



AutoGate, Inc.

7306 Driver Road

P.O. Box 50

Berlin Heights, OH 44814

PH: 1.800.944.4283

FAX: 419.588.3514

[www.AutoGate.com](http://www.AutoGate.com)

# Installation & Operation Manual

Vertical Pivot Gate (VPG) System

## VPG Operator-24 (APeX II)

This product is to be installed and serviced by a trained Gate Systems Technician only. Contact AutoGate for a local professional in your area.

Before attempting to install, operate or maintain the operator, you **MUST** read and fully understand this manual and follow all safety instructions.

# Safety & Helpful Information

AutoGate and the industry has endorsed three voluntary safety standards related to automatically operated gate systems. In the United States, UL 325 addresses the manufacturing and installation of gate openers and in Canada the standard is CSA 22.2 no. 247-14. ASTM F2200 addresses the design and construction of gates for vehicular traffic that are to be automated.

**UL 325:** Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems. For obtaining a copy of this standard call Underwriters Laboratory at 1-888-853-3503 or order online at [www.comm-2000.com](http://www.comm-2000.com)

**CAN/CSA 22.2 no. 247-14:** Standard for Operators and systems of Doors, Gates, Draperies and Louvres. For obtaining a copy of this standard call CSA at 1-800-463-6727, email at [sales@csagroup.org](mailto:sales@csagroup.org), or order online at [www.http://shop.csa.ca/](http://www.shop.csa.ca/)

**ASTM F2200:** Standard Specification for Automated Vehicular Gate Construction. For obtaining a copy of this standard contact ASTM at 1-877-909-2786, email at [service@astm.org](mailto:service@astm.org) or order online at [www.ASTM.org/](http://www.ASTM.org/).

Automatic vehicular gate operating systems provide convenience and security to the end user. A gate operator is capable of producing high levels of force to move and or reverse gates. If a system is not properly specified, installed, used, and maintained, serious injuries or death can result to someone in the vicinity of a moving gate. Some situations that can lead to a possibility of serious injuries or death include:

- absence of separate pedestrian access (automatic gates are for vehicular traffic only)
- reaching through a gate to operate the system
- attempting to climb under, over, or through a gate or the area covered by the travel of the gate
- children playing on, or in the vicinity of, the gate
- Improperly installed or physical failure of gate supporting hardware, which may allow a gate to “over travel” or fall down or fall from its prescribed mounting position
- unsafe gate designs and/or an absence of required entrapment protection devices
- unsafe installations in which access control devices or pedestrian access areas have been located within reach of or contacted by any part at any time by the moving gate
- modifying a manufacturers design or components and failing to follow instructions
- untrained individuals attempting to adjust, repair, or perform maintenance on a gate system

## **General Requirements from these standards (include, but are not limited to the following;)**

1. Gates shall have smooth bottom edges, with vertical bottom edged protrusions not exceeding 1/2” (0.50 in. /12.7 mm) other than the exceptions listed in ASTM F2200.
2. The minimum height for barbed tape shall not be less than eight foot (8’) (2.44 m) above grade.
3. The minimum height for barbed wire shall not be less than six foot (6’) (1.83 m) above grade.
4. Protrusions shall not be permitted on any gate. Refer to ASTM F2200 for exceptions

## General Requirements from these standards (continued)

5. Gates shall be designed, constructed and installed such that their movement shall not be initiated by gravity when an automatic operator is disconnected from its supporting or drive system hardware. A vehicular vertical pivot gate shall be restrained from movement along the arc of its path of travel.
6. The following provisions shall apply to Class I, Class II, and Class III vehicular vertical pivot gates:
- All areas of the moving gate panel from the bottom of the gate to the top of the gate or a minimum of 72 in. (1.83 m) above grade, whichever is less, that pass by a fixed stationary object, and in the area of the adjacent fence that the gate covers during the travel of the gate, shall be designed, guarded or screened to prevent a 2 1/4 in. (57 mm) diameter sphere from passing through such areas. A gap, measured in the horizontal plane parallel to the roadway, between a fixed stationary object nearest the roadway (such as a gate support post) and the gate frame when the gate is in either the fully open position or the fully closed position on vertical pivot installations, shall not exceed four (4") inches (102 mm). Exception: All other fixed stationary objects greater than 16 in. (406 mm) from the gate frame shall not be required to comply with this section. Horizontal and vertical framing members of a gate shall be smooth, and shall not include protrusions other than gate hardware to a maximum of 1/2"(0.50 in. /12.7 mm). All gates shall be designed with sufficient lateral stability to assure that the gate will enter a receiver guide.
7. Class IV vehicular vertical pivot gates shall be designed, constructed and installed in accordance with security related parameters specific to the application in question.
8. Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls. Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police, EMS) may be placed at any location in the line-of-sight of the gate.
9. A minimum of four (4) WARNING SIGNS shall be installed, two (2) on each side of the gate where easily visible when the gate is open or closed.
10. A vehicular gate operator or vehicular drop arm operator shall have provisions for, or be supplied with, **at least** two (2) independent monitored entrapment protection means as specified in UL 325 Table 31.1 for each entrapment zone. At installation, both entrapment protection devices must be installed.

Vertical Pivot Gate Systems	
Operator Entrapment Protection Types	
Type A	Inherent entrapment protection system (built into the control board)
Type B1	Non-contact sensors such as photoelectric sensor (Photo Beam)
Type B2	Contact sensors such as edge sensors
<p><b>Note</b> – The same type of device shall not be utilized for both entrapment protection means. Use of a single device to cover both the opening and closing directions is in accordance with the requirement; however, a single device is not required to cover both directions. A combination of one Type B1 for one direction and one Type B2 for the other direction is the equivalent of one device for the purpose of complying with the requirements of either entrapment protection means. This operator is provided with Type A built into the control board. The installer is required to install additional entrapment protection devices in each entrapment zone.</p>	

# END USER / INSTALLER CHECK OFF LIST

**IT IS RECOMMENDED THAT EACH ITEM ON THIS INSTALLATION CHECKOFF LIST  
BE DISCUSSED WITH THE END USER.**

- \_\_\_ FOUR WARNING SIGNS SECURELY INSTALLED, TWO (2) ON EACH SIDE OF GATE VISABLE IN BOTH OPEN AND CLOSED POSTION. (REQUIRED)
- \_\_\_ TWO MEANS OF ENTRAPMENT PROTECTION ARE INSTALLED TO REVERSE THE GATE IN THE CLOSING DIRECTION (i.e. TYPE A CURRENT SENSING (PROVIDED BY CONTROLLER) and (1) TYPE B (PHOTO EYE) or TYPE D (CONSTANT HOLD BUTTON) PER UL 325—6TH EDITION (REQUIRED)
- \_\_\_ OTHER ENTRAPMENT RISKS IN THE GATE TRAVEL AREA HAVE BEEN PROTECTED PER ASTM F-2200 (i.e. SCREENING, FENCING, ETC.) ( REQUIRED)
- \_\_\_ CUSTOMER ADVISED THAT GATE IS FOR VEHICULAR TRAFFIC ONLY. (REQUIRED)
- \_\_\_ A SEPARATE PEDESTRIAN ENTRY AND/OR EXIT IS PROVIDED. (REQUIRED)
- \_\_\_ GATE GUARD / FENCED OFF AREA INSTALLED ON BACK SIDE OF OPERATOR. (REQUIRED)
- \_\_\_ KICK PLATE INSTALLED ON DOOR SIDE OF OPERATOR. (REQUIRED)
- \_\_\_ ALL ACCESS CONTROL DEVICES A MINIMUM OF SIX FOOT (6') AWAY FROM THE MOVING GATE PANEL. (REQUIRED)
- \_\_\_ CLASS OF OPERATOR IS APPROVED FOR THE APPLICATION OF THE OPERATOR (CLASS 1,2,3,4) (REQUIRED)
- \_\_\_ CONTROLS INTENDED TO RESET GATE AFTER BEING OBSTRUCTED ARE INSTALLED IN LINE OF SIGHT (REQUIRED)
- \_\_\_ FIELD WIRING SECURED TO AVOID PINCHING DAMAGE.
- \_\_\_ CUSTOMER INSTRUCTED AND IS CLEAR ON PROPER USE OF GATE OPERATOR. (REQUIRED)
- \_\_\_ CUSTOMER INSTRUCTED ON PROPER USE OF ALL CONTROL DEVICES USED WITH OPERATOR.
- \_\_\_ SAFETY INSTRUCTIONS WERE REVIEWED AND LEFT WITH CUSTOMER. (REQUIRED)
- \_\_\_ DISCUSS THE POTENTIAL FOR A PREVENTATIVE SERVICE AND MAINTENANCE CONTRACT.
- \_\_\_ A PHOTO OF COMPLETED INSTALLATION TAKEN FROM FRONT AND BACK OF GATE & DATED.
- \_\_\_ CUSTOMER TRAINED ON MANUAL OPERATION OF THE GATE.
- \_\_\_ CUSTOMER ADVISED NOT TO DISCONNECT THE UL 325 ENTRAPMENT ALARM IN ANY WAY
- \_\_\_ ALL ENTRAPMENT PROTECTION MEANS HAVE BEEN TESTED AND VERIFIED FOR PROPER OPERATION

***THIS GATE OPERATOR IS INSTALLED FOR USE AS A CLASS \_\_\_\_\_ INSTALLATION.***

## **Operator Class Designation**

**CLASS I** - RESIDENTIAL VEHICULAR GATE OPERATOR – A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one to four single families.

**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 buildings accessible by or 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 accessible by or 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.

# Table of Contents

Safety and Helpful Information	2-3
Checklist	4
Table of Contents	5
Warning Instructions	6
Safety Instructions for Entrapment Protection Requirements	7
Approved Obstruction Detection Devices	7
Safety Instructions for Installers & End Users	8
Orientation	9-11
Accessory Components	12
Preparations Prior to Installation	13-15
Installation	16-19
Power Connection & Operator Testing	20-21
Control Board Layout & Troubleshooting	22-28
Control Board Accessory Wiring Instructions	29-31
Maintenance	32-35
Drawings	36-40

# WARNING!

**TO REDUCE THE RISK OF INJURY OR DEATH, READ AND FOLLOW ALL INSTRUCTIONS!**

## REDUCE RISK

1. Follow the safety standards of the Occupational Safety and Health Administration (OSHA), as well as any applicable Federal, State, Local Project Specification and Industry Standards or Procedures.
2. Only experienced personnel are to install, operate and maintain the equipment. Serious injury or equipment damage can occur if installed or operated by untrained personnel. Operators of the equipment must follow the specific instructions and safety precautions located in this manual.
3. At NO time should the Gate Panel/Drop Arm be modified in any way.
4. Do not add any additional weight to the Gate Panel/Drop Arm without contacting AutoGate first. This can affect the balancing and operation of the system.
5. Always keep people and objects away from all moving parts and entrapment/pinch points of the system. **NO PERSON OR OBJECT SHOULD CROSS THE PATH OF THE MOVING GATE.**
6. Test the gate operator monthly. The gate **MUST** reverse on contact with a rigid object or stop when an object activates the non-contact sensors or contact sensor. Sensitivity is adjusted at the "OC" or "CC" programming function. Failure to adjust and reset the gate operator properly can increase the risk of injury or death.
7. Use the belt tension lever release only when the gate panel/drop arm is not moving and powdered down.
8. Install the vehicular gate operator only when the operator is appropriate for the construction of the gate panel/drop arm and the usage class of the gate.
9. The system is intended for only gates used for vehicles. ***Pedestrians must be supplied with a separate access opening.*** The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate panel/drop arm such that persons will not come in contact with the vehicular gate panel/drop arm during the entire path of travel of the vehicular gate panel/drop arm.
10. The gate must be installed in a location so that enough clearance is maintained between the gate and adjacent structures when opening and closing to reduce the risk of entrapment.
11. Check the area where the gate will be installed and operated for overhead wires, limbs, buildings, signs or any other fixed objects that may interfere with the gate travel.
12. Controls intended for user activation must be located at least six feet (6') away from any moving part of the gate panel/drop arm and where the user is prevented from reaching over, under, around or through the gate panel/drop arm to operate the controls.

## SAVE THESE INSTRUCTIONS

Automatic Gate Operators can produce high levels of force, therefore, it is very important that all gate operator system installers and designers are fully aware of potential hazards that exist with an incorrectly installed or designed system. The internal safety capabilities of a gate operator system are not enough to reduce the risk of injury. The operator is only one part of a properly installed system which when combined with all ASTM F2200 requirements and correctly installed approved entrapment devices will yield a completed UL 325, 6th ed. and CSA 22.2 NO. 247-14 listed system that will not only provide convenience and security, but will be safer with a minimal risk of injury. The following information contained in this manual along with the installation checklist provided will make you aware of potential areas that are of a safety concern. Disregarding any of the following may result in **SERIOUS INJURY OR DEATH!**

# **SAFETY INSTRUCTIONS REGARDING REQUIREMENTS FOR ENTRAPMENT PROTECTION**

This unit is equipped with one (1) **INTERNAL** means of entrapment protection. (SEE UL 325 SECTION 31.1) AND one (1) **EXTERNAL** monitored entrapment input.

**NOTE:** If you require additional inputs for entrapment devices, contact AutoGate at 800-944-4283.

## **INTERNAL:**

(TYPE A) Inherent entrapment sensing systems: operator will reverse direction when the inherent TYPE A device senses an obstruction in either direction of travel.

## **EXTERNAL:**

(TYPE B1) Provision for a monitored connection of a non-contact sensor (Photo Beam or equivalent)

## **PRIMARY PROTECTION- TYPE A INHERENT PROTECTION:**

The unit will reverse direction when an obstruction is sensed while moving either direction. Sensitivity is adjusted at the "OC" or "CC" programming function. If an obstruction is sensed while closing by the inherent sensor, the gate will reverse and open to the full open position. The gate will remain open until a renewed intended input is received. (i.e.) Loop sensor, key or card reader, push button). If an input is still present when the gate reached the full open position, this input will need to be renewed or removed and another input given before the close timer will close the gate. (See Page 12).

## **ENTRAPMENT ALARM:**

Will activate upon the primary inherent sensor sensing a second obstruction before reaching a limit switch. Once activated, the gate will remain at rest and an alarm will sound. The alarm can only be cleared by someone in the line of sight and **MUST** be an "INTENDED" reset. Access control devices of any kind that require an intended activation may be used for this reset. Devices that will cause an incidental reset cannot be used. These include; vehicle detectors, probes, timers, motion sensors, photo beams. Turning off the master power switch is an acceptable method of resetting the gate operator.

# **WARNING!**

**FAILURE TO COMPLY WITH THIS REQUIREMENT MAY RESULT  
IN SERIOUS INJURY OR DEATH**

## **APPROVED VPG-24 OBSTRUCTION DETECTION DEVICES**

### **PHOTO BEAMS**

1) EMX INDUSTRIES	MODEL#: IRB-MON	TRANSMITTER / RECEIVER TYPE
2) EMX INDUSTRIES	MODEL#: IRB-RET	REFLECTOR TYPE PHOTO BEAM
3) Prime-GUARD	MODEL#: PG-K-RW	TRANSMITTER / RECEIVER TYPE
4) Reflecti-GUARD	MODEL#: RG-K-R	REFLECTOR TYPE PHOTO BEAM

# WARNING!

TO REDUCE THE RISK OF INJURY OR DEATH, READ AND FOLLOW ALL INSTRUCTIONS!

## SAFETY INSTRUCTIONS FOR INSTALLER AND END USER

Proper design is important in your system layout and installation. Entrapment devices must be used at all available points where injury or property damage may occur. For protection from injury to persons, use approved Infrared Reversing Beams across the driveway. Entrapment devices are monitored and the failure of such will disable your operator. Reversing Loops (Vehicle Detectors) should be installed in front and behind the gate to provide a reverse signal or stop signal to the gate operator. All reversing devices should be tested and inspected monthly. If a Reserving Loop or Loop detector malfunctions, operator should be disabled until repair can be made by an experienced service company.

In providing the service of “designer” or “installer” of the operator and gate system, you are responsible for educating the **END USER** on proper and safe operation of the gate system. All precautions to eliminate hazards **MUST** be taken before the system can be put into operation. All identified entrapment areas require two means of protection against entrapment. Refer to ASTM F2200 for diagrams of common entrapment areas.

- Check the National, State & Local building and fire codes **BEFORE** installation
- A minimum of one (1) approved external entrapment device must be properly installed or you will **NOT** be in compliance with the January 2016 UL 325 Code, 6th Edition. *(Also required to test gate operation during install after the power has been hooked up).*
- Pedestrians **must** use a separate entrance/exit and **never** the vehicular entrance/exit gate.
- **NEVER** activate the gate from long distances where visibility of the gate cannot be seen. Anyone operating the gate should always operate it in a safe manner.
- **NEVER** allow children or anyone to play on or around the gate at any time.
- **DO NOT** affix any adhesive material within thirty (30) days of receiving the system.
- **DO NOT** attach anything to the gate over four (4) pounds total weight or four (4) square feet without consulting AutoGate for re-balancing instructions. **The gate must remain balanced to ensure safe and reliable operation.**
- The gate and operator are designed to work together. **DO NOT** attempt to install an unauthorized gate without AutoGate’s prior authorization and instructions, in doing so will **VOID** the operator warranty.
- **DO NOT ALLOW** any access control devices to be mounted within six feet (6’) of the moving gate or in such a way that someone could reach their hand or arm through the gate to activate it.

