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Installation & Operation Manual

Vertical Pivot Gate (VPG) System

VPG Operator-24 (LM)

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

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, or order online at [www.http://shop.csa.ca/](http://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 or order online at 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

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 inches (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 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

Note – 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.

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 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. PHOTO BEAM, CONTACT SENSOR OR TYPE A CURRENT SENSING 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.

IT IS RECOMMENDED THAT END USER & INSTALLER

MUST RETAIN A COPY OF THIS CHECK OFF LIST FOR THEIR RECORDS

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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 PRIMARY & SECONDARY ENTRAPMENT PROTECTION

This unit is equipped with one (1) INTERNAL means of entrapment protection. (SEE UL 325 SECTION 30A) Gate Operator shall provide one (1) INTERNAL (INHERENT) AND one (1) EXTERNAL entrapment feature.

INTERNAL:

(TYPE A) – Inherent entrapment sensing systems – operator will reverse direction when the inherent TYPE A device senses an obstruction.

EXTERNAL:

(TYPE B1) – Provision for connection of a non-contact sensor (Photoelectric or equivalent)

(TYPE B2)— Provision for connection of a contact sensor (Edge device or equivalent).

NOTE: Unit ships with S1-6 ON & S1-8 OFF. DO NOT change these settings (see page 12 for illustration).

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 IRD1 on the control board while closing. If an obstruction is sensed by the primary inherent sensor, the gate will reverse and open to the full open position. The gate will remain open until a close command is received or will close by timer (if activated) after a new input is received. In order for the gate to close by timer, a new input on the terminals J5-1-8 must be given. If an input is still present when the gate HAS 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.

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 an input applied to J5#4. The wiring used to reset the operator **MUST** be 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 should not be used, these include; vehicle detectors, probes, timers, motion sensors, photo beams. Turning off the DC battery power **AND** turning off the AC power at the GFCI service outlet will also reset the control board.

WARNING!

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

APPROVED SECONDARY ENTRAPMENT DEVICES

PHOTO BEAMS

1)EMX INDUSTRIES
2)ALLEN BRADLEY
3)OMRON / MMTC

MODEL#: IRB-325
MODEL#: 60-2728
MODEL#: E3K-R10K4-NR

TRANSMITTER / RECEIVER TYPE
RETRO-REFLECTIVE TYPE
RETRO-REFLECTIVE TYPE

REVERSING EDGES (CONTACT EDGES)

MILLER EDGE MODEL— ME-120

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 Entrapment devices across the driveway. 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 Reversing Loop or Loop detector malfunction, 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 are required to be protected against entrapment. Refer to ASTM F2200 for diagrams of common entrapment areas.

- Check the National, State & Local building and fire codes **BEFORE** installation
- If you did not order a **Reversing Edge** (for along the bottom rail of your gate), or an **Infra-Red Modulated Photocell** (Reversing Beam), you will **NOT** be in compliance with March 2000 UL 325 Code, Rev 5. Consult your dealer for additional information.
- 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 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, doing so may VOID the operator warranty.
- **DO NOT ALLOW** any access control devices to be mounted within 6 feet 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 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 you will see it 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 that not all systems are identical as width, gate panel implementation, finish, accessories such as lights, and other accessory component options vary order to order. Below are some key features to the System.

Feature	Explanation
All Electric Operation. NO HYDRAULICS!	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
Gate Panel Options	Ranging from highly decorative pickets to a simple chain link or industrial anti-climb panels 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 (2”) inch 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.

Operator Orientation

All of the operators mechanical and electrical components are housed inside the operator (See Figure 1.2 through Figure 1.4). The operator is a lockable steel cabinet that mounts on a raised concrete pad. A separate NEMA 4x 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.

Figure 1.1 Operator (not depicting Drop Arm or optional gate panel)

