emergency please call the above mentioned 24 hour Emergency Support Line.*
- Repairs are carried out without the prior authorization of WALLACE INTERNATIONAL.  
*If it is an emergency please call the above mentioned 24 hour Emergency Support Line.*
- Original parts are not used when carrying out repairs.
- The damage is caused by use other than specified below.
  - The function of the SpeedGate is to allow selective access. Make sure that the SpeedGate is clearly marked as a vehicular access control system, and is not intended for pedestrian use.



***The guarantee does not cover any damage to the SpeedGate, vehicles, people, adjacent personal property or real estate caused by any manner of use of the SpeedGate.***

Appendix II

# End User Briefing Instructions

The following Checklist / Instructions regarding intended operation of the gate shall be provided as a separate document to the End User. This is to be done by the installer as a required part of the installation requirements:



**WARNING – To reduce the risk of severe injury or death:**

**READ AND FOLLOW ALL OF THESE INSTRUCTIONS**

- 1) Insure the installer of the SpeedGate has provided you with a complete review, demonstration thereof, and supporting documentation of the following:
  - a) A complete copy of the Installation Manual, which will include mechanical and electrical drawings and instructions for the proper operation and service of the gate system.
  - b) The normal Sequence of Operation as to how the Gate will behave in both the opening and closing cycles.
    - i) When a controlled open command is given the gate panels begin to move from the closed position.
    - ii) The gate panels will accelerate to the maximum operating speed until the gate panels reach the pre-open position.
    - iii) At the pre-open position (factory set), the gates will decelerate and come to a controlled stop at the fully open position.
    - iv) After receiving a controlled close command or elapse of the timer-to-close, the gate panels will move from the open position to the close position.
    - v) The gate panels will accelerate to the maximum operating speed until they have passed the pre-open position
    - vi) At the pre-closed position, the gate panels will decelerate until they come to a fully closed position.
  - c) The Obstruction Detection Devices and how the Gate will behave should any of these devices encounter an obstruction. This must include the proper steps to take following both a “Soft Shutdown” and a “Hard Shutdown”.
  - d) The electrical disconnect and the multiple fuse locations within the electrical controls enclosure.
  - e) The manual disconnect / mechanical drive, and how to properly use it and then return the system back to normal operation following the use of the manual disconnect.
- 2) Never let children operate or play with gate controls, or play in the vicinity of the Gate. If a remote control is provided with this system, always keep it away from children.
- 3) Always keep people and objects away from the gate.
- 4) **NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.**
- 5) Test the Gate System weekly. The gate **MUST** reverse on contact with a rigid object from the reduced speed sensor. Any of the gates edges, or stop when an object breaks the Infrared Beam (photocell) while the gate is in the Closing cycle. Failure to properly test these devices on a weekly basis can increase the risk of injury or death.
- 6) Use the emergency release only when the gate is not moving. When the manual brake disconnect chain is pulled a micro-switch will disable the electrical operation of the gate.
- 7) **KEEP THE GATE SYSTEM PROPERLY MAINTAINED.** This Gate System is not a toy, read the owner’s manual thoroughly. Only allow trained and qualified technicians to service the gate system, for both mechanical as well as electrical repairs.
- 8) The Gate System is for vehicles only. Pedestrians must use a separate gate.
- 9) **SAVE THESE INSTRUCTIONS.**



_____	_____
Installer's (OR SpeedGate Owner) Name Printed	End User's Name Printed
_____	_____
Installer's (OR SpeedGate Owner) Name Printed	End User's Name Printed

Site: \_\_\_\_\_ Date: \_\_\_\_\_

# Logbook

The following checklists and records are intended to record all repairs, maintenance and observations of the SpeedGate. All entries must be dated and signed.



**INFORMATION**

*If gate operation was not restored through the assistance of WALLACE INTERNATIONAL Technical support, please contact WALLACE INTERNATIONAL or your WALLACE INTERNATIONAL service provider to request a service call.*

Phone WALLACE INTERNATIONAL at 1-866-861-5200 and request to speak with a WALLACE INTERNATIONAL service technician. Please note the location of the gate (street address), the position of the gate (where on the property it is located and if part of a double gate system, which part), and the specific trouble with the gate prior to calling.



**INFORMATION**

*Following a phone call, fill out and fax or e-mail a copy of the following Service Call Request form. Ensure to number the reports and log a copy in the back of this manual.*

**Fax to:** WALLACE INTERNATIONAL at 1.204.300.1100  
**E-mail to:** service@wallaceintl.com

## WALLACE INTERNATIONAL Service Provider

Company: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Contact Name: \_\_\_\_\_





## Maintenance of the Controls

**1 Week:**                      **Date:** \_\_\_\_\_

**Maintenance check performed by:** \_\_\_\_\_

	Checked	Good	Needs Attn
Visually inspect the Operator Cabinet for Moisture	_____	_____	_____
Visually inspect the Operators for Moisture	_____	_____	_____
Ensure that the Operator Cabinet is secured properly	_____	_____	_____

**Actions Performed:**

\_\_\_\_\_

\_\_\_\_\_

**4 Weeks:**                      **Date:** \_\_\_\_\_

**Maintenance check performed by:** \_\_\_\_\_

	Checked	Good	Needs Attn
Visually inspect the Operator Cabinet for Moisture	_____	_____	_____
Visually inspect the Operators for Moisture	_____	_____	_____
Ensure that the Operator Cabinet is secured properly	_____	_____	_____