# WARNING!

THE GATE OPERATOR IS DESIGNED AND FACTORY BALANCED FOR THE SPECIFIC GATE IT WAS SUPPLIED WITH.

DO NOT MODIFY THE GATE IN ANY WAY OR ADD SIGNS WEIGHING MORE THAN FOUR (4) LBS TOTAL OR FOUR (4) SQUARE FT.

FAILURE TO COMPLY WITH THIS REQUIREMENT WILL VOID THE WARRANTY AND MAY RESULT IN SERIOUS INJURY OR DEATH.

# ORIENTATION

The *AutoGate Vertical Pivot Gate (VPG)* in this manual is referred to as “system”. The VPG has many features that make it effective, reliable, and easy to use and some of these important features are summarized in the table below. Note, not all systems are identical, such as, width or height of the gate panel/drop arm or finish. Accessories such as lights, sirens, keypads and other accessory component options vary. Below are some key features to the System.

Feature	Explanation
All Electric Operation. <b><i>NO HYDRAULICS!</i></b>	24 volt DC with input voltage of 120-volt (standard) or 240-volt single phase. Built-in battery backup for continued operation during power outages. Can be outfitted with solar charging for remote locations without AC power. No hydraulic fluids (for environmentally sensitive areas). Batteries are not included, but are required.
Gate Panel Options	Ranging from highly decorative pickets to a simple chain link or industrial anti-climb pales for military or correctional facilities.
Opens Completely	The VPG opens fully to 90°. Easily accommodates tall vehicles and equipment.
Duty Cycle: Continuous	The operator is engineered and rated for continuous duty and is specifically designed for constant use throughout the day.
Low Maintenance	Requires only periodic lubrication and annual tension adjustment. Very low order of service required compared to our competition.

## **GLOSSARY & TERMS**

Figure 1.1 through 1.3 will orient you to the basic components of the system. Most of the terms are self explanatory; however, the following will help you understand certain components and terms.

**Operator** - A mechanical device used to open and close (raise and lower) a gate panel/drop arm system.

**False Panel** - Parallel to operator enclosure is the *False Panel*. It is permanently attached to the operator and is comprised of two inch (2”) steel tubing and sheet metal. Its purpose is to protect pedestrian, technician, and system users from being in the area of the pivoting gate panel/drop arm.

**Hand (or handing)** - The system comes in left hand or right hand configurations. This refers to the location of the operator when viewed from the secured side of the closed Gate. To illustrate “handing” see the figure 1.1 for an example of a Right Handed (RH) system.

# Section #1 Operator Orientation

All of the operators mechanical and electrical components are housed inside the operator (See Figure 1.2 through Figure 1.3). The operator is a lockable steel cabinet that mounts on a concrete pad. A separate electrical enclosure is also housed inside the operator. The electrical enclosure contains the master control circuit board and the terminal blocks/wire management system. It may also house a variety of optional electrical components and configuration custom to your specific order.

(Also refer to DWG 103-DR-APEX)

Figure 1.1 Operator (not depicting gate panel/drop arm)

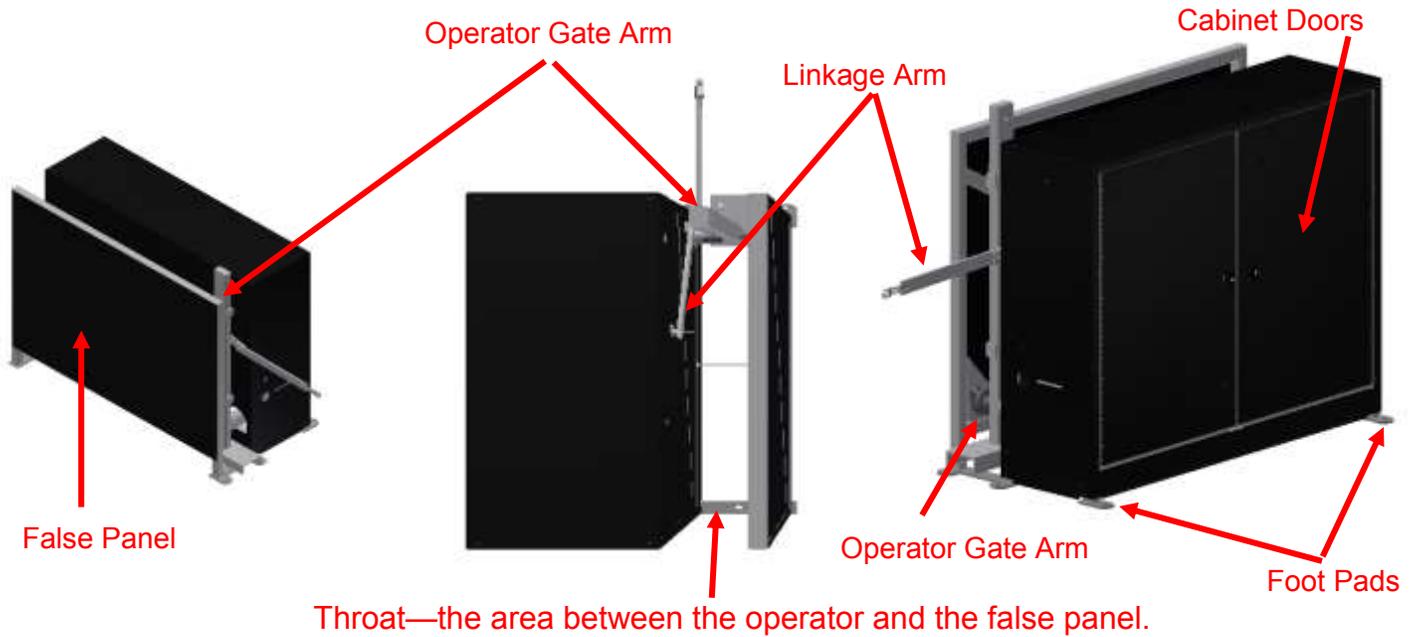
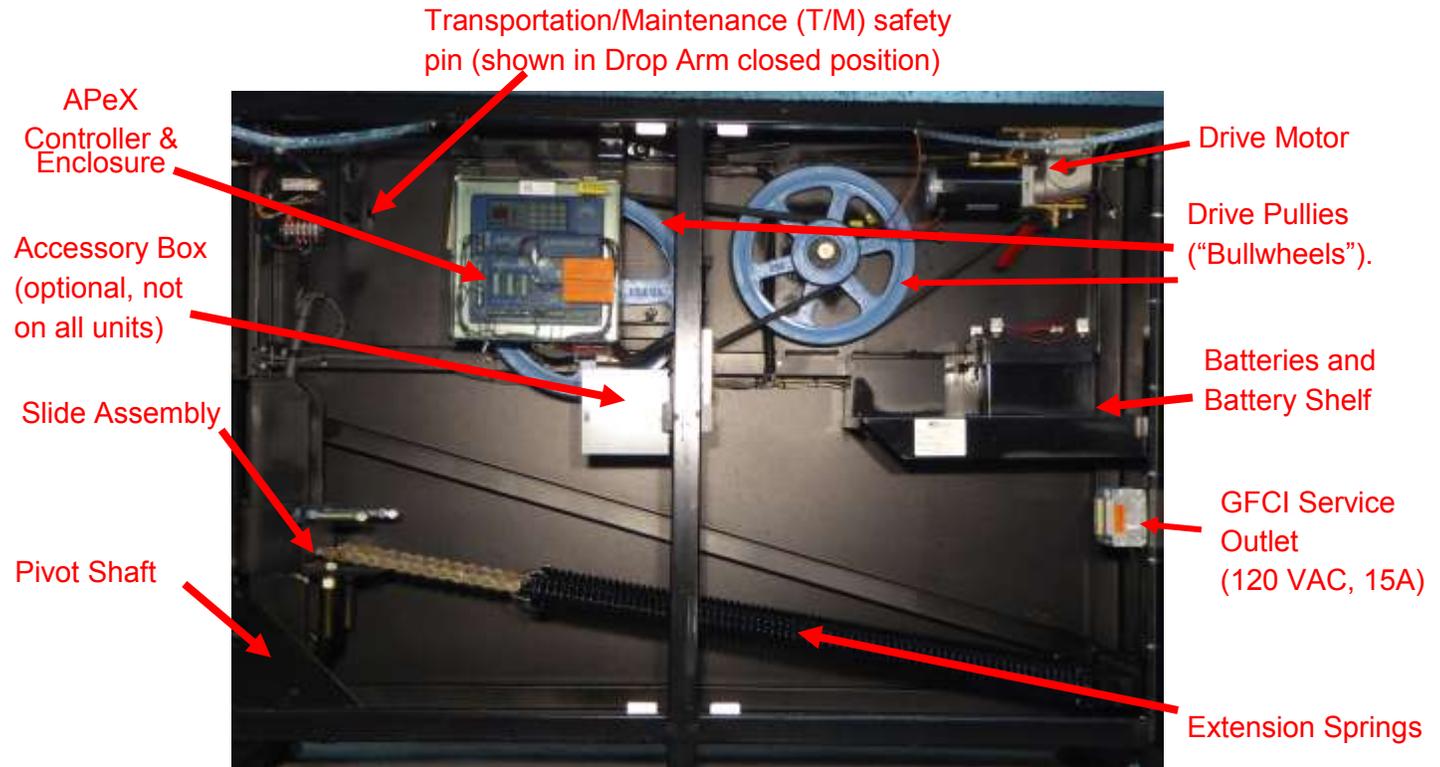


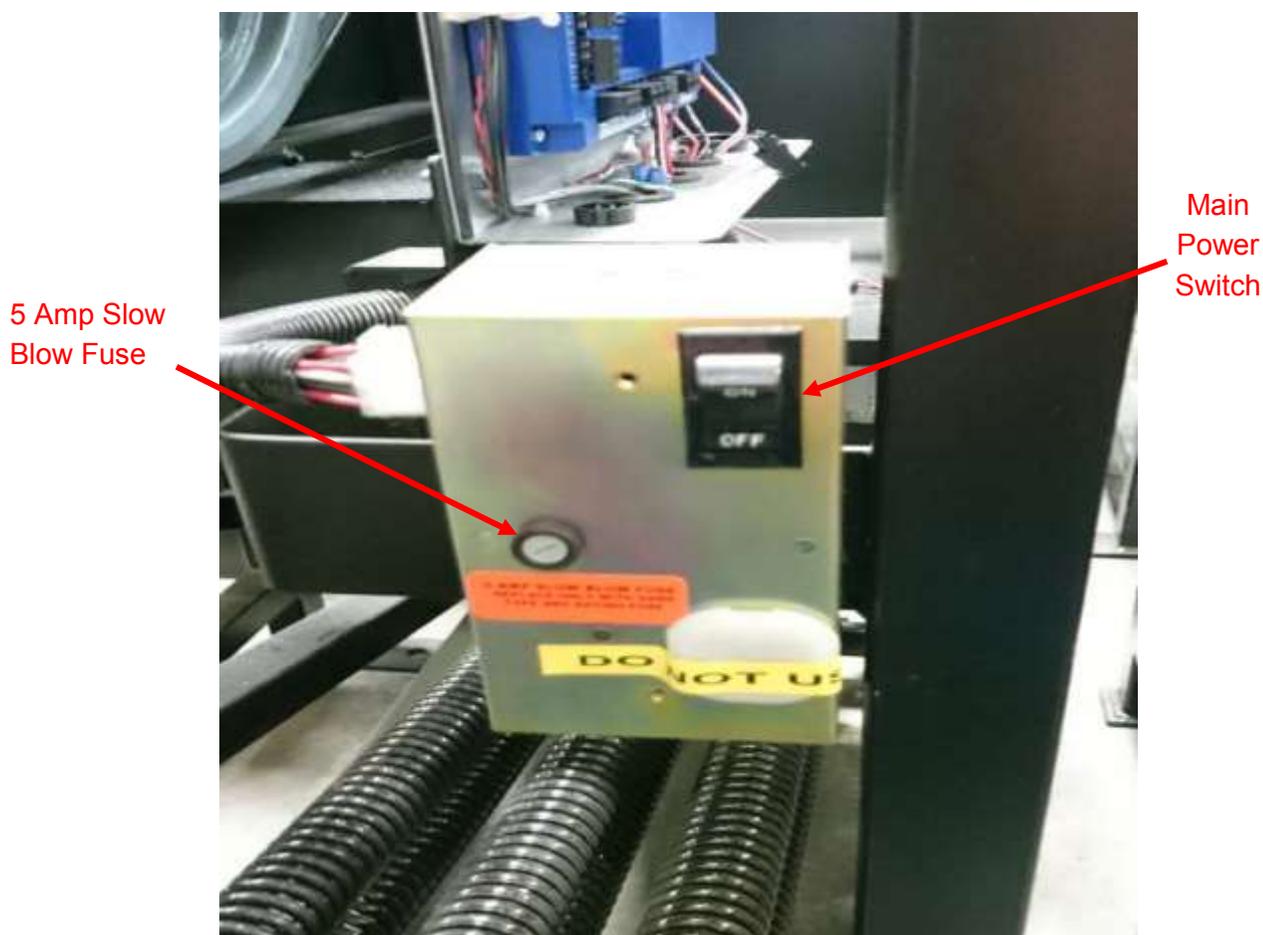
Figure 1.2 Components Housed in the Operator (NOTE: Picture may not depict exact



## APeX Power Box Receptacle

---

The APeX power box receptacle is rated for only 1 amp of AC current draw. Use of high amp draw appliances (i. e. heat mats, heat tape, electric power tools) is not permitted to be powered off this receptacle. All heater, heat mat options or power tools shall be powered off the AC receptacle located underneath the battery shelf. Damage caused by not following these guidelines will not be the responsibility of the manufacturer.



# ACCESSORY COMPONENTS

If your system came with accessory or optional components that require installation or setup, you must review this section for Operator Wiring & Testing. Instructions are provided by the component manufacturer. In general, those instructions provide guidance needed for installing and using these accessory components.

The following table lists the accessory components that may have been provided with your system.

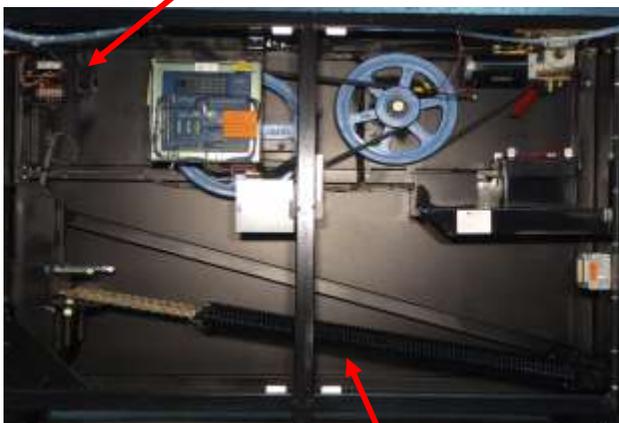
Component or System	Comments
<p><b>Note:</b> Certain components should be considered mandatory on all systems. These are noted below and should be procured, installed, and tested before the system is commissioned and used by the End User.</p>	
<p><b>Vehicle Loops &amp; Loop Detectors</b></p>	<p>These are required to restrict or limit gate operation under certain vehicle detection or in conjunction with access control vehicle presence. A socket for the loop detector electronic control modules are included on the control board. Installer must install loops in the roadway, install the control module (detector), complete the hookup, and program/adjust detector sensitivity for good interaction of the loops and the gate system.</p>
<p><b>External Entrapment Devices</b>  <b>B1– Non Contact Obstruction Device</b>  <b>(See approved list on Page 7)</b>  <b>(Refer to Figure 5.1 for wire connections)</b></p>	<p>Used to stop and reverse the Gate Panel when closing. If an object passes through or blocks the beam, the Gate Panel will remain open while the beam is blocked. AutoGate's maximum length is 26'. Always check the photo beam instructions to assure sensors are properly set per the manufacturers instructions.</p> <p>If you did not order an photo beam sensor from AutoGate, an approved device list is on page seven (7) &amp; MUST be installed in order to be in compliant with UL325 6th Edition and CSA 22.2 No. 247-14. Always follow the device manufacturer's instructions for proper installation.</p>
<p><b>Traffic Signal Lights—1 lens, 2 lens, or 3 lens</b>  <b>(Ex: Red, Yellow, Green)</b></p>	<p>Used to warn of the system's presence and operation. AutoGate recommends a <b>Red</b> LED lens at all times, except when the Gate Panel/Drop Arm is in its fully open position, in which case we recommend a <b>Yellow</b> (amber) flashing lens.</p>
<p><b>Warning Signs, Reflective Tape, Warning Lights</b></p>	<p>Drivers should be alerted to the presence of a high-stopping power system, and that striking the system will cause injury or death. Speed limits should also be posted. Contact AutoGate for specific warning signs, reflective tape, and warning lights that can be affixed to the Gate Panel/Drop Arm.</p>

## Section #2 PREPARATIONS PRIOR TO INSTALLATION

### T/M (Transportation & Maintenance) Safety Pin Warning!

When you receive your system, it has a safety device called a T/M Safety Pin installed. (see Figures 2.1- 2.3 below). This pin is installed during shipping, installation, and whenever maintenance is being performed. **DO NOT remove this pin until the instructions in this manual directs you to do so!**

Figure 2.1 T/M Pin location from inside operator



Springs Are Under High Tension!—**CAUTION!!**

FIGURE 2.2



Figure 2.3

T/M Pin viewed from the operator and in the operator throat.