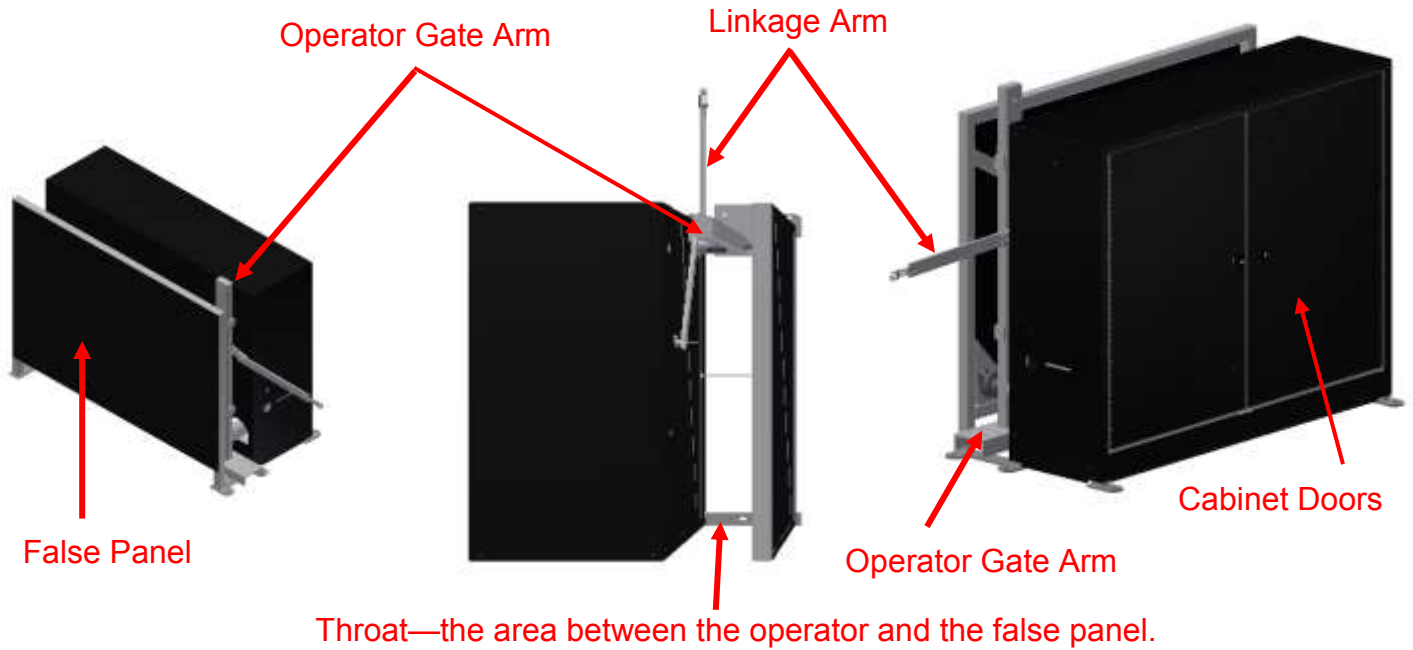
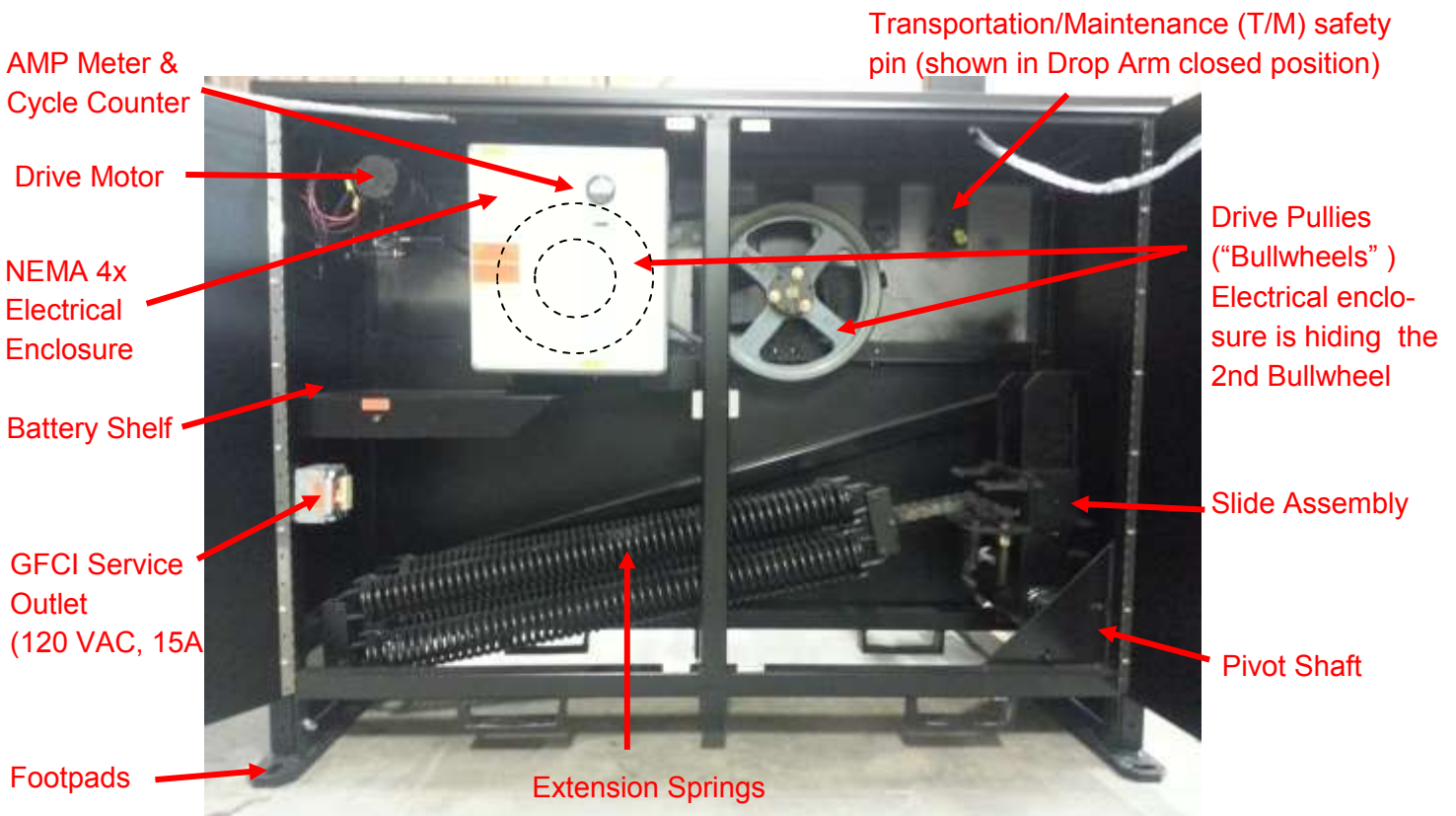


Figure 1.2 Components Housed in the Operator (Picture may not depict exact items)



Electrical Enclosure

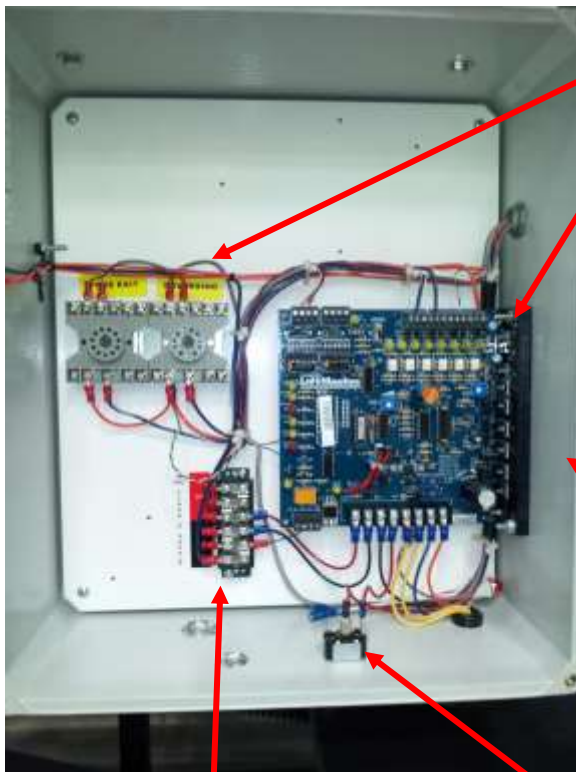
The control board is configured to receive input commands from nearly any type of access control device such as a card reader, keypad, push button panel, vehicular loop detector, over-speed detector, or even a PLC. In short, the control board accepts dry contact inputs to provide the necessary open, close, or reversing commands to the board. The control board also has a built in battery charging system to maintain proper back-up battery voltage for hundreds of cycles in the event of a power outage.

The system can also be configured to operate: 1, 2 or 3 color traffic lights, audible alarm devices, external emergency shut-off switch, output to an external source to indicate gate open/closed, and several other configurations including **LED** warning lights on the Gate Panel/Drop Arm.

Pre-installed amp meter and cycle counters are a standard on all systems from AutoGate with the Liftmaster Control Board..

AutoGate mounts the Liftmaster Control Board in a NEMA 4X Electrical enclosure box.