**Actions Performed:**

\_\_\_\_\_

\_\_\_\_\_

**5 Months:**                      **Date:** \_\_\_\_\_

**Maintenance check performed by:** \_\_\_\_\_

	Checked	Good	Needs Attn
Visually inspect the Operator Cabinet for Moisture	_____	_____	_____
Visually inspect the Operators for Moisture	_____	_____	_____
Ensure that the Operator Cabinet is secured properly	_____	_____	_____

**Actions Performed:**

\_\_\_\_\_

\_\_\_\_\_

**12 Months:**                      **Date:** \_\_\_\_\_

**Maintenance check performed by:** \_\_\_\_\_

	Checked	Good	Needs Attn
Visually inspect the Operator Cabinet for Moisture	_____	_____	_____
Visually inspect the Operators for Moisture	_____	_____	_____
Ensure that the Operator Cabinet is secured properly	_____	_____	_____

**Actions Performed:**

\_\_\_\_\_

\_\_\_\_\_

# Maintenance Checklist

## One Month

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

---

Maintenance check performed by:

Signature:

---

Date:

Name:

---

Cycle Count:

---

Date of next Maintenance Inspection:

---

# Maintenance Checklist

## Three Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

Signature:

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Date:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance Checklist

## Four to Six Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

Signature:

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Date:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance Checklist

## Eight to Twelve Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

Signature:

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Date:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance Checklist

## Twelve to Eighteen Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature: \_\_\_\_\_

Customer Name: \_\_\_\_\_

Maintenance check performed by: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Cycle Count: \_\_\_\_\_

Date of next Maintenance Inspection: \_\_\_\_\_

# Maintenance Checklist

## Sixteen to Twenty-Four Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

Signature:

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Date:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance Checklist

## Twenty to Thirty Months

	Checked	Good	Needs Attn.	N/A
Physical structure – no damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure hinge bolts – 85ft/lbs torque	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure bolts at drive pins and guide roller wheel to 80 ft/lbs. (top of panels)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check idler wheel for abnormal wear / improper function (running freely/smoothly in center of guide roller channel)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check all electrical cables for proper clearance from all moving parts inside column. Fasten as required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check post termination box for weather-tight seal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check seal on gear boxes for leaks (gearbox in each column)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check Photo cell operation, clean lens with damp rag (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Stop button functional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### IF EQUIPPED/ENABLED

Accessory devices secure in cabinet (loop relays, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto-close timer, interlock functional (if enabled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cabinet thermal cover installed correctly (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Center catch shoe functional/secure (if installed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet clean/dry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Control cabinet fasteners secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function of traffic lights is correct (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heater operational (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sensing edges (qty of 6) – no rips/tears, function ok (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obstruction loop / free exit loop - operational/good condition (if equipped)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature: \_\_\_\_\_

Customer Name: \_\_\_\_\_

Maintenance check performed by: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Cycle Count: \_\_\_\_\_

Date of next Maintenance Inspection: \_\_\_\_\_



# Maintenance of the Drive Mechanism Checklist

## Two Months

	Checked	Good	Needs Attn.	N/A
Remove covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grease drive linkage rod end bearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the drive linkage for wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check paint & torque if necessary on motor bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on motor mount plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on drive pins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the motor and gearbox for wear and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check brakes to see if they disconnect properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

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Date:

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Signature:

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Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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## Maintenance of the Drive Mechanism Checklist

### Four Months

	Checked	Good	Needs Attn.	N/A
Remove covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grease drive linkage rod end bearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the drive linkage for wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check paint & torque if necessary on motor bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on motor mount plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on drive pins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the motor and gearbox for wear and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check brakes to see if they disconnect properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

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Date:

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Signature:

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Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance of the Drive Mechanism Checklist

Eight Months

	Checked	Good	Needs Attn.	N/A
Remove covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grease drive linkage rod end bearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the drive linkage for wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check paint & torque if necessary on motor bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on motor mount plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on drive pins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the motor and gearbox for wear and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check brakes to see if they disconnect properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

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Date:

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Signature:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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## Maintenance of the Drive Mechanism Checklist

### Ten Months

	Checked	Good	Needs Attn.	N/A
Remove covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grease drive linkage rod end bearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the drive linkage for wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check paint & torque if necessary on motor bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on motor mount plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on drive pins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the motor and gearbox for wear and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check brakes to see if they disconnect properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

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Date:

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Signature:

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Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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# Maintenance of the Drive Mechanism Checklist

Twelve Months

	Checked	Good	Needs Attn.	N/A
Remove covers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grease drive linkage rod end bearing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the drive linkage for wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check paint & torque if necessary on motor bolts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on motor mount plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check torque on drive pins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visually inspect the motor and gearbox for wear and leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check brakes to see if they disconnect properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*\*If necessary, please contact Pevac America for further information regarding adjustment of rod end bearings if required*

Comments/Recommendations:

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Customer Signature:

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Customer Name:

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Maintenance check performed by:

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Date:

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Signature:

Name:

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Cycle Count:

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Date of next Maintenance Inspection:

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