Keys are stored during transportation

## **SITE PREPARATION & PLANNING**

Inspect the site and verify there are no underground utilities, overhead wires, or other obstructions that can affect your installation and use. Keep routine foot traffic away from the system to reduce the chance of pedestrians or site personnel contact with a moving system. A separate pedestrian gate or turnstile is required for the use of the system by anything other than vehicular traffic.

Determine if there are any accessory components to be installed with your system and necessary conduit used for traffic lights, in-ground loops, access control stations, etc. and factor them into your site layout and installation plan.

High voltage and control wiring must **NOT** be run in the same conduit.

### **Concrete Pads**

Concrete pads are required to install the VPG Operator and Yoke. Along with securing the operator to the entry / exit point, the pad provides a fixed and adequate foundation to resist wind and maintain stability for many years of operation. Prior to pouring the concrete for the operator pad ensure the soil is undisturbed or compacted to local or governing standards. **(See DWG. 102-P)**

### **4' X 7' Operator Pad Options:**

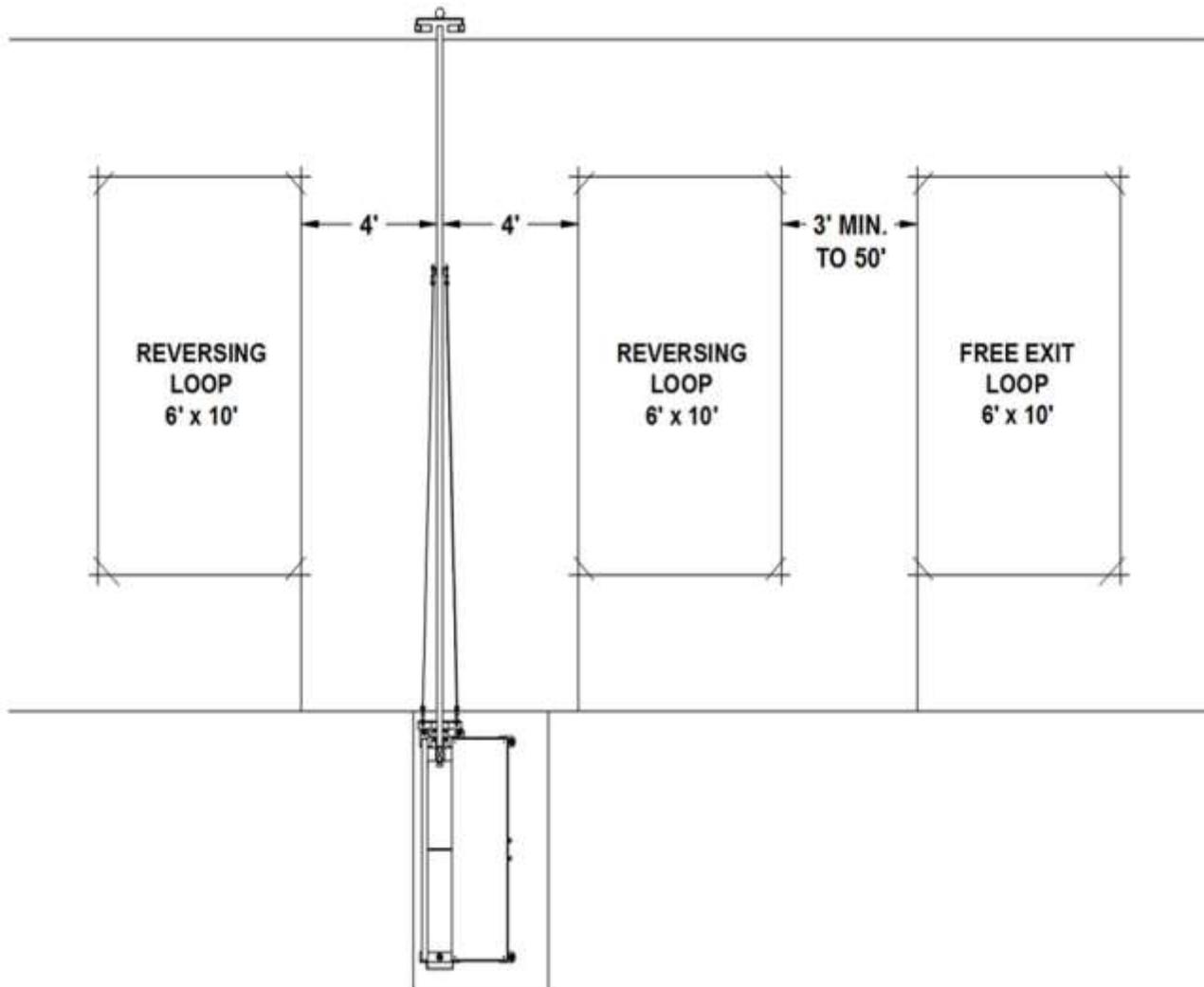
1. Full Pad, Minimum depth of 36" or below *local* frost line
2. 10"-12" thick pad with five (5) 12" dia. x 36" deep holes or below *local* frost line

## Vehicle Loop Installation and Performance

Ground vehicle sensing loops are very common to gate sites. They are used for the detection of vehicles which then triggers the gate to do a specific action. Proper installation and placement is critical. If you purchased Pre-formed Loops carefully follow the enclosed installation instructions and use the diagram below for the proper placement of the ground loops. If you are constructing the loops on-site, be certain to use D.O.T. approved materials and methods.

Test the function of the loops thoroughly by using vehicles once installed to verify correct operation.

**Figure 2.4**



# PREPARATIONS PRIOR TO INSTALLATION

## RECOMMENDED TOOLS AND EQUIPMENT

Lifting Strap	Multi-Meter (DCV & AMPS)
Hammer & Level	Hammer Drill, 1/2 & 5/8 Bits
Grease Gun, Lithium Grease	Tape Measure
Screwdriver Sets (Flat & Phillips)	1/2" Drive Socket Set: 1/2", 9/16", 3/4", 15/16", 1-1/8"
Electrical Tape	Open End Wrenches: 1/2" 9/16", 3/4", 15/16", 1-5/16"
Wire Cutters/Strippers	Misc. Electrical Connectors
Chalk Line	Batteries (2) 12 VDC Group 24 Deep cycle marine

**NOTE: Refer to manufacturer's instructions of Accessory Equipment for correct wire size and type.**

## RECEIVING & UNLOADING INSTRUCTIONS

Unloading & Unpacking - Gate weight per foot varies with gate style & height and are approximate. Operator weighs 1,150 lbs., steel gates are 24 lbs. per foot and aluminum gates weigh 19 lbs. per foot.

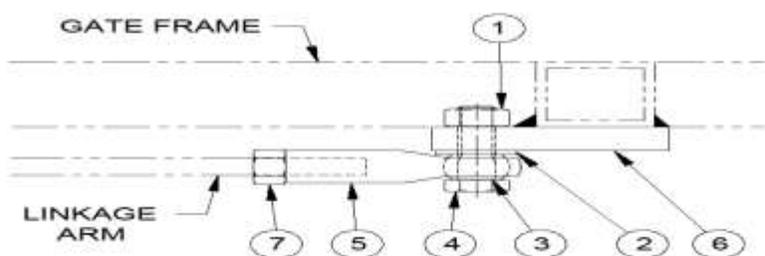
1. Have adequate equipment ready to unload your Gate and Operator safely. Utilize a Liftgate service when available from the LTL carrier.
2. Before removing your Gate and Operator from the truck, inspect it for any visible damage and make sure the Gate Box was shipped upright. **(DO NOT DROP EITHER GATE OR OPERATOR BOX)**. Photograph and retain if damaged as well.
3. After uncrating your Operator, locate and remove the door lock keys attached to the Transport/Maintenance (T/M) Safety Pin. **DO NOT REMOVE T/M PIN. ONLY REMOVE HAIR PIN RETAINER TO REMOVE THE KEYS THEN REPLACE HAIRPIN. (See Figure 2.3)**
4. Any transmitter, antenna, or other ordered accessories will be boxed inside your operator cabinet.
5. Unpack gate panel crating very carefully.

## Section #3 INSTALLATION

### Attaching Gate Panel/Drop Arm to the Operator

1. Position Gate on Operator Arm.
2. Use (1) SS 3/4"-10 x 4 1/2" (STEEL GATE) or (1) SS 3/4"-10 x 5" (ALUMINUM GATE) Bolt for the top connection. Use four (4) SS 1/2 x 1-1/2" Bolts for the bottom connection.
3. Insert the top bolt first and then the bottom four (4) bolts finger tight. Be certain gate is properly aligned before tightening. Tighten bottom bolts first, then tighten top bolt.
4. Locate the linkage hardware package and assemble to the Figure 3.1 below. You may have to push down on the gate to insert the Linkage Bolt.

Figure 3.1



1. 5/8-11 ZINC PLATED FULL HEX NUT
2. 5/8" HEAVY WASHER
3. 5/8" S.S. FLAT WASHER
4. 5/8-11 X 2 1/4" LG. HEX BOLT
5. 5/8" DIA 5/8-18 FEMALE ROD END (TEFLON LINED)
6. 3/4" x 2" x 4" LUG
7. 5/8-18 HEX NUT

### Lifting Gate Panel/Drop Arm & Operator Assembly

To lift Gate & Operator use a lifting strap. The strap should be secured around Operator Arm and T/M Safety Pin or the top rail of the gate near the operator arm. See Figure 3.2 & 3.3

Figure 3.2



Figure 3.3



**NOTE:** It is recommended to attach Gate to Operator Arm **before** lifting (for better balance), but it is not mandatory. If using a Forklift to position Operator Only, lift from sides only! Do not try to lift gate and operator together from the side.

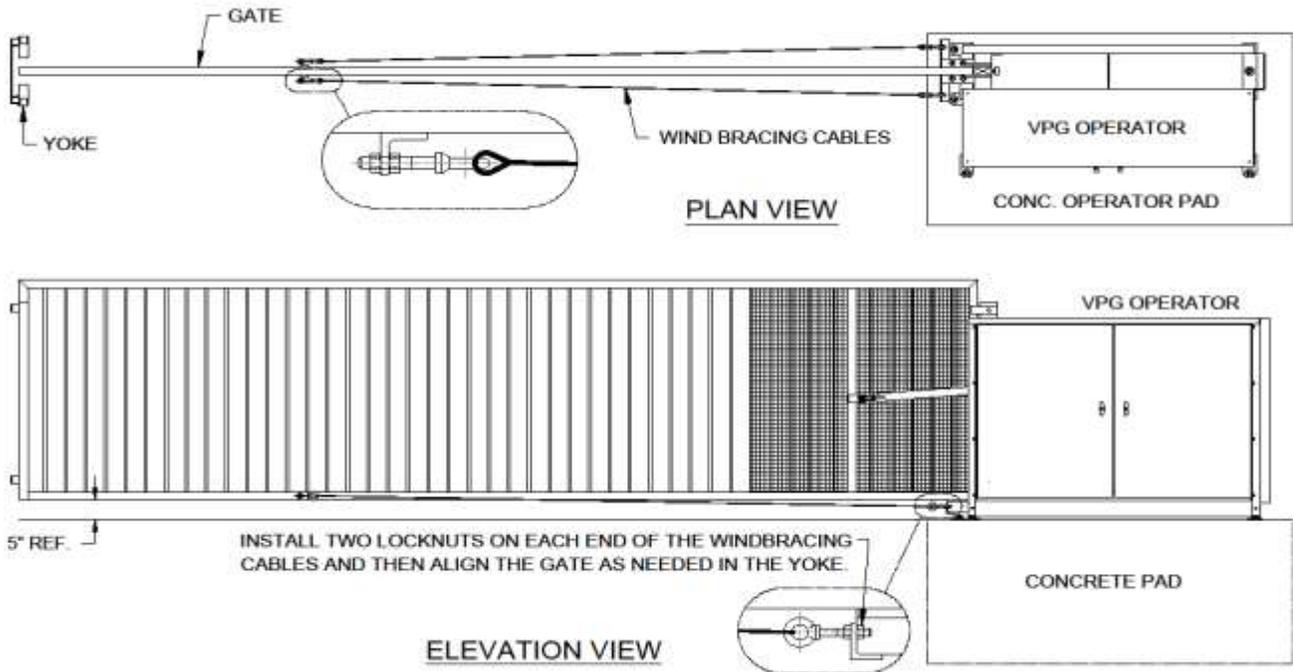
### Positioning Gate Panel/Drop Arm & Operator

Refer to the site drawing for your specific order as there may be details unique to the installation.

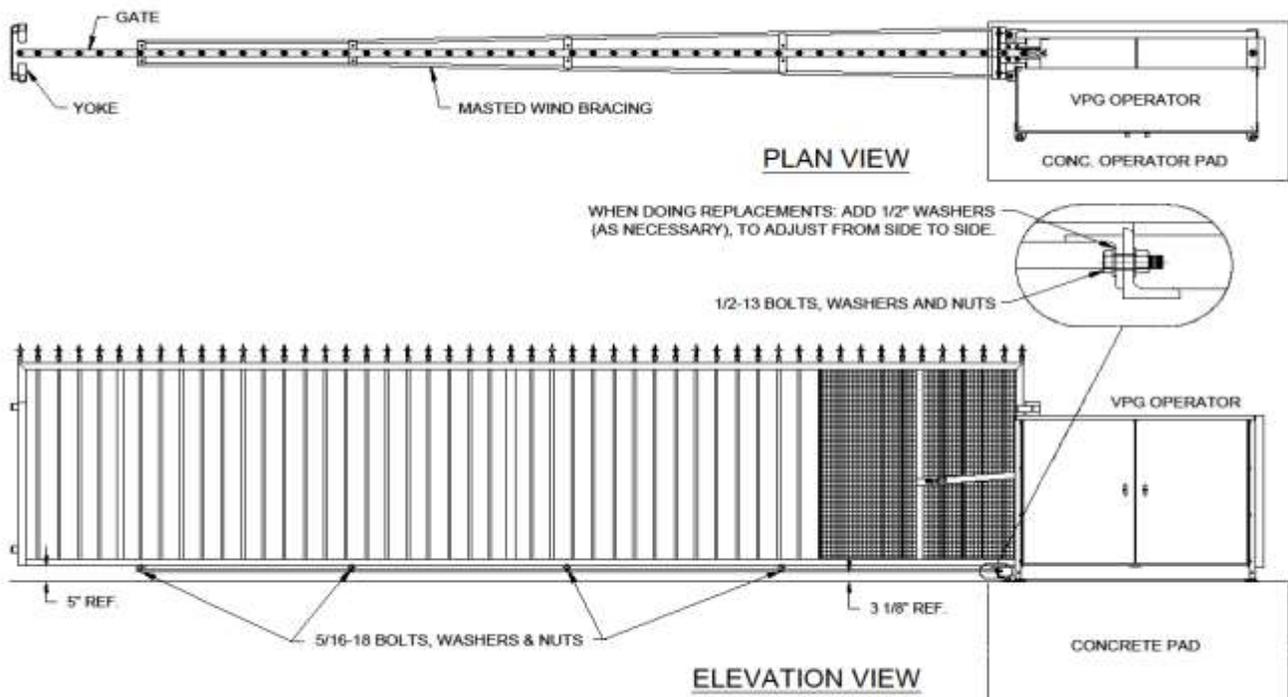
1. Place Gate & Operator Assembly on pad (**refer to DWG. 102C-L or -R**) so the end of the Gate is centered over the Yoke pad or intended yoke position for the site (for yoke styles mounted to posts, buildings, etc.). Allow a mini. three inches (3") from edge of pad to bolt holes to prevent concrete damage.
2. Position and align Pad Yoke and center under gate.
3. Secure **Operator** with (1) 5/8" dia. Wedge Bolt in rear; stop and check alignment on pad as well as gate panel/Drop Arm alignment before installing remaining anchor bolts.
4. Install remaining four (4) 5 1/2" x 5/8" dia. Concrete Anchor Bolts provided, (**level Gate Panel/Drop Arm and Operator on pad**, if necessary).
5. Secure Yoke with four (4) 1/2" dia. Anchor bolts (provided). If installing a Ground Yoke, allow a minimum space of two inches (2") between bottom of Gate and Yoke.