Figure 1.3 Electrical Enclosure (Inside)



1 AMP MAX 24 VDC
Accessory Power Strip

DC/Battery
Power Toggle Switch

Loop Detector Sockets (Free Exit & Reversing)

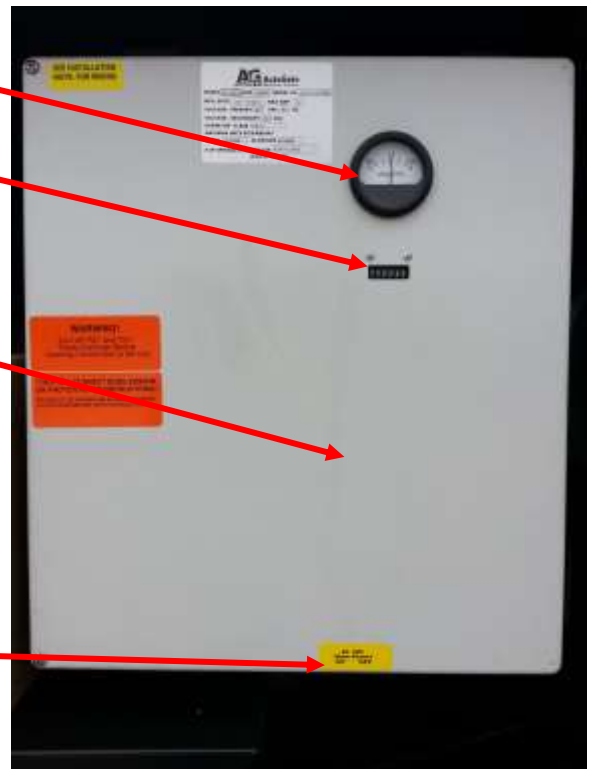
Liftmaster
Control Board

Amp Meter

Cycle Counter

NEMA 4x
Enclosure

Figure 1.4 Electrical Enclosure (Outside)



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). T/M stands for Transportation and Maintenance because the pin must be installed during shipping, installation, and whenever maintenance is being performed. Do not remove this pin until the instructions in this manual direct you to do so!

FIGURE 2.1



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

Figure 2.2

T/M Pin viewed from inside the operator



Figure 2.3

T/M Pin viewed in the operator throat Area (Door Keys are attached here for shipping)



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 highly recommended to discourage 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 VP Operator & 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:

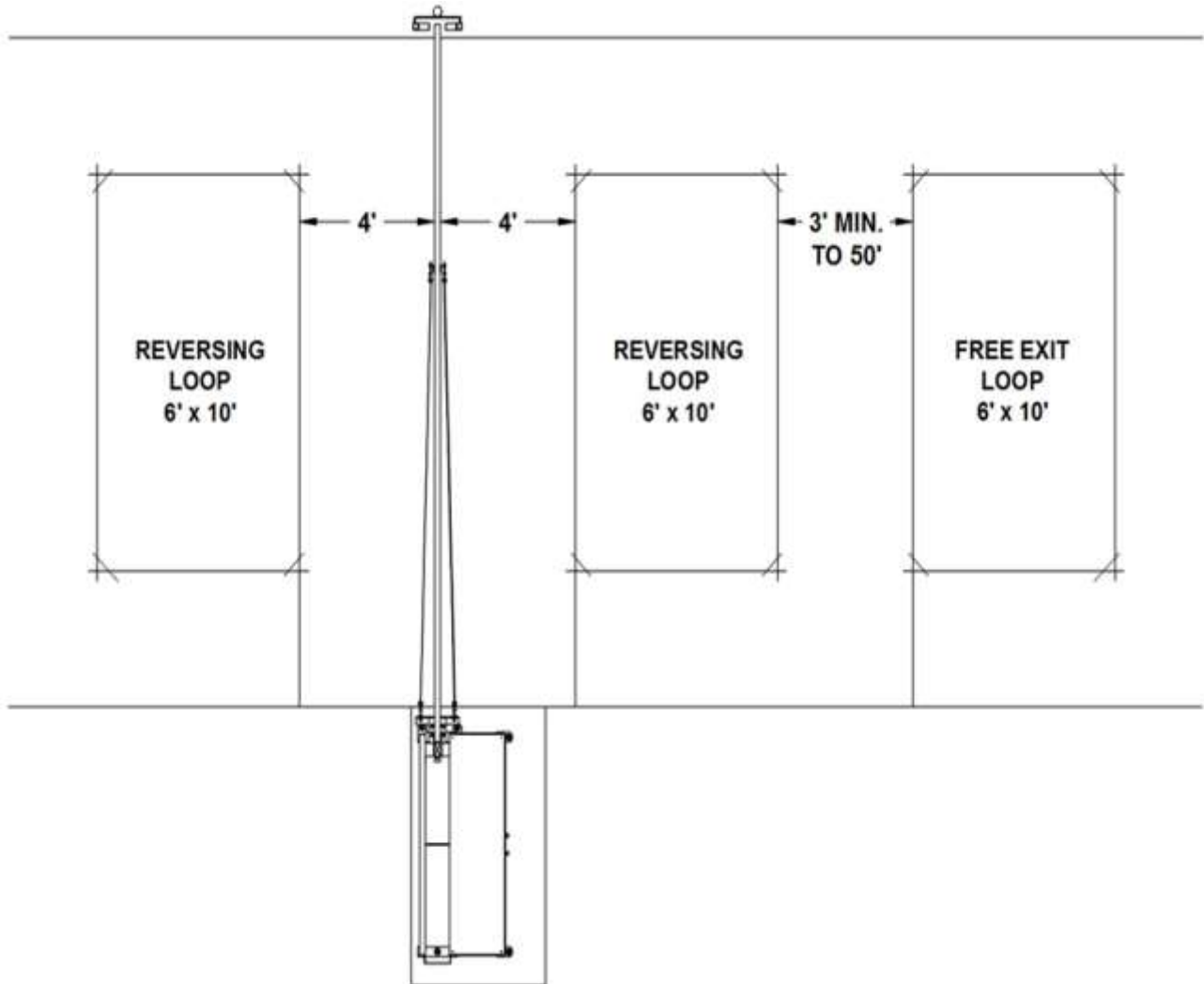
1. Full Pad, Minimum depth of 36" or below *local* frost line
2. 10"-12" thick pad with five (5) 12" dia. x 36" deep holes or below *local* frost line

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 1150 lbs., steel gates are 24 lbs. per foot and aluminum gates weigh 19 lbs. per foot.

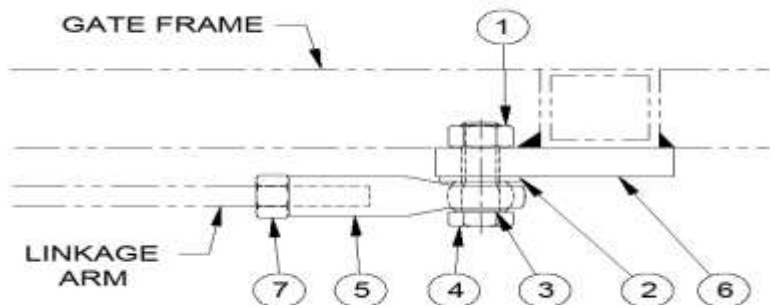
1. Have adequate equipment ready to unload your Gate and Operator safely. Utilize a Liftgate service when available from the LTL carrier.
2. Before removing your Gate and Operator from the truck, inspect it for any visible damage and make sure the Gate Box was shipped upright. **(DO NOT DROP EITHER GATE 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.