# Installing Other Components

## Cable Wind Bracing

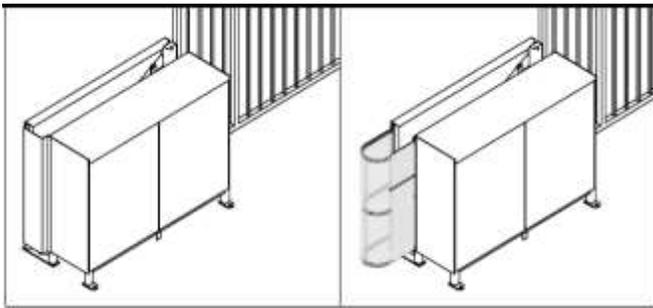


## Masted Wind Bracing

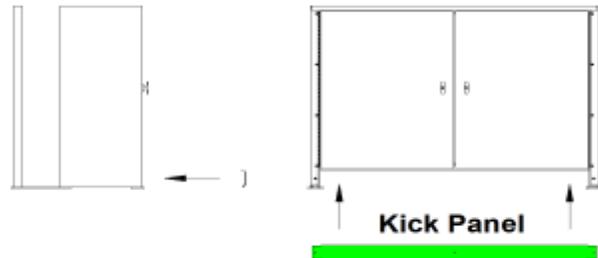


## Installing Other Components

### GATE GUARD



**KICK PANEL:** Attach the Kick Panel to the door side of the operator using the 3 # 12 x 3/4 TEK screws. See **green** example Kick Plate below.

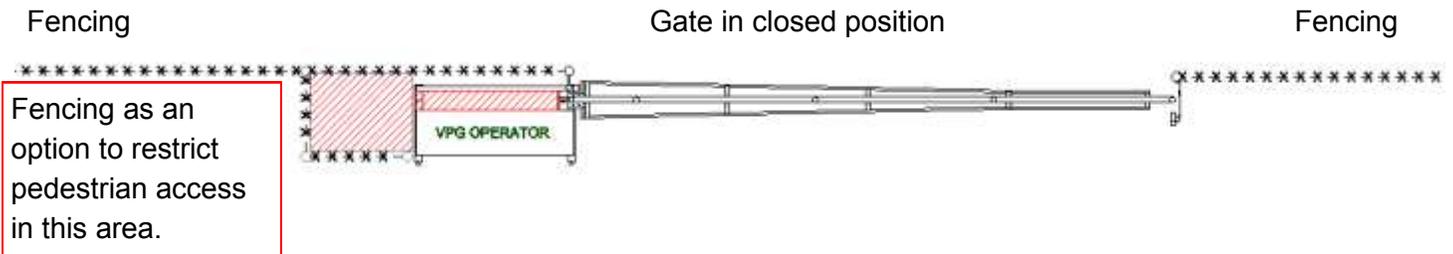


- NOTE:** The area behind the operator is an entrapment zone. The installer must prevent or protect pedestrian access to this area by at least one or more of the following:
- Install factory supplied Gate Guard (shown above)
  - Site installed fencing (shown below)
  - Utilize Recommended Entrapment Protection Devices

**WARNING!**

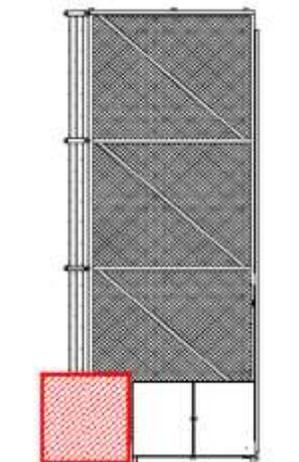
THIS PAGE ILLUSTRATES THE MINIMUM KNOWN ENTRAPMENT ZONES. ANY OTHER ENTRAPMENT ZONES MUST BE MITIGATED BY THE INSTALLER IN ACCORDANCE WITH UL 325 & ASTM F2200 TO REDUCE THE RISK OF PROPERTY DAMAGE, INJURY OR DEATH. THE INSTALLER MUST REDUCE PUBLIC EXPOSURE TO POTENTIAL HAZARDS.

### Entrapment Zones (RED shaded areas)



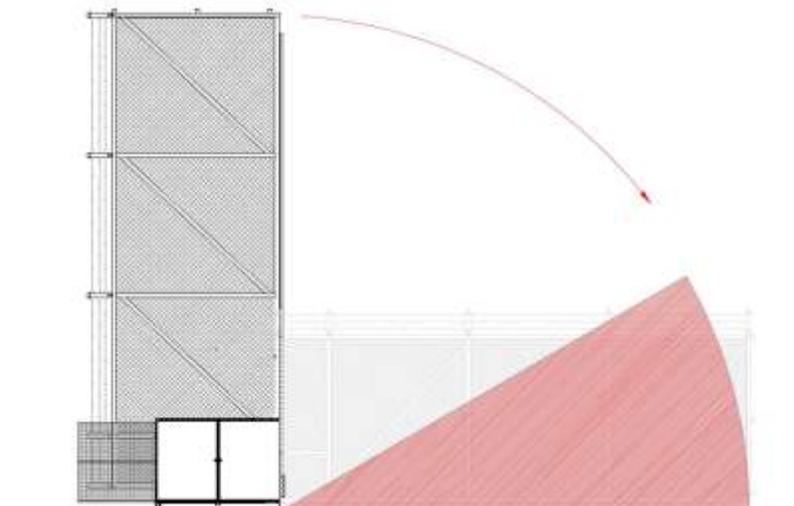
### Opening Entrapment Zones

Gate in "OPEN" position below (shaded area) requires installer to install one of the following: Fencing, installation of provided gate guard, or B1 entrapment protection devices. It is the installer's responsibility to assess and evaluate the entrapment area for additional protection.



### Closing Entrapment Zone

Below illustrates the minimum known entrapment zone when gate is closing. Installation of an approved B1 non-contact sensor (Photo Beam) is shown in **RED** including beam path.

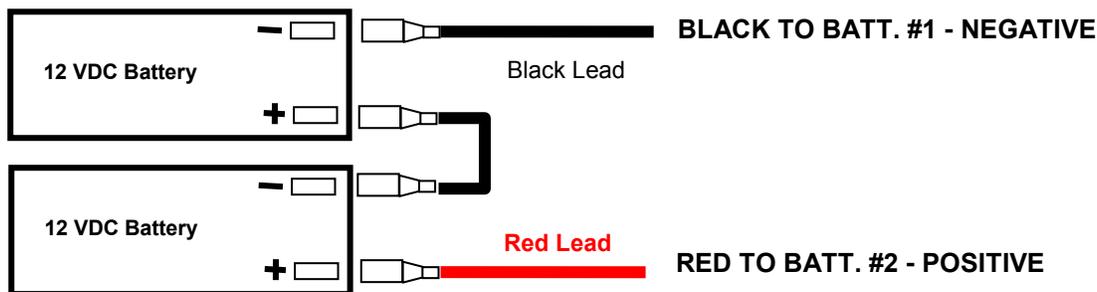


## Connecting the Batteries

### 1. Connecting Batteries - Required

- A. Install two (2) Group 24 12 VDC Batteries (**not provided**) on the battery shelf. AutoGate recommends Group 24, 100 Amp hour deep cycle marine starting batteries for extended battery back up. At a minimum use two (2) 7AH batteries for battery back up. See drawing below for proper battery and jumper hook up. **BATTERIES MUST REST IN A LEVEL POSITION ON THE BATTERY TRAY TO AVOID ACID LEAKING FROM BATTERIES.**
- B. Install Jumper Wire (provided) from **Battery #1 - POSITIVE** to **Battery #2 - NEGATIVE** (See Below).
- C. Locate **RED** and **BLACK** Power Wires and connect:

**NOTE:** Battery back up duration will depend on the size of batteries, number of accessories and open/close cycles while being powered by the batteries.



# WARNING!

TO REDUCE THE RISK OF ELECTRICAL SHOCK, THIS EQUIPMENT HAS A GFCI TYPE OUTLET. THIS OUTLET WILL ONLY ACCEPT A GROUNDING TYPE PLUG. IF THE PLUG DOES NOT FIT IN THE OUTLET, CONTACT A QUALIFIED ELECTRICIAN TO INSTALL THE PROPER OUTLET. DO NOT CHANGE THE PLUG IN ANY WAY.

## Section #4 AC POWER CONNECTION

### Connecting AC Power

1. Be certain Main Power Switch is OFF.
2. Wire incoming AC power to the 4 x 4 Box provided and turn on the breaker from your AC Source.
3. Turn Main Power Switch on at the Power Box.

**NOTE:** The A/C Power must be connected by a qualified, licensed Electrician, according to the [National Electric Code](#), and follow all State and Local codes. Refer to electrical block diagram Fig 4.1 on [Page 21](#) for additional information.

### Power Box



**A/C ELECTRICAL SUPPLY  
MINIMAL REQUIREMENTS:  
120 VAC, 15AMP CIRCUIT**

**FOR CLASS 1 APPLICATIONS YOU  
MAY NOT EXCEED 15 AMPS**

The APeX<sup>®</sup> power box turns the main power ON and Off to the APeX control board. A convenience outlet is provided for service tools and should **NOT** be utilized for appliances. Also located on the box is a five (5) amp slow blow fuse which provides protection for the transformer.

# WARNING!

**ADDITIONAL 120 VAC SURGE PROTECTION IS RECOMMENDED BUT NOT REQUIRED. SURGE UNIT MUST BE GROUNDED TO A TRUE EARTH GROUND.**

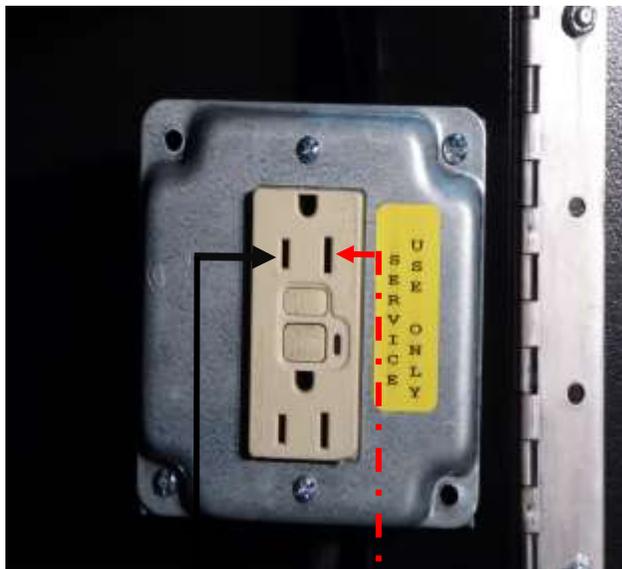
**AC OUTLETS ARE HOT AT ALL TIMES. OUTLETS ARE FOR SERVICE USE ONLY.**

**OPERATOR MUST BE GROUNDED TO TRUE EARTH GROUND LUG LOCATED ON FRAME**

## Pre-Mounted 120VAC Electrical Outlet

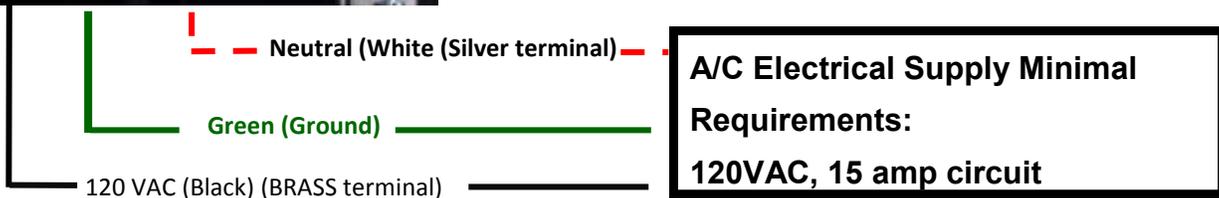
Located below battery shelf

Figure 4.1



## Warning!

***AC Outlets are HOT at all times.  
Outlets are for service use only.***



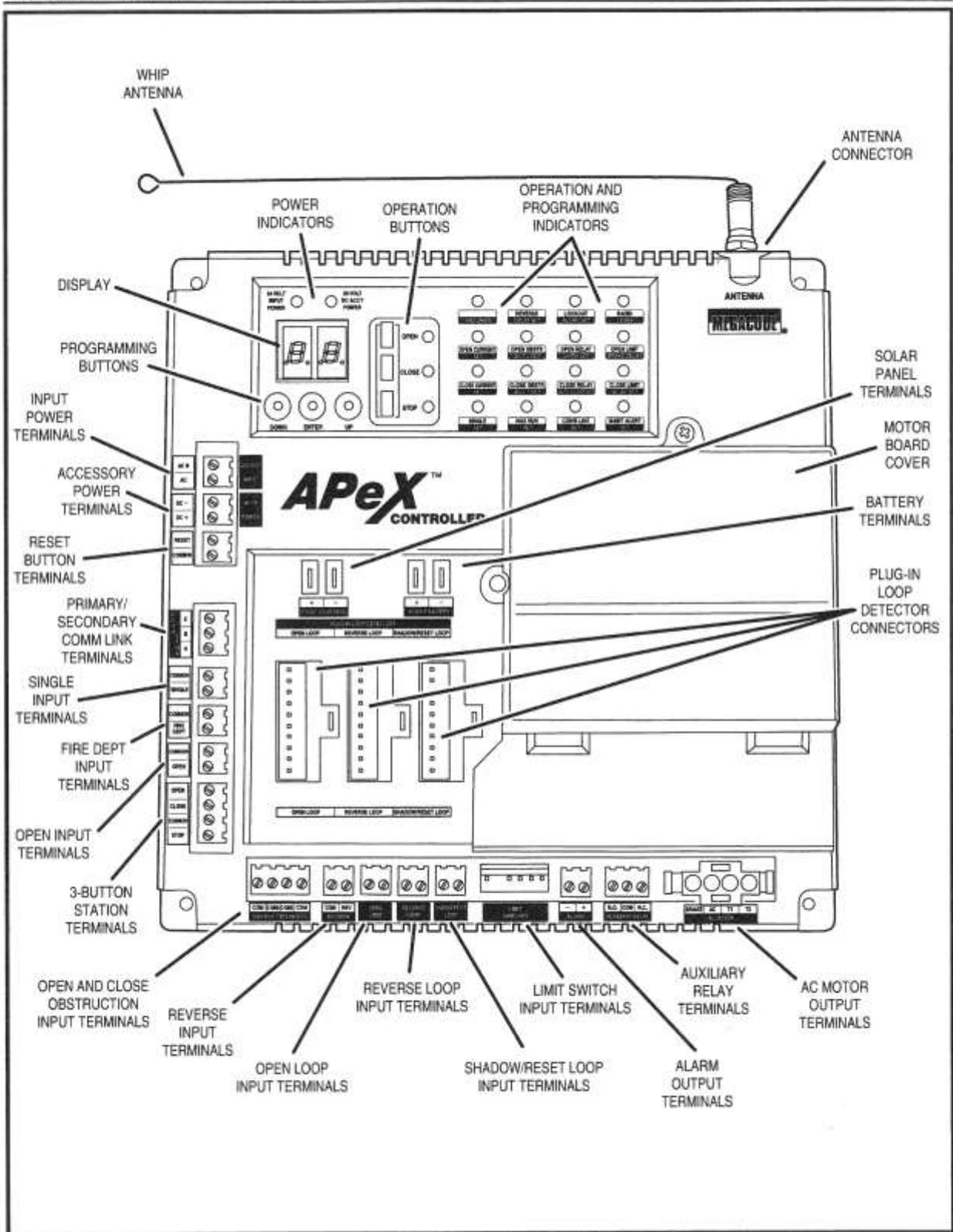
## INITIAL TESTING OF YOUR VPG SYSTEM

**NOTICE! THIS SYSTEM REQUIRES ONE OR MORE APPROVED EXTERNAL ENTRAPMENT PROTECTION DEVICES INSTALLED PRIOR TO ANY TESTING!**

1. Turn off all power to the operator.
2. Locate the desired external entrapment devices and wire them to the control board as instructed on Page 25-29.
3. Once all intended devices are installed and wired, return power to the operator.
4. Test the operator using the open, close, stop buttons located on the control board.
5. Test each entrapment device for proper function per this manual and the manufacture's instructions.
6. Read the next several pages for programming, accessory wiring and set-up options.

# Section #5 APeX II

## Controller Features



INDICATOR DEFINITION		INDICATOR WHEN LIT DURING	INDICATOR WHEN LIT
OPERATION	PROGRAMMING	NORMAL OPERATION	DURING PROGRAMMING
24 VOLT INPUT POWER		LOW VOLTAGE AC POWER IS PRESENT	
24 VOLT DC ACC. POWER		LOW VOLTAGE DC POWER IS PRESENT	
OPEN		OPEN SIGNAL PRESENT FROM THE INTERNAL RECEIVER OR AN EXTERNAL DEVICE CONNECTED TO THE OPEN INPUT TERMINAL	
CLOSE		CLOSE SIGNAL IS PRESENT FROM A DEVICE CONNECTED TO THE CLOSE TERMINAL	
STOP		STOP INPUT TERMINAL IS OPEN AND NOT CONNECTED TO COMMON	
PROGRAM			CONTROLLER IN PROGRAMMING MODE
REVERSE	DELAY SET	SIGNAL FROM REVERSING DEVICE IS PRESENT	SET REVERSE DELAY TIME
LOCKOUT	ALARM SET	CONTROLS AND OPERATOR ARE LOCKED OUT BECAUSE OF EXISTING TROUBLE CONDITION	SET RUN ALARM AND PRE-START ALARM
RADIO	LEARN	BUILT-IN RECEIVER IS DETECTING A RADIO SIGNAL FROM A REMOTE CONTROL	TRANSMITTERS CAN BE ENTERED INTO MEMORY (UP TO 40 TRANSMITTERS)
OPEN CURRENT	SET	MOTOR CURRENT HAS EXCEEDED THE OPEN CURRENT SETTING WHILE OPENING	SET MAXIMUM OPEN CURRENT
OPEN OBSTRUCTION	MGT 2 SET	OPEN OBSTRUCTION TERMINAL; CONNECTED TO COMMON BY BEAM OR SAFETY EDGE, OR SIGNAL FROM MGT OBSTACLE TRANSMITTER	SET MGT #2 FUNCTION
OPEN ELAY	LH/RH/SET	OPEN RELAY IS ACTIVATED	SET LEFT-HAND OPERATION
OPEN LIMIT	BRAKE DELAY	OPEN LIMIT SWITC IS ACTIVATED	
CLOSE CURRENT	SET	MOTOR CURRENT HAS EXCEEDED THE CLOSE CURRENT SETTING WHILE CLOSING	SET MAXIMUM CLOSE CURRENT
CLOSE OBSTRUCTION	MGT 1 SET	CLOSE OBSTRUCTION TERMINAL; CONNECTED TO COMMON BY BEAM OR SAFETY EDGE, OR SIGNAL FROM MGT OBSTACLE TRANSMITTER	SET MGT.#1 FUNCTIO
CLOSE RELAY	AUTO CLOSE SET	CLOSE RELAY IS ACTIVATED	SET AUTO CLOSE TIME
CLOSE LIMIT	AC DC SET	CLOSE LIMIT SWITCH IS ACTIVATED	SET MOTOR TYPE
SINGLE	SET	SINGLE TERMINAL CONNECTED TO COMMON BY AN EXTERNAL PUSHBUTTON OR RADIO	SET SINGLE BUTTON INPUT FUNCTION
MAX RUN	SET	MXIMUM RUN TIMER HAS BEEN EXCEEDED	SET MAXIMUM RUN TIME
COMM LINK	SET	DUAL OPERATION CONNECTED DETECTION BLINKS IF CONNECTION HAS FAILED	
MAINT. ALERT	SET	MAINTENANCE IS REQUIRED ON OPERATOR	SET MAINTENANCE ALERT CYCLE COUNT

## APEX FUNCTION DISPLAY INDICATIONS

<b>r</b> <b>L</b> "RL" LEFT OR RIGHT HAND OPERATION	<b>S</b> <b>b</b> "SB" SINGLE BUTTON INUT SETUP	<b>L</b> <b>P</b> "LP" LOW POWER MODE	<b>m</b> <b>d</b> "MO" MOTOR TYPE SELECTION
<b>P</b> <b>m</b> "PM" SINGLE OR DUAL GATE	<b>S</b> <b>m</b> "SM" STAGGER MODE	<b>F</b> <b>S</b> "FS" POWER FAILURE MODE	<b>r</b> <b>R</b> "RA" RADIO ENABLE
<b>A</b> <b>C</b> "AC" AUTO CLOSE TIMER	<b>S</b> <b>t</b> "ST" STAGGER TIME	<b>S</b> <b>S</b> "SS" SOFT ATART/STOP DURATION	<b>t</b> <b>L</b> "TL" LEARN TRANSMITTERS
<b>r</b> <b>P</b> "RP" RUN ALARM PRE-START ALRAM	<b>A</b> <b>R</b> "AR" AUXILIARY RELAY MODE	<b>C</b> <b>t</b> "CT" RESET CYCLE CURRENT	<b>t</b> <b>D</b> "TD" DELETE TRANSMITTERS
<b>O</b> <b>C</b> "OC" MAXIMUM OPEN CURRENT	<b>r</b> <b>D</b> "RD" REVERSE DELAY TIME	<b>m</b> <b>R</b> "MA" MAINTENANCE ALERT TRIGGER	<b>m</b> <b>L</b> "ML" LEARN MGT TRANSMITTERS
<b>C</b> <b>C</b> "CC" MAXIMUM CLOSE CURRENT	<b>C</b> <b>P</b> "CP" CONSTANT PRESSURE MODE	<b>m</b> <b>t</b> "MT" MID-TRAVEL STOP POSITION	<b>m</b> <b>d</b> "MD" ERASE MGT TRANSMITTERS
<b>A</b> <b>d</b> "AD" ADVANCED PROGRAMMING	<b>S</b> <b>P</b> "SP" SHADOW LOOK OPEN INHIBIT	<b>A</b> <b>t</b> "AT" ANTI-TAILGATE ENABLE	<b>C</b> <b>L</b> "CL" RESET TO FACTORY DEFAULTS
<b>r</b> <b>t</b> "RT" MAXIMUM RUN TIMER			

## APeX II FACTORY SETTINGS

*Refer to this setting sheet in the event you need to factory reset your APeX II Control board.*

RL-RH (Righthand)/LH (Lefthand)

PM-59

AC-06

RP-OF

OC-10

CC-10

AD-ON

RT-25

SB-00

AR-OF (Unless using a Strobe then ST)

RD-01

6d-NOT USED

CP-OF

SP-OF

LP-OF

FS-SA (May not show yet)

SS-3 (May not show yet)

CT-NOT USED

MA-NOT USED

MT-OF

AT-OF

RA-OF

MO-d2 (May not show yet)

CL-NOT USED (go back to FS & SS)

### ***Test Operator***

**For more detailed instructions and servicing issues refer to our website: ([www.autogate.com](http://www.autogate.com)) or ([www.norteckcontrol.com/literature.php](http://www.norteckcontrol.com/literature.php))**

Linear Apex v1.4 Gate Controller Quick Programming Guide — Basic & Advanced Programming —

**PRESS UP & DOWN BUTTONS FOR 1-SECOND TO ENTER PROGRAMMING**

**PROGRAMMING KEYS/STROKES**

- SELECT FUNCTION: UP 1s, DOWN 1s
- UP/DOWN TO CHANGE: UP 1s, DOWN 1s
- UP/DOWN TO SET OPTION: UP 1s, DOWN 1s
- UP/DOWN TO SELECT OPTION: UP 1s, DOWN 1s
- UP/DOWN TO SET OPTION: UP 1s, DOWN 1s

<b>FUNCTION</b> *RL*	RIGHT HAND INSTALLATION OPERATOR ON RIGHT OF GATE WHEN VIEWED FROM INSIDE	<b>FUNCTION</b> *PM*	SINGLE GATE INSTALLATION	<b>FUNCTION</b> *AC**	AUTO CLOSE TIMER DISABLED
*RL*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*PM*	SINGLE GATE INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*AC**	SET TIMER VALUE 1 TO 99 SECONDS SET TIMER VALUE 1 TO 1 MINUTES
*LH*	LEFT HAND INSTALLATION OPERATOR ON LEFT OF GATE WHEN VIEWED FROM INSIDE	*OC*	DUAL GATE INSTALLATION	*OC**	PUSH AND HOLD THE CLOSE BUTTON UNTIL THE OPERATOR IS FULLY CLOSED
*LH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*OC**	DUAL GATE INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*OC**	SUGGESTED MINIMUM NUMBER WILL FLASH, ADJUST TO THE PROPER FORCE
*RH*	RIGHT HAND INSTALLATION OPERATOR ON RIGHT OF GATE WHEN VIEWED FROM INSIDE	*RT*	SINGLE STARTER INSTALLATION	*SB*	SINGLE INPUT WILL CYCLE OPERATOR IN FORCE OF OPEN/STOP/CLOSE/STOP
*RH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*RT*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*SB*	SINGLE INPUT WILL OPEN OPERATOR IF POWER IS ON WHEN SINGLE INPUT WILL CLOSE OPERATOR
*LH*	LEFT HAND INSTALLATION OPERATOR ON LEFT OF GATE WHEN VIEWED FROM INSIDE	*ST*	SINGLE STARTER INSTALLATION	*AD*	ADVANCED PROGRAMMING FUNCTIONS WILL NOT BE DISPLAYED
*LH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*ST*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*AD*	NOTE: ADVANCED PROGRAMMING WILL STAY ENABLED AFTER EXITING PROGRAMMING UNTIL THE GATE CYCLES 50 TIMES
*RH*	RIGHT HAND INSTALLATION OPERATOR ON RIGHT OF GATE WHEN VIEWED FROM INSIDE	*SM*	SINGLE STARTER INSTALLATION	*BD*	BRAKE DELAY TIME
*RH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*SM*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*BD*	SET TIMER VALUE 1 TO 3 SECONDS
*LH*	LEFT HAND INSTALLATION OPERATOR ON LEFT OF GATE WHEN VIEWED FROM INSIDE	*ST*	SINGLE STARTER INSTALLATION	*FS*	FAILURE MODE
*LH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*ST*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*FS*	SET TO FAIL SAFE MODE SET TO FAIL SECURE MODE SET TO OPEN INMEDIATE MODE
*RH*	RIGHT HAND INSTALLATION OPERATOR ON RIGHT OF GATE WHEN VIEWED FROM INSIDE	*ST*	SINGLE STARTER INSTALLATION	*OP*	CONSTANT PRESSURE MODE
*RH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*ST*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*OP*	CONCANT PRESSURE SET TO OFF (MOMENTARY PRESSURE ON)
*LH*	LEFT HAND INSTALLATION OPERATOR ON LEFT OF GATE WHEN VIEWED FROM INSIDE	*ST*	SINGLE STARTER INSTALLATION	*BB*	BRAKE DELAY TIME
*LH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*ST*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*BB*	LOW POWER MODE IN RADIO OR OPEN LOOP WILL JUST MAKE REVERSE LOOP WILL JUST MAKE
*RH*	RIGHT HAND INSTALLATION OPERATOR ON RIGHT OF GATE WHEN VIEWED FROM INSIDE	*ST*	SINGLE STARTER INSTALLATION	*SP*	SHADOW LOOP OPEN PREVENTION
*RH*	PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*ST*	SINGLE STARTER INSTALLATION PRESS UP OR DOWN TO CYCLE THROUGH OPTIONS PRESS ENTER TO SELECT AN OPTION	*SP*	STANDALONE OPERATION SHADOW LOOP INHIBITS CLOSING ONLY OPEN INHIBIT ON SHADOW LOOP INHIBITS OPENING AND CLOSING

### BASIC PROGRAMMING

**APEX FUNCTION DISPLAY INDICATIONS**

*RL*	LEFT OR RIGHT HAND OPERATION	*LH*	LOW POWER MODE	*RT*	MAXIMUM RUN TIME	*AD*	ADVANCED PROGRAMMING
*PM*	SINGLE OR DUAL GATE	*FS*	POWER FAILURE MODE	*AT*	ANTI-TALGATE ENABLE	*OR*	OPEN/PRESET INPUT
*AC**	AUTO CLOSE TIMER	*SB*	SOFT START/STOP DURATION	*RA*	RADIO INHIBIT	*TO*	ANTI-TALGATE
*OC*	OPEN/ALARM PRE-START ALARM	*CT*	RESET CYCLE COUNT	*TL*	LEARN TRANSMITTERS	*MT*	MD-TRAVEL STOP POSITION
*OC**	MAXIMUM OPEN CURRENT	*MA*	MAINTENANCE ALERT TRIGGER	*AT*	DELETE TRANSMITTERS	*ML*	LEARN/MT TRANSMITTERS
*OC**	MAXIMUM CLOSE CURRENT	*OP*	OPEN/PRESET INPUT	*MD*	ERASE MT TRANSMITTERS	*MO*	MOTION TYPE SELECTION
*AD*	ADVANCED PROGRAMMING	*CL*	RESET TO FACTORY DEFAULTS	*SP*	SHADOW LOOP OPEN PREVENTION		

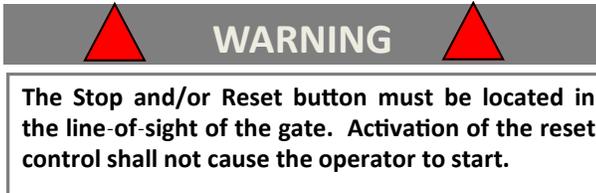


# Error Indications

During abnormal operation, the Controller's displays and beeper will indicate the error that has occurred.

## Entrapment

If an entrapment condition occurs detected by two (2) repeated open or close obstruction triggers, the Controller will lock the operator out. The beeper will sound constantly and the gate will not open. To reset the Controller press the **STOP** button or the **RESET** button on the operator's cover.



## COMM LINK Connection Failure

In dual gate installations, if there is a connection failure between the two operators, the COMM LINK indicator will blink once a second. During this condition, the gate will not operate, except if triggered by the FIRE DEPT input, which functions normally.

## MGT Obstacle Transmitter Trouble

If any MGT transmitters are used with the operator. Their supervision feature will alert the controller if there is any trouble with the transmitter. MGT transmitters send hourly status reports and will send low battery reports when the transmitter has a low battery. The MGT transmitters also have a tamper detection switch that will trigger when their case is opened.

When the Controller detects a low transmitter battery, a tamper signal, or missing transmitter status reports, the gate will still operate normally, but the beeper will change as follows:

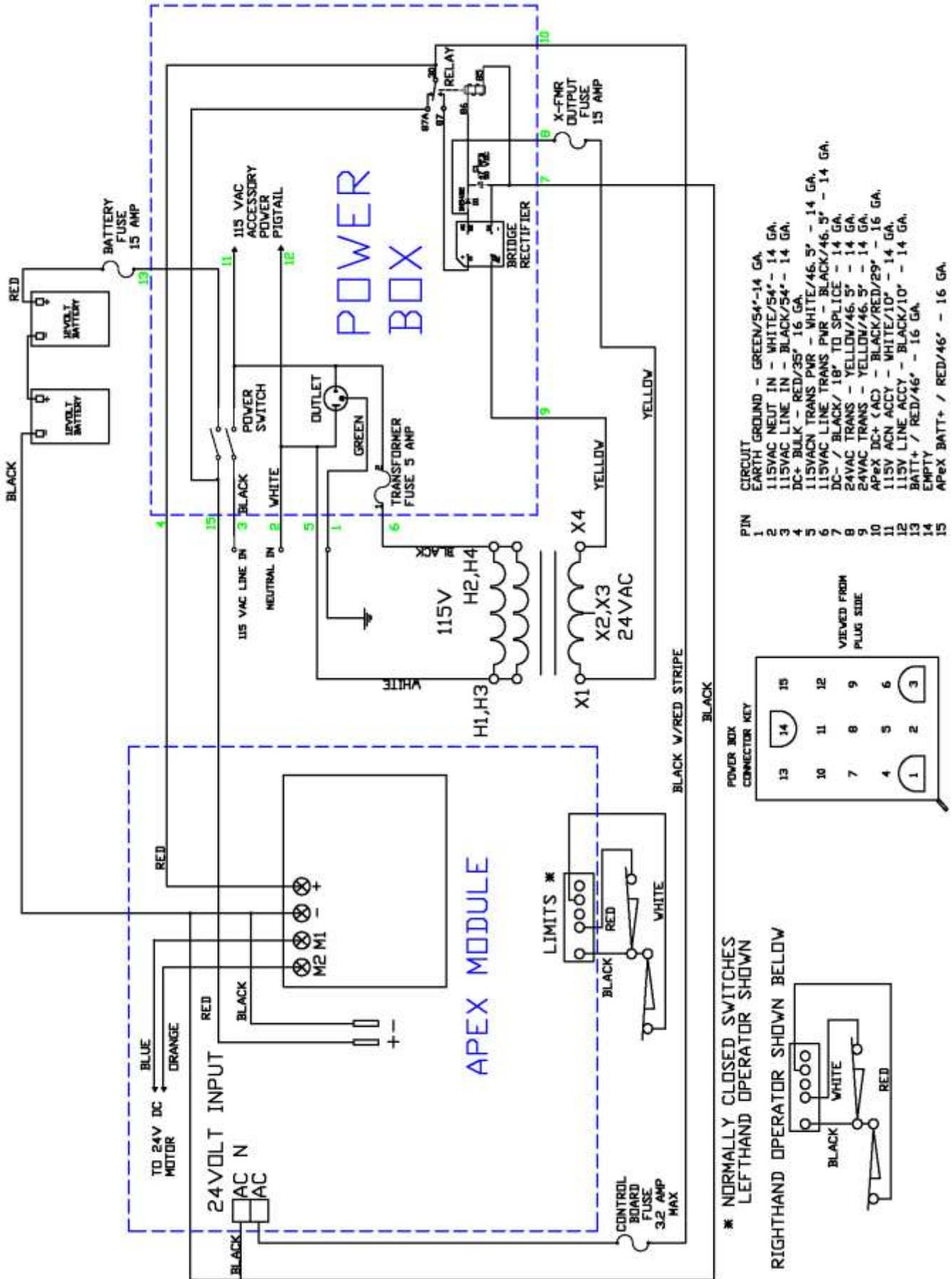
- The pre-start alarm will be twice as fast.
- The run alarm will beep twice as fast and continue for five (5) minutes after the gate stops.
- The gate should "chirp" every five (5) seconds when the gate is idle.