INSTALLATION

Installing VP Gate and 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 (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 washers and Linkage Pivot Bolt (5/8" x 2-1/4") and insert through rod end fitting and tighten bolt into the gate lug hole as shown below. You may have to push down on the gate to insert 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 & Operator

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*

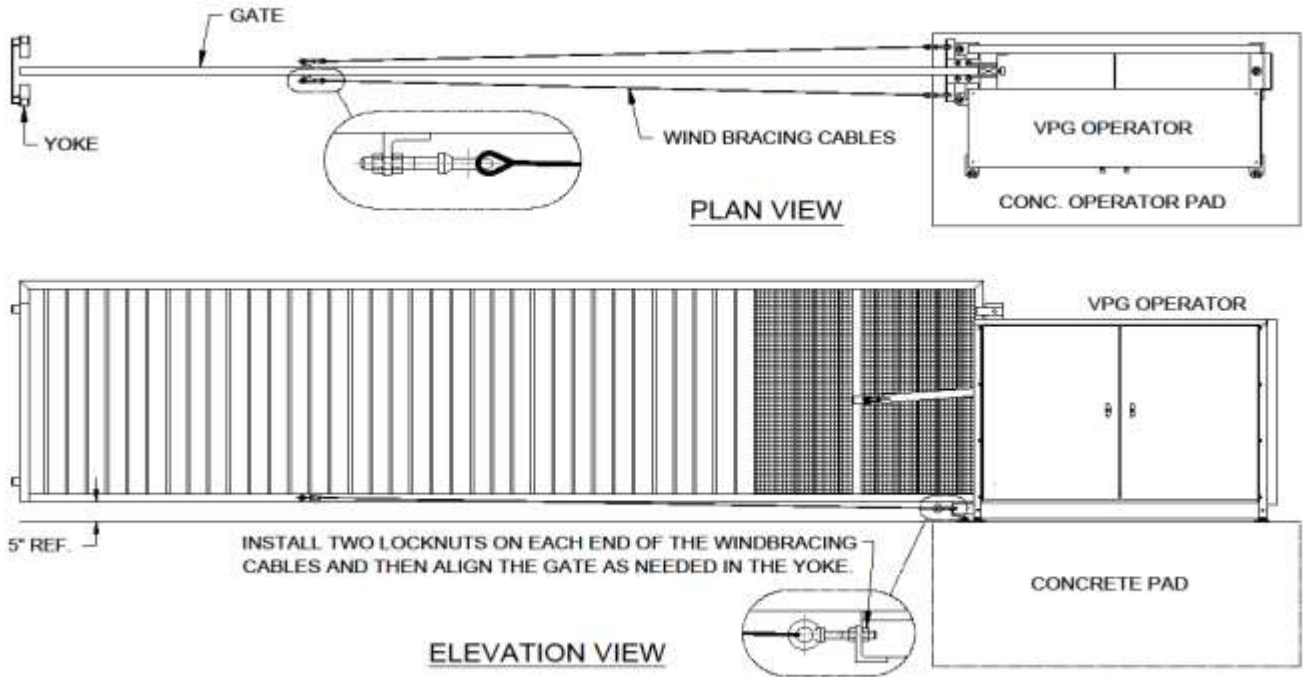
Positioning Gate Panel/Drop Arm & Operator

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

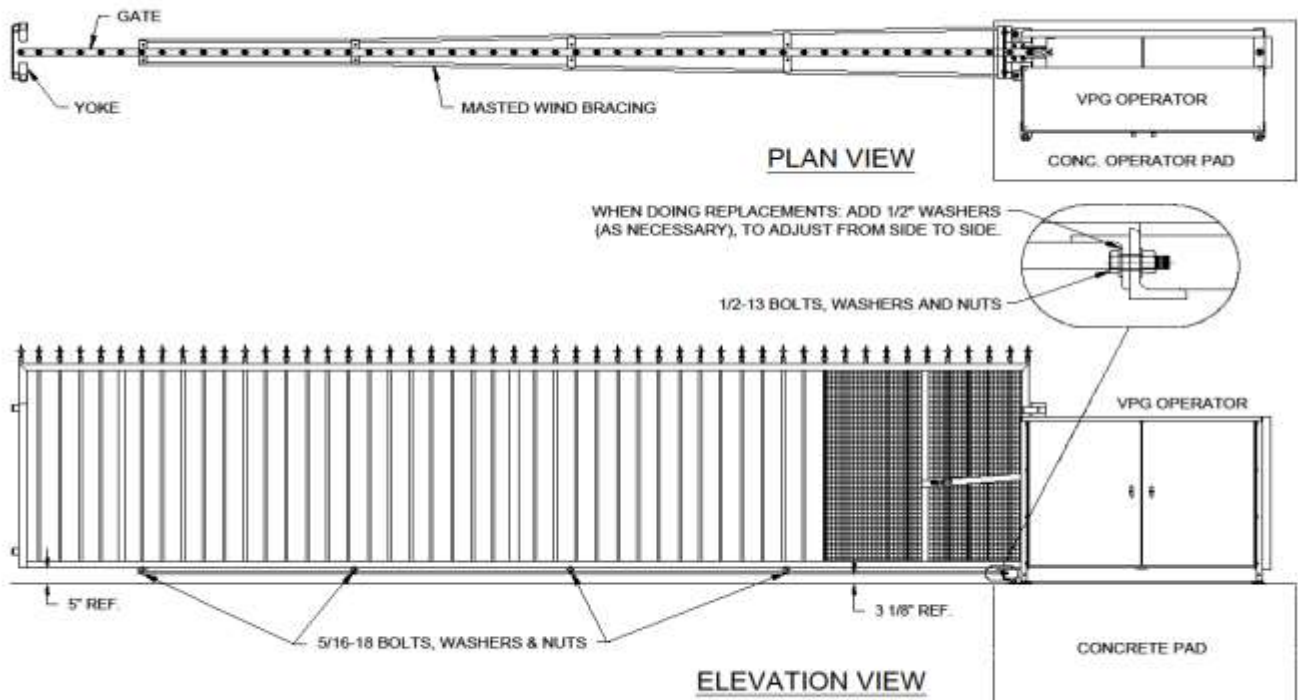
1. Place Gate & Operator Assembly on pad so the end of the Gate is centered over the Yoke pad or intended yoke position for the site (for yoke styles mounted to posts, buildings, etc.). Allow a minimum three (3") inches from edge of pad to bolt holes to prevent concrete damage
2. Position and align Pad Yoke and center under gate.
3. Secure **Operator** with (1) 5/8" dia. Wedge Bolt in rear; 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 (2") inches between bottom of Gate and Yoke.

Installing Other Components

Cable Wind Bracing

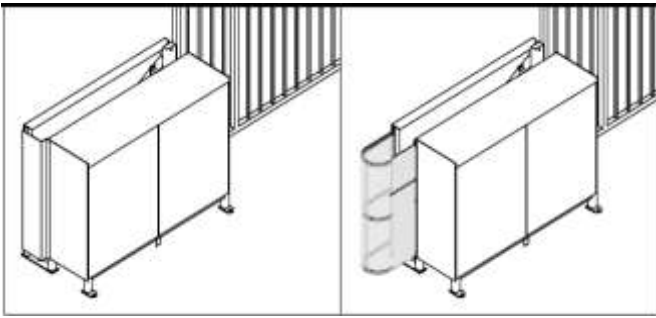


Masted Wind Bracing

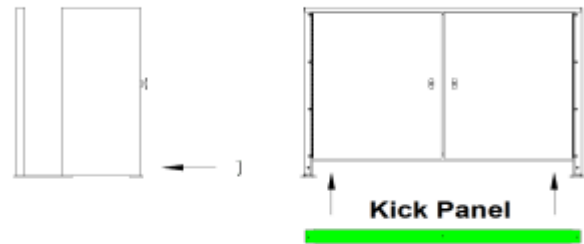


Installing Other Components

GATE GUARD



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



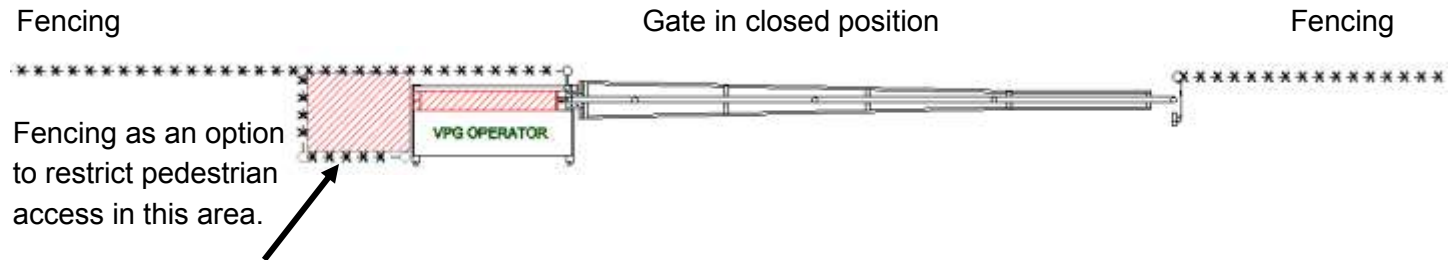
NOTE: The area behind the operator is an entrapment zone. The installer must prevent or protect pedestrian access to this area by at least one or more of the following:

- Install factory supplied Gate Guard
- Site installed fencing
- Utilize Recommended Entrapment Protection Devices

Entrapment Zones (RED shaded areas)

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.

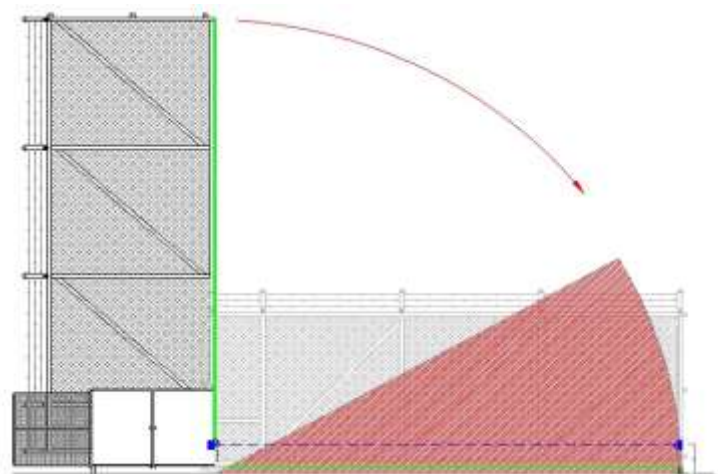
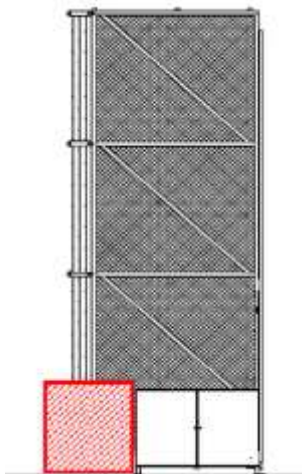


Opening Entrapment Zones

Gate in "OPEN" position below (shaded area) requires installer to install one (1) of the following: Fencing, installation of provided gate guard, or entrapment protection devices.

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 **blue** including beam path. Additionally, installation of an approved B2 contact sensor is shown in **bright green**.



Initial Power Connection & Operator Testing

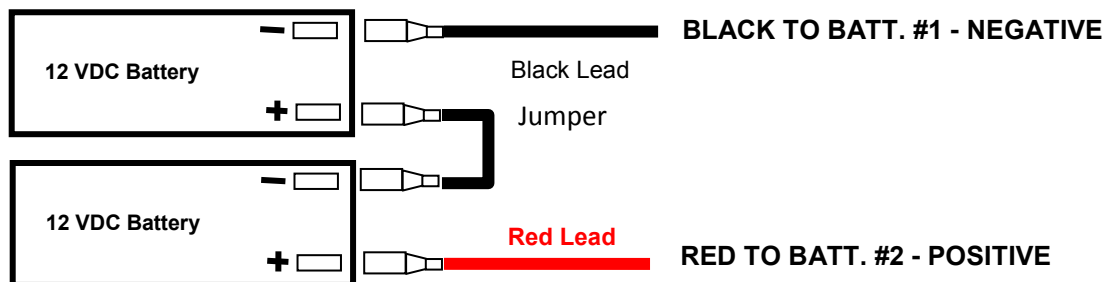
1. Connecting Batteries - Required

A. Install two (2) 12 VDC Batteries (**not provided**) on the battery shelf. AutoGate recommends Group 24, 100 Amp hour deep cycle marine batteries for extended battery back up. At a minimum use seven (7) AH 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:

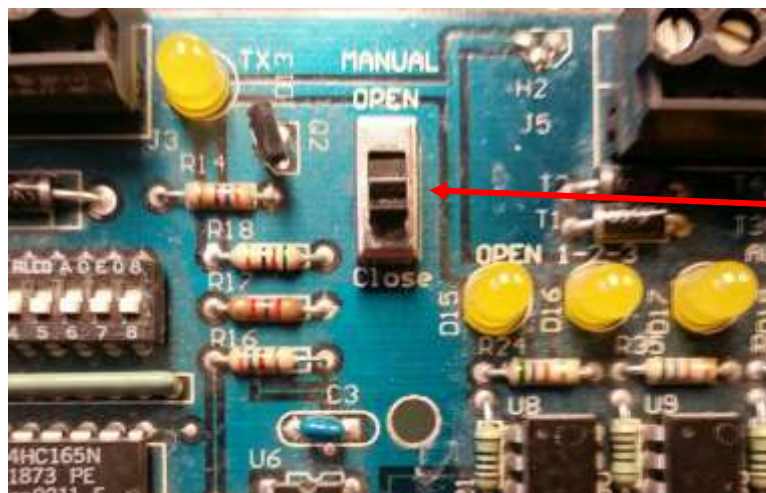
NOTE: Battery back up duration will depend on the size of batteries, number of accessories and open/close cycles while being powered by the batteries.