Correct the trouble close the case, replace the battery, or replace transmitter to clear the obstacle transmitter trouble indications.

## MAXIMUM RUN TIME EXCEEDED

If the **Maximum Run Time** is exceeded, the Controller stops the operator the same as if double obstacle has occurred in an entrapment condition. The entrapment alarm sounds constantly, and is cleared by pressing the **STOP** button or the **RESET** button on the cover. After the **STOP** and **RESET** button is pressed, because the **Maximum Run Timer** has been exceeded, the sounder will be beep every five (5) seconds. The next operation of the gate will clear the indication.

CONTROLLER ERROR CAUSES AND INDICATIONS		
ERROR CASUE	ERROR INDICATION	HOW TO CLEAR
TWO SAFETY REVER-SALS (ON SINGLE GATE OR ON EITHER DUAL GATE)	En 00, CONTINUOUS ALARM BEEPER, GATE DISABLED	PRESS STOP BUTTON
MAXIMUM RUN TIMER EXCEEDED ON OPENING	En 01, AND <b>MAX RUN</b> LED, CONTINUOUS ALARM BEEPER, GATE DISABLED	PRESS STOP BUTTON, CLEARS CONTINUOUS ALARM, THE DOUBLE BEEP EVERY FIVE (5) SECONDS UNTIL NEXT OPERATION
MAXIMUM RUN TIMER EXCEEDED ON OPENING	En 02, AND <b>MAX RUN</b> LED, CONTINUOUS ALARM BEEPER, GATE DISABLED	PRESS STOP BUTTON, CLEARS CONTINUOUS ALARM, THE DOUBLE BEEP EVERY FIVE (5) SECONDS UNTIL NEXT OPERATION
COMM LINK FAILURE	En 03, AND <b>COMM LINK</b> LED, CONTINUOUS ALARM BEEPER FOR 1 MINUTE, GATE DISABLED (EXCEPT FOR FIRE DEPT. INPUT)	PRESS STOP BUTTON CLEARS CONTINUOUS ALARM
GATE FULL OPEN RESULTING FROM FIRE DEPT. INPUT	En 04, GATE DISABLED	PRESS STOP BUTTON
FAIL SAFE OR FAIL SECURE BECAUSE OF BATTERY VOLTAGE DROPS BELOW 21.6 VDC DUE TO AC POWER LOSS	En 05, GATE DISABLED	BATTERY VOLTAGE MUST RISE ABOVE 24VDC
OTHER CONTROLLER IN ENTRAPMENT (DUAL GATE)	En 06, GATE DISABLED	CLEAR ENTRAPMENT ON OTHER (PRESS STOP)
LOW AC VOLTAGE AT CONTROLLER	En 07, GATE DISABLED	RESTORE AC POWER TO NORMAL LEVEL
INPUT TRIGGERED DURING ENTRAPMENT LOCKOUT	En 08, GATE DISABLED	PRESS STOP BUTTON
COMPATIBILITY ROBLEM	En 09, GATE DISABLED	UPDATE FIRMWARE AND RESET BOTH PAIRED CONTROLLERS
EEPROM PROBLEM	En 10, GATE DISABLED	TRY RESET, CALL TECH SUPPORT
DC MOTOR MISMATCH	En 11, GATE DISABLED	REPROGRAM MOTOR TYPE OR CHANGE DC MOTOR BOARD, NEXT GATE MOVEMENT WILL RETRY DC MOTOR CHECK
MOTOR FAILURE (NOTE: WIRING MORE THAN A HALF AMP OF ACCESSOIRES OFF BOARD CAN ALSO CASUE EN12)	En 12, GATE DISABLED	REPLACE MOTOR (CHECK ACCESSORY DRAW OFF CONTROLLER BOARD)
AC POWERLOSS IN OPEN OR CLOSE IMMEDIATE POWER FAIL MODE	En 13	REAPPLY AC POWER
MAXIMUM RUN TIMER EXCEEDED AFTER AC POWER LOSS	En 14	BATTERY VOLTAGE MUST RISE ABOVE 24 VOLTS
MGT SUPERVISORY CONDITION(TAMPER, LOW BATTERY, MISSING HOURLY STATUS)	FAST BEEPS DURING PRESTART, FAST BEEP RUN ALARM, CHIRP EVERY FIVE (5) SECONDS AT IDLE	CLEARS WHEN MGT CONDITION CLEARS



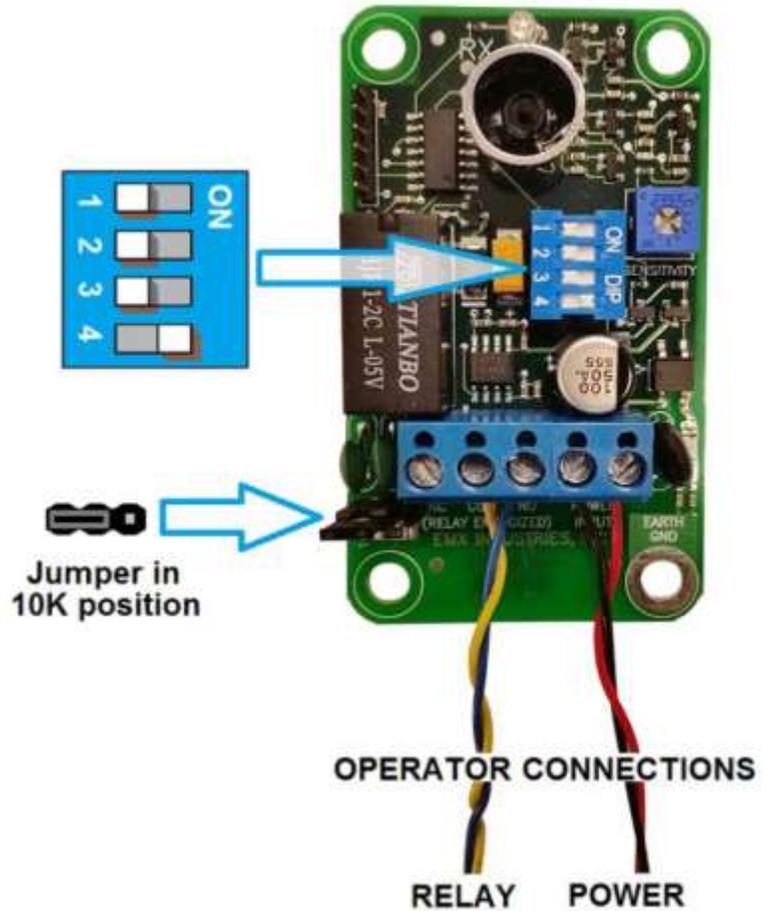
## EMX IRB-MON

1. Connect power wires from APeX II Controller ACCY Power terminals to the EMX IRD-MON Power terminals. Polarity is not an issue.

2. Connect relay wires from EMX IRD-MON N.O. & COM terminals to the APeX II C-OBS & COM (Obstruction Inputs).

3. Make sure the pin jumpers are in the correct positions and the #4 DIP Switch is in the ON position with #1 thru #3 switches in the OFF position

### IRB-MON set-up for relay operation, 10K resistive termination

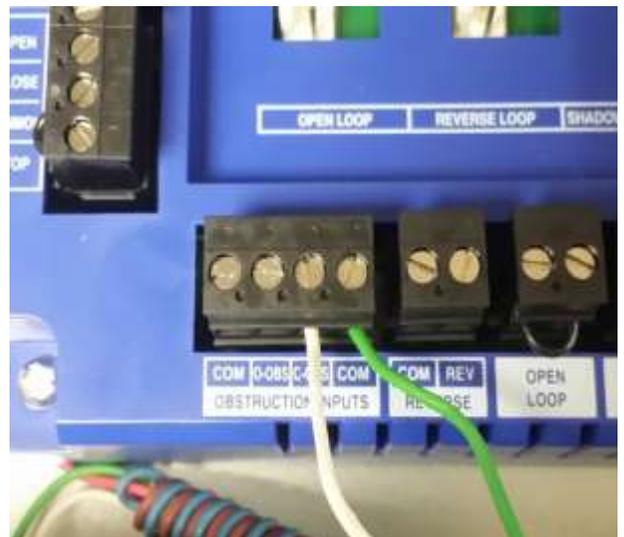


## APEX BEAM ACCESSORY CONNECTIONS

### POWER



### SIGNAL



## EMX IRB-RET

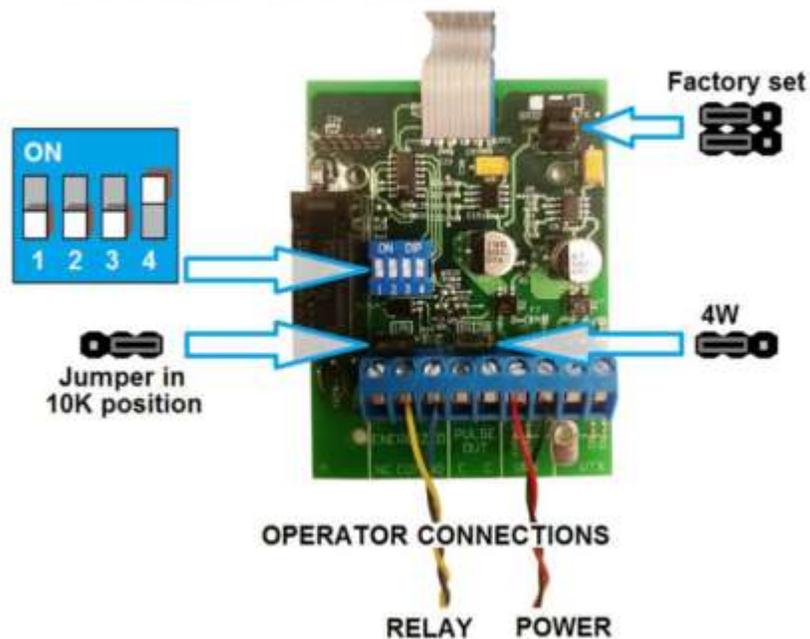
### Refer to Figure 5.1

1. Connect power wires from APeX II Controller ACCY Power terminals to the EMX IRD-RET VRX Power terminals. Polarity is not an issue.

2. Connect relay wires from EMX IRD-RET N.O. & COM terminals to the APeX II C-OBS & COM (Obstruction Inputs).

3. Make sure the pin jumpers are in the correct positions and the #4 DIP Switch is in the ON position with #1 thru #3 switches in the OFF position.

### IRB-RET set-up for relay operation, 10K resistive termination



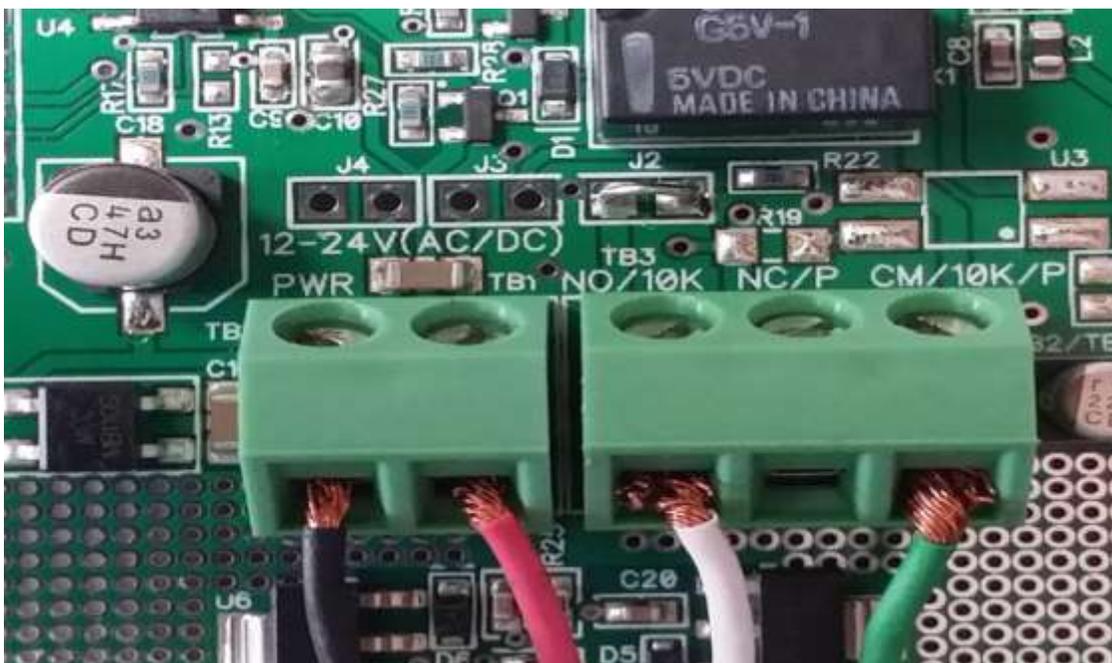
## Miller Edge Prime-Guard-Relay

### Refer to Figure 5.1

1. Connect power wires from APeX II Controller ACCY Power terminals to the ME PG-RX-R Power terminals. Polarity is not an issue.

2. Connect relay wires from Miller Edge PG-RX receiver N.O./10K & COM terminals to the APeX II C-OBS & COM (Obstruction Inputs).

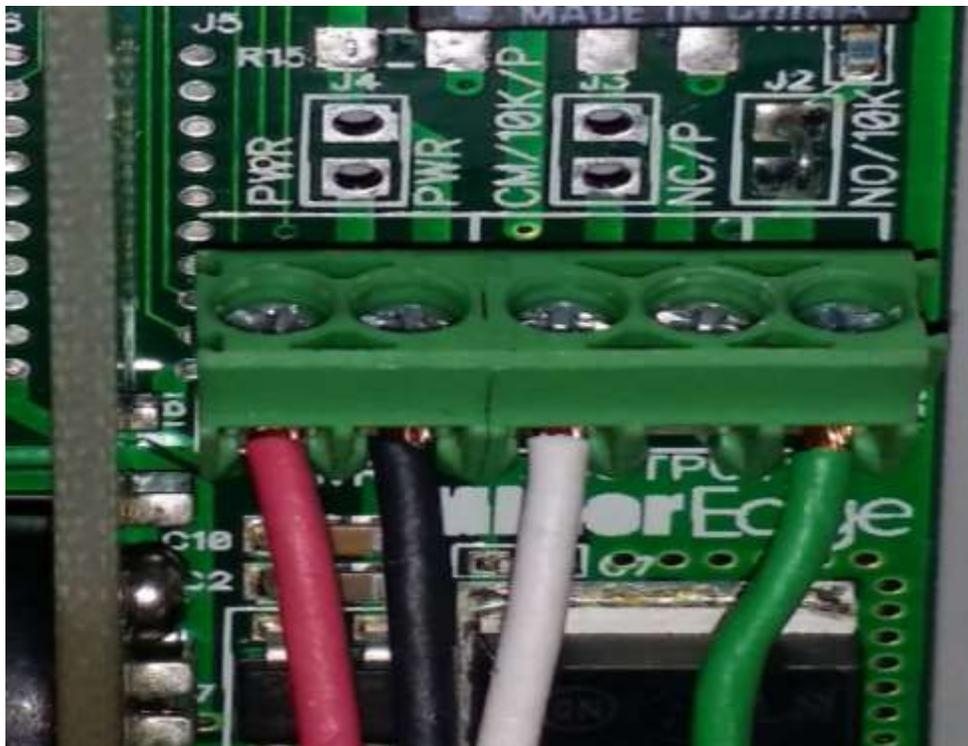
3. Connect power wires from the APeX ACCY terminals to the Miller Edge PG-RX transmitter power terminals. Again, polarity is not an issue.