- Temporarily remove any wires in the main circuit board J5 Strip, Terminal #5 (rev./safety) to disable any Reversing devices not installed from preventing the gate from closing.
- With all personnel clear of any moving part or component of the system you will take the next steps to cycle the gate up and down a few times to verify proper operation. Turn Main DC Power Switch "on". (Located under the Electrical Enclosure) Use the S3 manual open/close switch on the control board.



CAUTION: At this point you have no external safety devices connected to your operator. Open with care!!



Use the MANUAL Open-Close switch to test your operator.

4. Verify basic operator system function

NOTE: The gate should activate and open in approximately 10-12 seconds. In DC only operation the cycle time could vary. If your gate does not lift properly, refer to "Troubleshooting Tips" pages 22—23.

WARNING!

TO REDUCE THE RISK OF ELECTRICAL SHOCK, THIS EQUIPMENT HAS A GFCI TYPE PLUG THAT HAS A THIRD (GROUNDING) PIN. THIS PLUG WILL ONLY FIT INTO A GROUNDING TYPE OUTLET. 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.

AC POWER CONNECTION

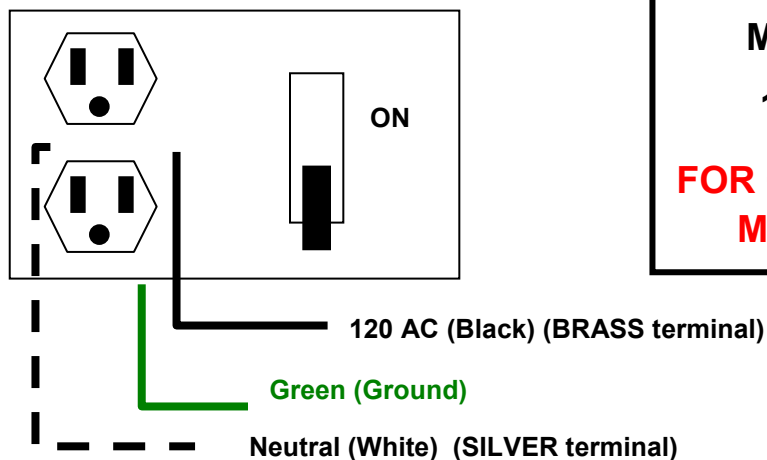
Connecting AC Power

1. Turn Off DC power.
2. Wire incoming AC power to the 4 x 4 Box provided and turn on the breaker from your AC Source.
3. Turn AC Power Switch on at the 4 x 4 Box.

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

Pre-Mounted 120 VAC Electrical Outlet & AC Power Switch Electrical Connection

Operator Main AC Power Switch
(pre-wired to outlet)



A/C ELECTRICAL SUPPLY

MINIMAL REQUIREMENTS:

120 VAC, 15AMP CIRCUIT

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

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.

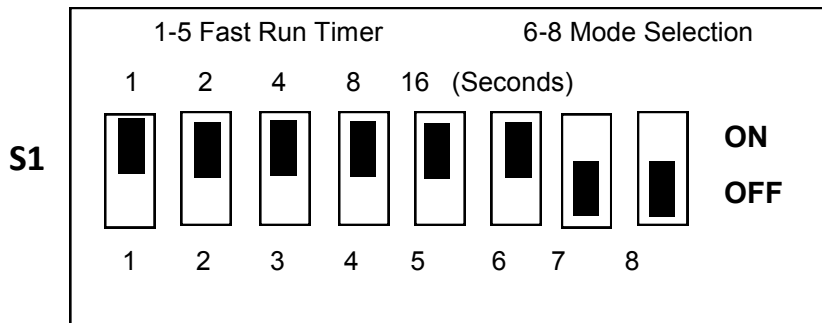
OPERATOR MUST BE GROUNDED TO TRUE EARTH GROUND LUG LOCATED ON FRAME

CONTROL BOARD

The VP gate has many features and options. Most are controlled by an electronic circuit board inside the Control Box. The circuit board is factory set and should not be altered in any way or the Warranty may be voided. If an adjustment has to be made, consult your Control Board Instructions for details. If you need any further assistance, please contact your local AutoGate Dealer or call AutoGate at 1-800-944-4283.

Timers and Mode Selections (S1) **SEE DIAGRAM BELOW**

Full Speed Run Timer – Switch Pack S1 (1-5) Switches one (1) through five (5) are FACTORY PRESET. **DO NOT CHANGE!**

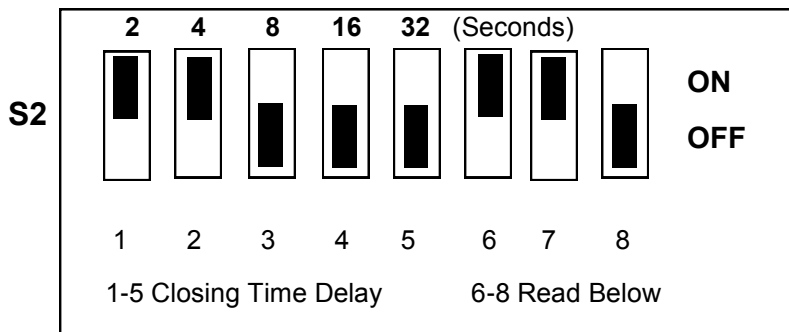


Mode Selections – Switch Pack S1 (6-8). **SEE DIAGRAM ABOVE**

SWITCH 6 – “On”. This is set for the UL 325 Alarm. **DO NOT CHANGE!**

SWITCH 7 - FACTORY PRESET. **DO NOT CHANGE!**

SWITCH 8 – “Off” Not used on this system.



Timers & Mode Selections – Switch Pack S2 (1-8). **SEE DIAGRAM ABOVE**

SWITCHES 1-5 on S2 are for the closing timer delay. Default is S2-3 “ON” to provide a eight (8) second delay if activated. If S2-7 is on, the gate will auto close by timer.

SWITCH 6 – Sets auxiliary. Open input terminal #4 at J5 to be pulse open-pulse close (Default is On).

SWITCH 7 – AUTO CLOSE TIMER – Default is ON. When on, use S2 1-5 to set close time delay. When close timer is selected, you MUST install vehicle and pedestrian detection devices.

SWITCH 8 – AUTO OPEN ON POWER FAILURE – When switch eight (8) is in the ON position, the operator will automatically open the gate approximately 15 seconds after the loss of power. Once power is restored, the operator will resume normal operation. Factory setting is “OFF” allowing the operator to function normally until the battery power has diminished. Once A/C has been restored, the operator will function normally.

NOTE: If batteries were completely discharged, remove from operator and recharge with a commercial grade battery charger.

WARNING!