## Miller Edge Reflecti-Guard-Relay

### Refer to Figure 5.1

1. Connect power wires from APeX II Controller ACCY Power terminals to the ME RG-R Power terminals. Polarity is not an issue.
2. Connect relay wires from Miller Edge RG-R N.O./10K & COM terminals to the APeX II C-OBS & COM (Obstruction Inputs).
3. Align reflector per instructions by Miller Edge



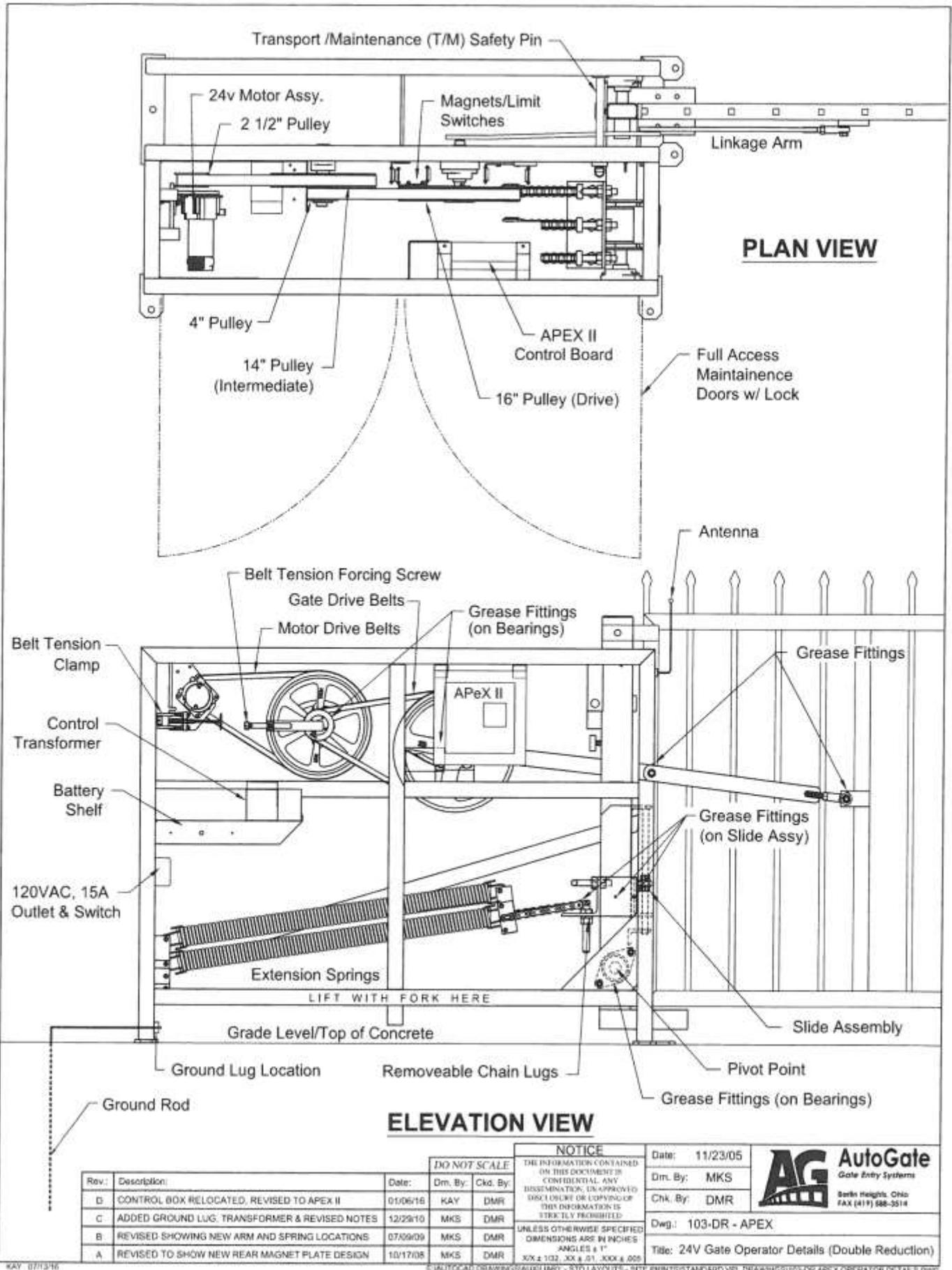
# MAINTENANCE

The basic electrical and mechanical systems require only minimum routine maintenance. The following items should be checked and serviced periodically depending on amount of use.

ITEM	RECOMMENDED MAINTENANCE
Grease pivot points on Linkage Assembly (“LUBRIPLATE ‘R’ LOW TEMP” Grease)	10,000 cycles or 6 months
Grease all bearings: (2) Operator Arm, (4) Bullwheel Shafts	10,000 cycles or 6 months
Grease Chain Tension Bolt and Lube Chain & lightly coat springs	10,000 cycles or 6 months
Check belts for wear and tightness. (Belt flex between motor and Intermediate sheaves is 1/2” deflection at 10 lbs. force and between intermediate and final drive sheaves should be tightened to minimal deflection). Belt(s) loose or worn require replacement.	Every 6 months
Check battery water level, use distilled water only (Not required on maintenance-free)	Every 6 months
Clean snow/ice off of gate (Balance correctly, gate will temporarily tolerate an additional 10 lb. of wt.)	As needed
Clean lenses on Photocells or Reflectors	As needed
Lubricate (Graphite Oil) all lock cylinders and mechanisms	Every 6 months
Check and verify proper operation of all entrapment devices.	Every month
Check and verify proper operation of <i>inherent</i> reversing feature.	Every month
Check gate balance	Four months after install, they annually

## Touch-Up Paint

For scratches and following minor repairs use Rustoleum® Painters Touch 2x Ultra Cover to match the AutoGate Standard Colors. All colors Gloss Black, Dark Gray, Kona Brown, Hunter Green, & White.



KAY 07/13/16

©AUTOGATE DRAWINGS/AUXILIARY - STD LAYOUTS - SITE PRINTS/STANDARD VPL DRAWINGS/STD-LR APEX OPERATOR DETAILS.DWG

Rev.	Description	Date	Drn. By	Ckd. By
D	CONTROL BOX RELOCATED, REVISED TO APEX II	01/06/16	KAY	DMR
C	ADDED GROUND LUG, TRANSFORMER & REVISED NOTES	12/29/10	MKS	DMR
B	REVISED SHOWING NEW ARM AND SPRING LOCATIONS	07/09/09	MKS	DMR
A	REVISED TO SHOW NEW REAR MAGNET PLATE DESIGN	10/17/08	MKS	DMR

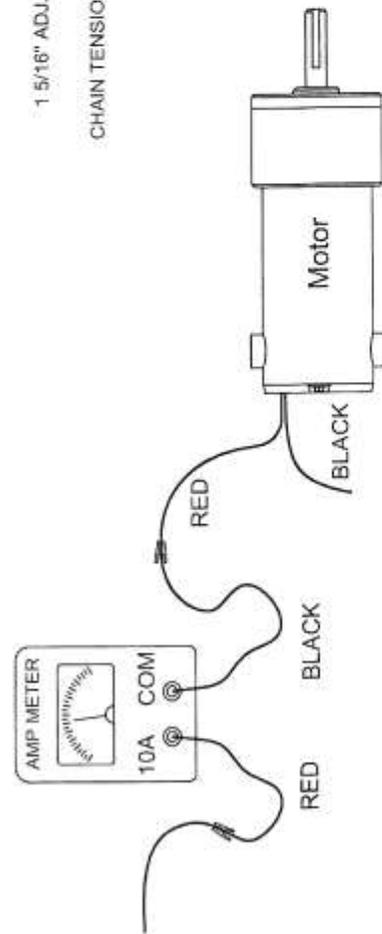
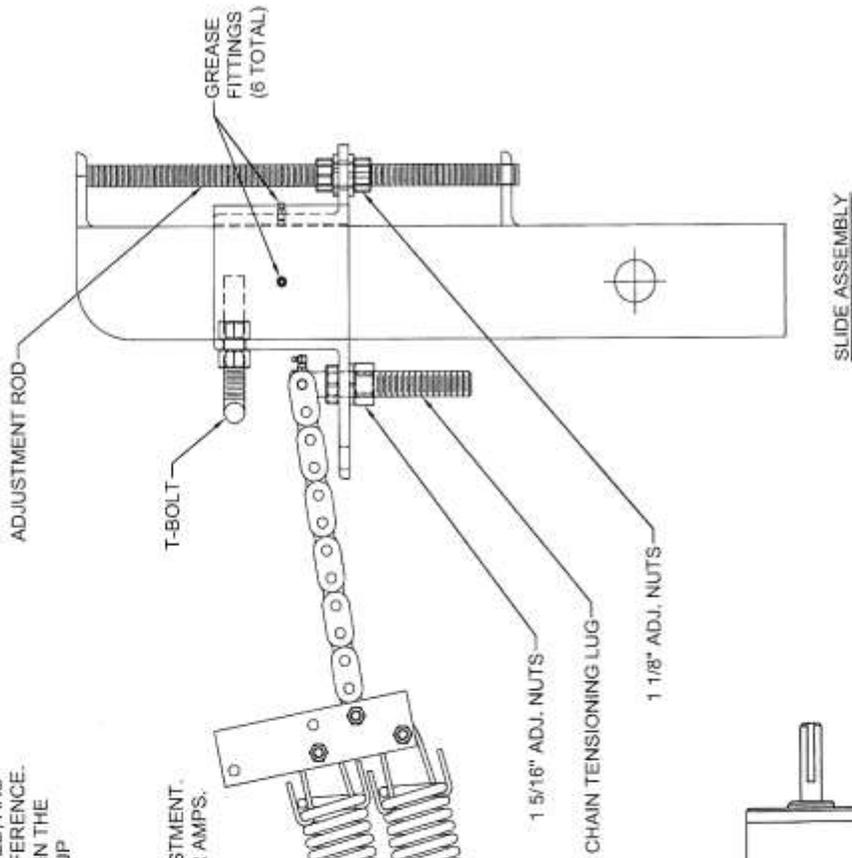
**DO NOT SCALE**  
 THE INFORMATION CONTAINED ON THIS DOCUMENT IS CONFIDENTIAL. ANY DISSEMINATION, UNAPPROVED DISCLOSURE OR COPYING OF THIS INFORMATION IS STRICTLY PROHIBITED.  
 UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES  
 ANGLES ± 1°  
 XXX ± 1/32, XXX & .01, .XXX & .005

Date: 11/23/05  
 Drn. By: MKS  
 Chk. By: DMR  
 Dwg.: 103-DR - APEX  
 Title: 24V Gate Operator Details (Double Reduction)



**TESTING AMPERAGE:**

1. CONNECT AMP METER IN SERIES BY REMOVING THE WIRE NUT FROM THE RED MOTOR LEAD.
2. CYCLE GATE UP AND DOWN RECORDING THE HIGHEST AMPERAGE IN THE SPACE PROVIDED, AND ADJUST IF NECESSARY. HIGHEST UP & DOWN READING SHOULD NOT EXCEED 1 AMP DIFFERENCE. FOR EXAMPLE; IF YOUR HIGHEST READING IS 6.5 IN THE UP, AND THE HIGHEST READING IN THE DOWN WAS 8.0... THAT WOULD BE ACCEPTABLE. UN-ACCEPTABLE WOULD BE 3.0 IN THE UP AND 8.1 IN THE DOWN.
3. LOOSEN ADJ. 1 1/8" NUTS ON BOTH SIDES OF THE SLIDE ASSEMBLY ANGLE.
4. ONLY ADJUST 3 TO 4 TURNS (1/4") AT A TIME AND CHECK YOUR AMPS. AFTER EACH ADJUSTMENT. NOTE: YOUR AMPS. UP, OPENING, SHOULD BE AT LEAST 1/2 (.5) AMPS LOWER THAN YOUR AMPS. DOWN, CLOSING.
5. IF GATE OPENS SLOW, RAISE THE SLIDE ASSEMBLY. IF GATE WILL NOT CLOSE, LOWER THE SLIDE ASSEMBLY. IF GATE STALLS IN EITHER DIRECTION, YOU OVER-ADJUSTED. BACK OFF YOUR LAST ADJUSTMENT AND CHECK AMPS.
6. IF GATE IS SLOW TO CLOSE FROM THE OPEN POSITION, INCREASE LENGTH OF T-BOLT.



UP: 10° 55° 85°  
 DOWN: 10° 55° 85°

**AG AutoGate**  
 Gate Entry Systems  
 9616 Highway, Qing  
 FAX: (419) 588-3314

Date: 04/03/07  
 Dwn. By: MKS  
 Ckd. By: DMR  
 Dwg.: 107  
 Title: Balancing Slide Assembly

**NOTICE**  
 THE INFORMATION CONTAINED  
 ON THIS DOCUMENT IS  
 CONFIDENTIAL AND  
 DISSEMINATION IS PROHIBITED  
 WITHOUT THE WRITTEN  
 PERMISSION OF  
 THIS INFORMATION SYSTEMS  
 DIVISION.  
 UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 ANGLES ± 1°  
 XXX & LXX, XXX & DT, XXX & LXX

Rev.	Description	Date	D/D NOT SCALE		
			Dwn. By	Ckd. By	Appr. By
C	Black motor wire was blue and added thread details	08/18/14	MKS	DMR	
B	Revised motor and slide assembly to current style	04/07/09	MKS	DMR	
A	General Revision - new Title Block	04/07/08	MKS	DMR	

E:\AutoCAD Drawings\Layout and Site Drawings\Standard VPL Drawings\107 Balancing Slide Assembly.dwg

## SPRING CHANGING INSTRUCTIONS

**ONLY AUTHORIZED PERSONNEL SHOULD PERFORM SPRING CHANGES**

**TOOLS REQUIRED:** 5/16" (Nut Driver), 1/2", 1 1/8", 1 5/16" Open End Wrenches

Step 1) For ease of access, remove the door and end panel nearest the gate.

Step 2) Remove any upper "T" bolts completely

Step 3) Loosen the top adjusting nut of the slide assembly. Thread the nut up to within four inches (4") of the top of slide mechanism.

Step 4) You will now raise the gate. (**DO NOT** release the disengage lever!) Initiate the gate to open, immediately move to the gate and help raise it open, once the slide moves up, hold on the bottom rail of the gate until fully open. The gate may bounce slightly, there will be a loud bang but no damage will occur.

Step 5) Turn Off Power before gate "times out" and tries close. Insert T/M Pin.

Step 6) Using a 1 5/16 wrench, loosen and remove the chain tension bolt with the damaged spring.

Step 7) Replace damaged spring

Step 8) Replace chain tension bolt. **NOTE:** Grease fitting must point up! Tighten bottom nut. **NOTE:** Chain MUST remain level and not twisted once tightened.

Step 9) Remove T/M Pin and Restore power.

Step 10) Lowering the gate. Initiate the gate to close and at the same time, assist the gate down by pulling on the bottom rail of the gate. The slide will move down and another loud bang as the gate is lowered.

Step 11) Turn off power.

Step 12) Thread the slide nut back down to the slide assembly and tighten.

Step 13) Replace the T-Bolts to their original location and tighten.

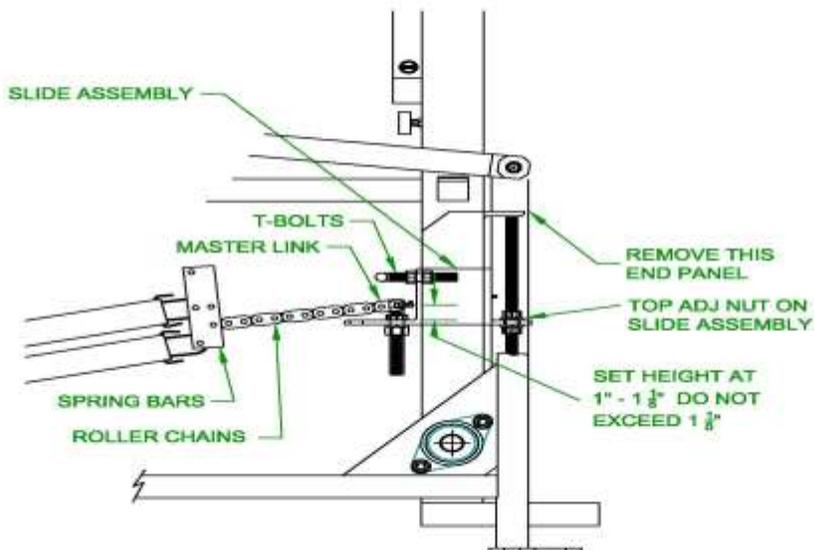
Step 14) Restore power.