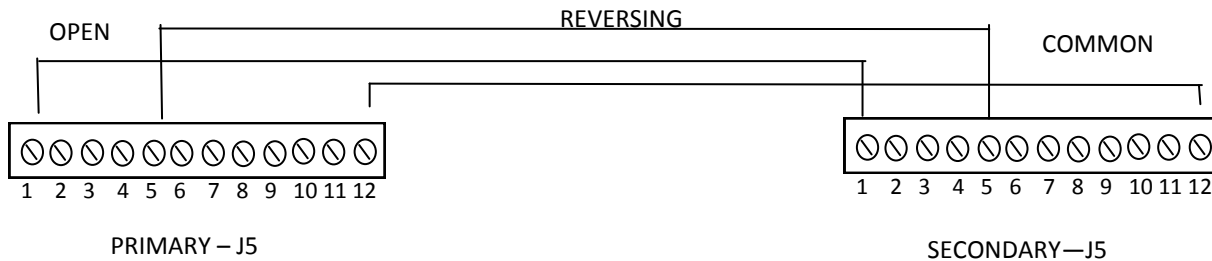
INHERENT REVERSE DEVICE (IRD) SHOULD BE TESTED PERIODICALLY TO INSURE PROPER OPERATION.

Instant Reverse Device (IRD) - The Internal Entrapment Protection Device

The *Instant Reverse Device* is an internal circuit that continuously monitors the motors current for increase draw. This is factory preset for your specific gate size. To test for proper operation, position yourself approximately 2/3 of the way across the driveway. With the gate descending, carefully catch the gate to simulate an obstruction and it should stop and reverse within two (2) seconds. If the gate does not reverse, call the factory for technical assistance. If obstructed while closing, the gate will stop and reverse to the open position, time out (using the time delay set at S2 switches 1-5) and then close. If gate is opening when obstructed, the gate will stop its open travel. If inputs are present, gate will remain stopped. If no inputs are present or existing are cleared, the gate will time out and close.

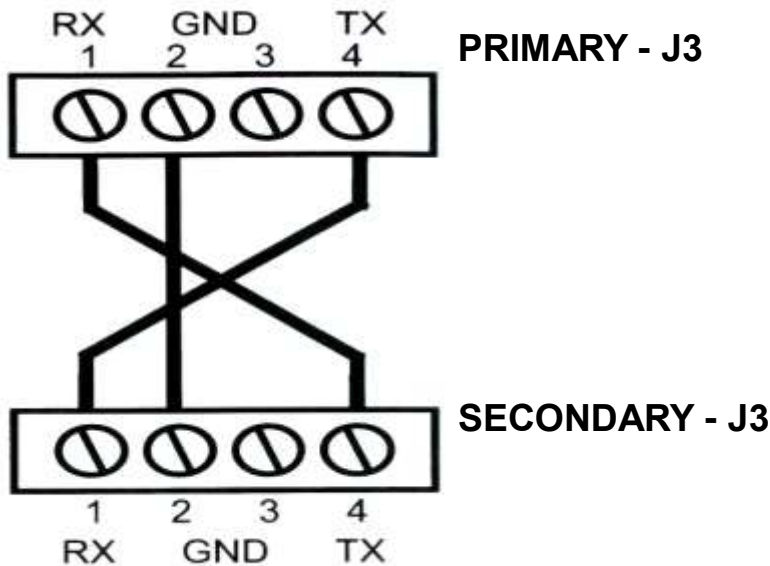
Primary—Secondary Wiring (Two systems designed to work together as an entry or exit point)

In a primary/secondary configuration, either unit can be the primary. Choose one unit to be the master and then direct all control wiring to it (also install vehicle detector and receivers in it). At the PRIMARY any input (at J5) with control (detectors, receivers, keypads, timers, etc.) wires to it must also be run to the same terminals of the secondary system. Along with these control wires, both operators MUST share a common ground connection from chassis to chassis (or from common to common, i.e. master gate J5 terminal #12 to secondary unit J5 terminal #12).



EXAMPLE: If only open and reversing are used at primary then three wires will run between gates.

If it is required that if one gate senses an obstruction, the other reverses also, then three (3) additional wires must be run between the primary **J3** and secondary **J3** as shown below. These connections are for transmitting IRD (obstruction signals) between both units. This will allow the primary or secondary to inform the other that a closing obstruction has occurred and for it to also reverse and open. **SET** switches on **S2**, **1-8** the same on both gates.



THE CONNECTIONS TO THE LEFT MUST BE DONE IN ORDER FOR GATE IRD'S TO WORK CORRECTLY. TERMINAL 1 OF PRIMARY MUST GO TO TERMINAL 4 OF SECONDARY. TERMINAL 1 OF SECONDARY MUST GO TO TERMINAL 4 OF PRIMARY. TERMINAL 2 OF PRIMARY WILL GO TO TERMINAL 2 OF SECONDARY.

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 and instructions 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>Note: 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 owner.</p>	
Vehicle Loops & Loop Detectors	<p>These are required to restrict or limit gate operation under certain vehicle detection or in conjunction with access control station vehicle presence detection. A socket for the loop detector electronic control modules are pre-installed in the electrical enclosure. Installer must: fabricate and install loops in the roadway, install the control module (detector), complete the hookup, and programs/adjust detector sensitivity for good interaction of the loops and the gate system.</p>
Infrared Photo Electric Sensors	<p>Used to stop and reverse the Gate Panel/Drop Arm when closing. If an object passes through or blocks the beam, the Drop Arm will remain open while the beam is blocked.</p>
Gate Edge Sensors	<p>Edges are to cover the entire bottom edge of the gate and are used to stop and reverse the Gate Panel in the intended direction of travel.</p>
Traffic Signal Lights—1 lens, 2 lens, or 3 lens (Ex: Red, Yellow, Green)	<p>Used to warn of the barrier systems presence and operation. AutoGate recommends an Red LED lens at all times, except when the Gate Panel/Drop Arm is in its fully open position, in which case we recommend a Yellow (amber) flashing lens.</p>
Warning Signs, Reflective Tape, Warning Lights	<p>Drivers should be alerted to the presence of a high-stopping power barrier system, and that striking the barrier 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 Drop Arm.</p>

CAUTION! Failure to completely install any Reversing Devices may cause your gate to default Open. (Ex.: Hooking up your Loop Wires to the Socket Base while not having the Detector plugged in, or having your IFR Receiver hooked up and not the IFR Transmitter).

A. Reversing / Free Exit Loops and Detectors:

1. Locate your “Homerun” lead-in Loop wires and connect the Free Exit Loop to Socket Base connections #7 and #8 (Free Exit Device).
2. Locate you “Homerun” lead-in Loop wires and connect the Reversing Loop(s) to Socket Base connections #7 and #8. You can wire two (2) Reversing Loops to one (1) Socket Base (Reversing Device). Check the Loop instructions for proper phasing.
3. Plug in Loop Detector in the pre-wired socket base(s).