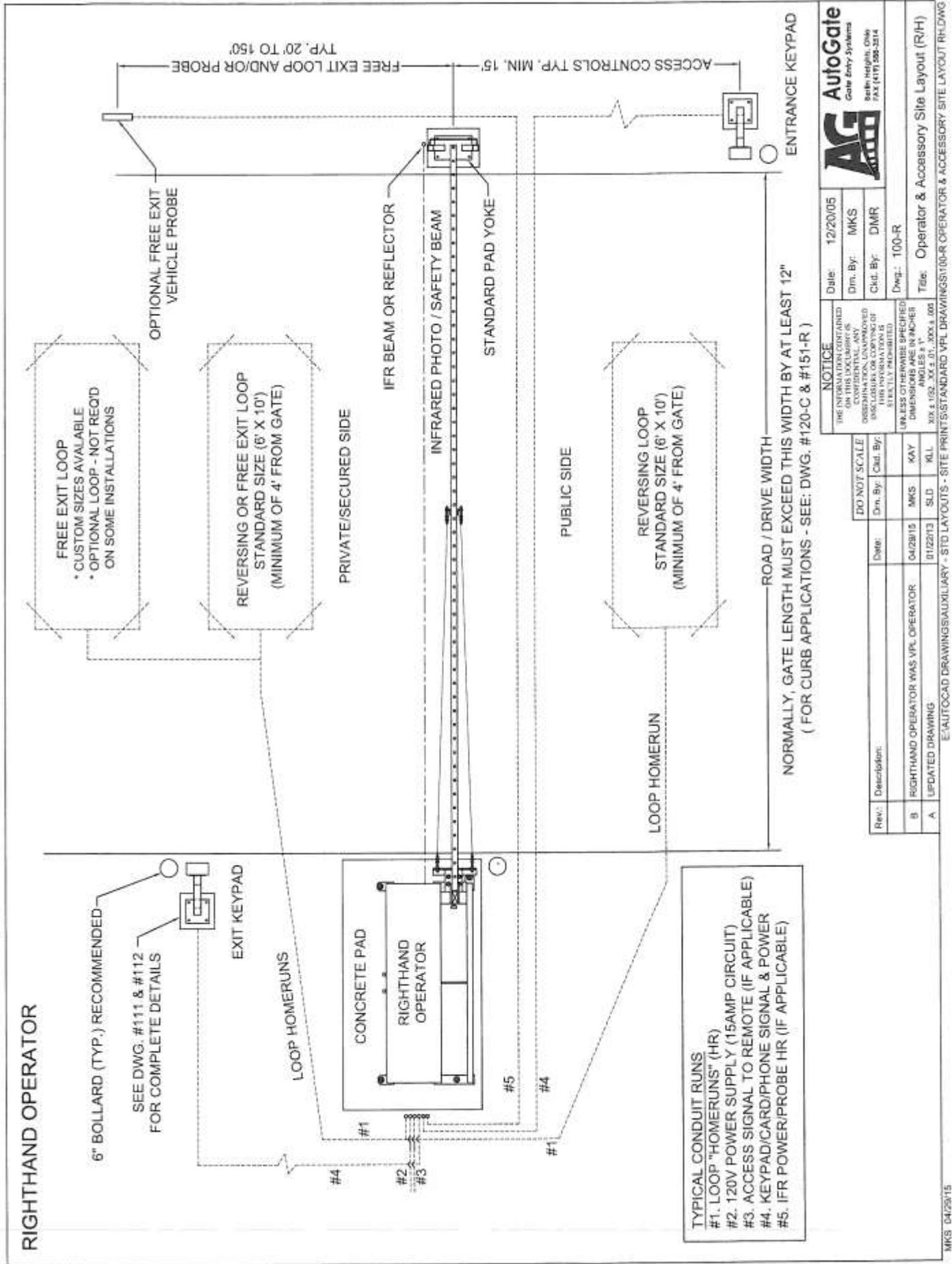
Step 15) Cycle gate.

Step 16) Spray all springs with a chain lube to prevent corrosion.

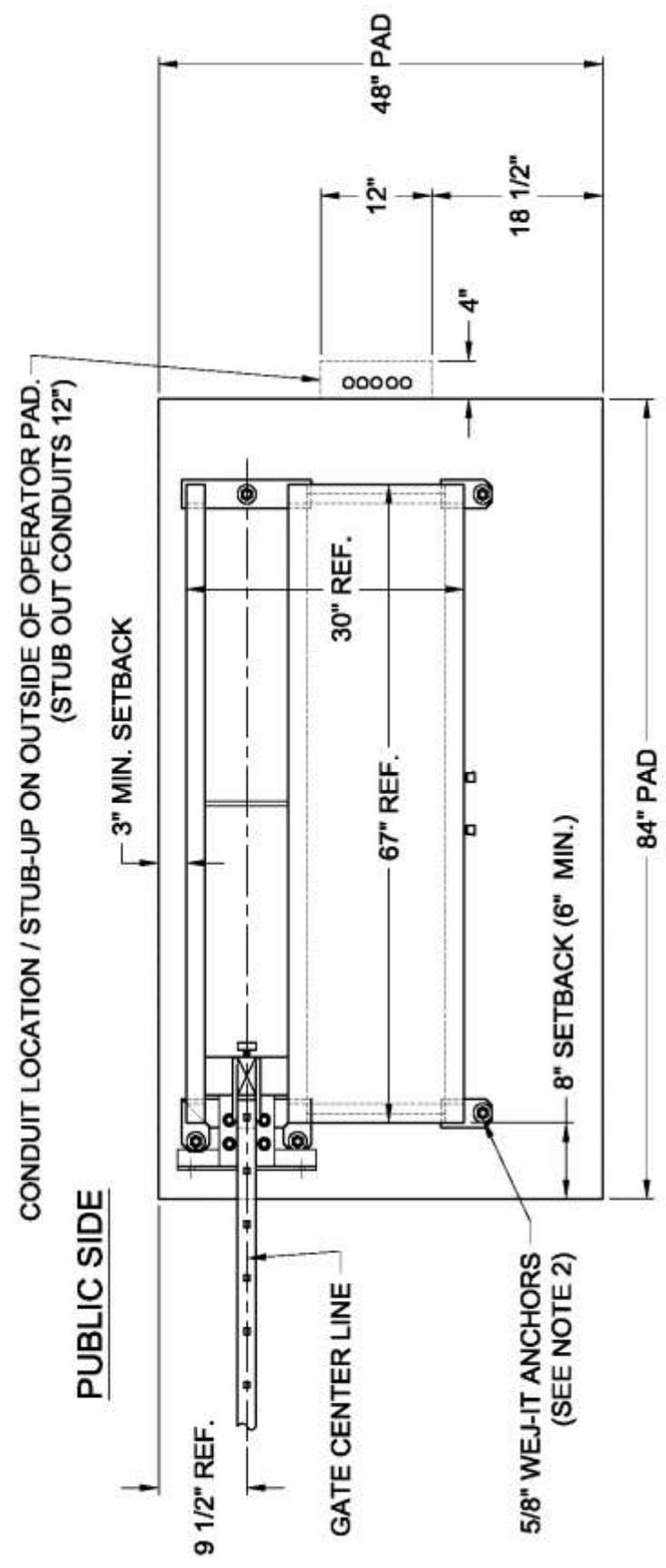
**RECOMMENDED:** Always check and adjust the balance after any spring change. Refer to balancing instructions at [www.AutoGate.com](http://www.AutoGate.com) or the instructions on Page 39.

### SLIDE ASSEMBLY DETAILS





# RIGHTHAND OPERATOR



## PRIVATE/SECURED SIDE

- POSSIBLE CONDUITS \* (USE 3/4" CONDUIT ONLY) \*
- \* 120 VAC, MIN. 15 AMP CIRCUIT \* FREE EXIT LOOP
- \* "ENTRANCE" KEYPAD \* OFFICE COMMUNICATION
- \* "EXIT" KEYPAD \* IFR BEAM POWER
- \* REVERSING/SAFETY LOOPS \* OPTIONAL SPARES

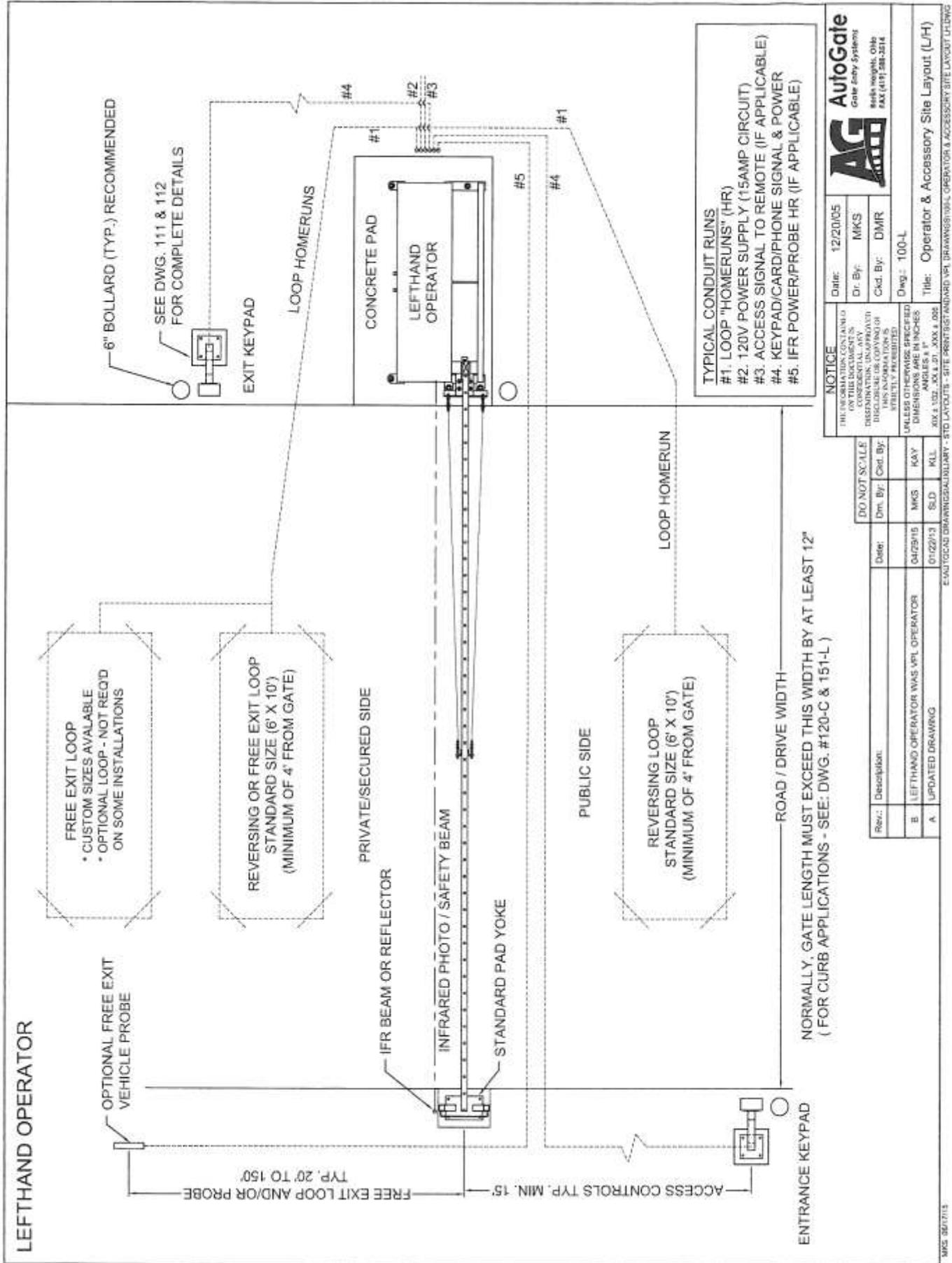
### NOTES:

- 1) PAD DIMENSIONS CAN VARY PER SITE
- 2) LEAVE AT LEAST 3" BETWEEN ANCHOR AND EDGE OF PAD
- 3) ALL PADS MUST BE POURED LEVEL AND BELOW LOCAL FROST LINE DEPTH

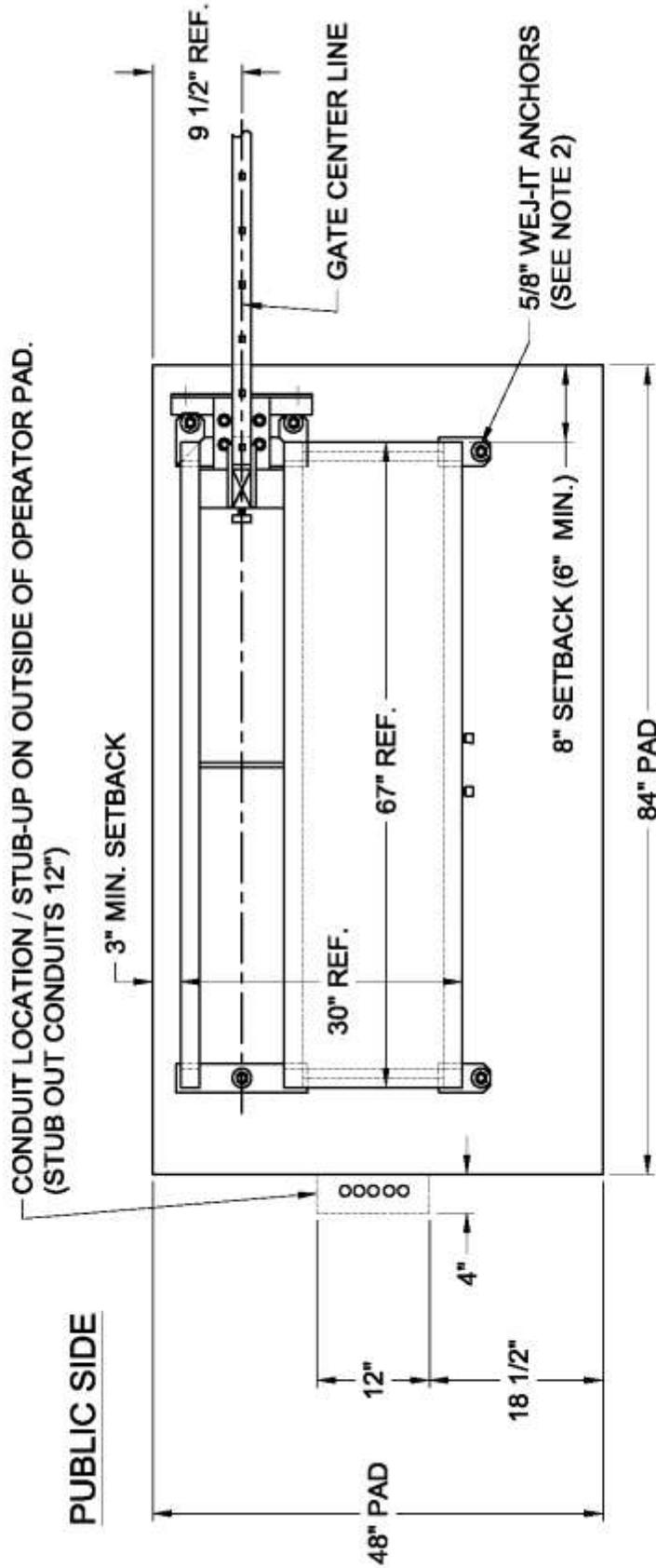
 <b>AutoGate</b> <small>Gate Entry Systems</small>		Date: 12/07/05
		Drn. By: MKS
<small>THIS INFORMATION CONTAINED ON THIS DOCUMENT IS UNCLASSIFIED UNLESS INDICATED OTHERWISE. REPRODUCTION OR COPYING OF THIS INFORMATION IS STRICTLY PROHIBITED.</small>		Con. By: DMR
		Dwg.: 102C-R
<small>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. XREFS: 002, 001, 001, 001, 001, 001.</small>		Title: Conduit Pad Location (Righthand)
		<small>E:\AUTOCAD DRAWINGS\AUXILIARY - STD LAYOUTS - SITE PRINTS\STANDARD VPL DRAWINGS\102C-R CONDUIT PAD LOCATION RHD.DWG</small>

Rev.	Description	Date	Drn. By	Clad. By
D	COMBINED INFORMATION FROM 102-R	07/18/16	KAY	MKS
C	LEFTHAND OPERATOR WAS VPL OPERATOR	04/29/15	MKS	KAY
B	UPDATED DRAWING	01/23/13	SLD	DMR
A	CONDUIT LOCATIONS WERE MOVED OUTSIDE THE PAD	07/18/08	MKS	DMR



**LEFTHAND OPERATOR**



**PRIVATE/SECURED SIDE**

- POSSIBLE CONDUITS \* (USE 3/4" CONDUIT ONLY) \*
- \* 120 VAC, MIN. 15 AMP CIRCUIT \* FREE EXIT LOOP
- \* "ENTRANCE" KEYPAD \* OFFICE COMMUNICATION
- \* "EXIT" KEYPAD \* IFR BEAM POWER
- \* REVERSING/SAFETY LOOPS \* OPTIONAL SPARES

**NOTES:**

- 1) PAD DIMENSIONS CAN VARY PER SITE
- 2) LEAVE AT LEAST 3" BETWEEN ANCHOR AND EDGE OF PAD
- 3) ALL PADS MUST BE POURED LEVEL AND BELOW LOCAL FROST LINE DEPTH

 <b>AutoGate</b> Gate Entry Systems 4444 Main Highway, Ohio FAX (419) 288-3014		Date: 12/07/05
DO NOT SCALE THIS INFORMATION CONTAINED ON THIS DOCUMENT IS CONFIDENTIAL AND UNCLASSIFIED EXCEPT FOR DISCLOSURE ON CONDUIT OR THIS INFORMATION IS STRICTLY INTENDED UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ANGLES ± 1° XXX ± 0.02, XX ± 0.01, XXXX ± .005		Dwn. By: MKS Ckd. By: DMR Dwg.: 102C-L Title: Conduit Pad Location (Lefthand)
Description: D COMBINED INFORMATION FROM 102-L C LEFTHAND OPERATOR WAS VPL OPERATOR B UPDATED DRAWING A CONDUIT LOCATIONS WERE MOVED OUTSIDE THE PAD	Date: 07/18/16 04/28/15 01/23/13 07/18/08	Dwn. By: KAY MKS BLD MKS

E:\AUTOCAD DRAWINGS\AUXILIARY - STD LAYOUTS - SITE PRINTS\STANDARD VPL DRAWINGS\102C-L CONDUIT PAD LOCATION L.H.DWG