B. Photoelectric Sensors:

1. Verify voltage compatibility, 24v DC is required.
2. Connect signal wire N.O. (normally open) to terminal #5 on your control board.
3. Connect the ground wire to terminal 9, 10, 11, or 12 (commons).
4. Connect the power wires to the terminal strip located inside the control box.

C. Contact Sensor Edge:

1. Connect signal wire N.O. (normally open) to terminal #5 on your control board.
2. Connect the ground wire to terminal 9, 10, 11, or 12 (commons).
3. Be certain all wires are secured to prevent damage to the gate during operation.

D. Vehicle Sensor Probe (Car-Sense 101):

1. Locate the Car-Sense 101 Vehicle Sensing Probe either along the edge of the Exit Drive
2. Once installed, run the 2-conductor cable to Socket Base connections #6, 7 & 8 (Free Exit Device). Refer to manufacturer’s instructions for proper wiring.
3. Connect the power wires to the terminal strip located inside the control box.
4. Connect signal wire to an open terminal – 1, 2, 3.
5. Connect the ground wire to terminal 9, 10, 11 or 12 (commons).
6. Plug in your Car Sense Detector in the pre-wired socket base.

E. Gate Auto Timer:

1. Install your timer in the electrical box.
2. Run a power wire from the time terminal “A” the “Positive” on the control board, run a power wire from the timer terminal “B” to the “Negative” on the control board.
3. Run a power wire from the time terminal “1” to “1”, “2”, or “3” on the control board, run a power wire from the timer terminal “2” to “9”, “10”, “11” or “12” on the control board.

F. Keypads:

1. Refer to your Keypad Manufacturer’s Instructions for complete wiring.
2. Run the power wires to Terminal Strip main power (+ and -).
3. The **N.O. & Common** signal wire to open the gate need to be attached to the Circuit Board #'s 1, 2 or 3 (Open 9, 10, 11, or 12 (Common). (Refer to Manufacturer’s Instructions).

G. Card Readers:

1. Refer to your Card Reader Manufacturer’s Instructions for complete wiring.
2. Run the power wires to Terminal Strip main power (+ and -).
3. The **N.O. & Common** signal wires to open the gate need to be attached to the Circuit Board #'s 1, 2, or 3 (Open) & 9, 10, 11, or 12 (Common). (Refer to Manufacturer’s Instructions.)
4. We recommend using a ground rod to minimize lightning damage.

WARNING!

WARNING: DISCONNECT BATTERIES AND AC POWER BEFORE SERVICING ANY MECHANICAL OR MOVING COMPONENTS!

WARNING: FOR CONTINUED PROTECTION AGAINST FIRE, ONLY REPLACE WITH THE SAME TYPE AND RATING OF FUSE.

TROUBLESHOOTING & CHECKING CONTROL BOARD

Checking Batteries & Charging

Note: When the batteries become weak the gate can begin to run erratically or stay open.

- Turn off the AC power and put an Volt meter across the battery terminals to measure voltage. Cycle gate for five (5) to ten (10) cycles while observing voltage and low battery indicator LED D12. If LED 12 comes ON, the batteries are too weak to function properly. Correct voltage across the batteries is a minimum of 23.5 to 25 VDC.
- If LED D12 does light, gate will default open indicating LOW batteries. In this test or in a real power loss, even if **Switch 8** on S2 is off (*refer to switch settings on pg. 20*). Return of AC power will trickle charge the batteries. You may have to re-charge the batteries as they may be too weak for the board to re-charge quickly. If the batteries won't charge, remove and LOAD test and replace if bad.
- Correct charge voltage is 27.0—27.5 VDC with batteries not connected (adjustment is at R63).

Gate Will Not Close

- Check for any active inputs on terminal inputs D15-D24, AC power loss, AC power switch is off or weak batteries.
- Check that batteries are connected properly. Is switch S3 in “ON” position (this is manual open switch). Check if S2 switch number 8 is in “ON” position and if AC power is lost, See LED D14.
- Check LED D12, if lit and AC power is off, then batteries need to be charged or replaced.

Gate Will Not Open

- Check for AC power loss at D14 (check AC power switch) and that batteries are fully charged.
- Check fuses and if inputs are wired correctly, test S3 manual open switch.

Gate Dead—No Operation

1. Make sure both DC Power Toggle Switch and A/C Power switch are on. If no LED lights are “lit” on the board proceed to #2. If LED lights are “lit” verify HBEAT (D11) is flashing? If flashing proceed and D12 BAT LOW LED is off proceed to #2 . If HBEAT (D11) is not flashing and other LED's are “lit” the control board is bad (contact AutoGate for replacement).
2. Check A/C indicator light on cabinet, is it on? Yes, go to step #3; No, check 3 amp fuse on battery tray, if good, go to step #3, if bad replace and check again. If No A/C, source external power problem back to fuse box.
3. Check F3 & F4 fuses on control board. If bad, replace. If they continue to blow the control board is bad.
4. If D14 (AC) & D5 (BRAKE) are on, then gate has repeatedly sensed obstructions. Clear obstruction, turn off AC and DC power. Now turn AC and DC power back on and test system.
5. If steps above do not restore operation contact AutoGate Tech Support at 1.800.944.4283.

IRD (D2) Led Is Flashing

MRT (Maximum Run Timer) has expired. Gate was unable to reach the closed limit switch. Check that fast run timer is set to run as long as possible. (SW1 #'s 1-5 should all be on).

Fuse(s) Are Blown

F3 (15 AMP AC) AND/OR F4 (15 AMP DC) Check for shorts in wiring. If F3 AC fuse is blown, then batteries may also be dead. If you continue to blow fuses and no apparent shortages are visible, you most likely have a blown control board and it will need to be replaced.

Gate Closes Then Reverses

See IRD adjustments, also check for obstacles in gate travel, such as trees, sticks, etc. Check batteries for voltage, if batteries are weak, it can cause the gate to not reach the close limit and re-open.

Charge Voltages

Charge voltage to batteries too low, adjust at R63. With batteries disconnected, set to 27.5.

Motor Doesn't Stop

If gate closes and motor continues to run the limit switch may need adjustment or replacement.

IRD Obstruction Signal to Other Gate Note Working Correctly

Remove connector at J3, obstruct gate, LED D13 should go off for a few seconds. This indicates signal was transmitted. Be sure gates have a common ground.

Manual Operation

The VP gate is easily operated manually in the event of total power or component failure.

1. Turn main power switches off (both A/C & D/C).
2. Release the belt tension lever located under the gear motor to remove the belt tension.
3. Position yourself in front of operator and lift up on Linkage Arm at the pivot point 1"-2".
4. Walk out to end of gate and lift gate to the open position.
5. Place the T/M pin through the bracket holes to prevent the gate from lowering.
6. Secure the belt tension lever in the locked position to re-apply tension to the belts.

NOTE:

It only takes 16 - 30 lb. of force to open gate. If more is required, contact your dealer or AutoGate.

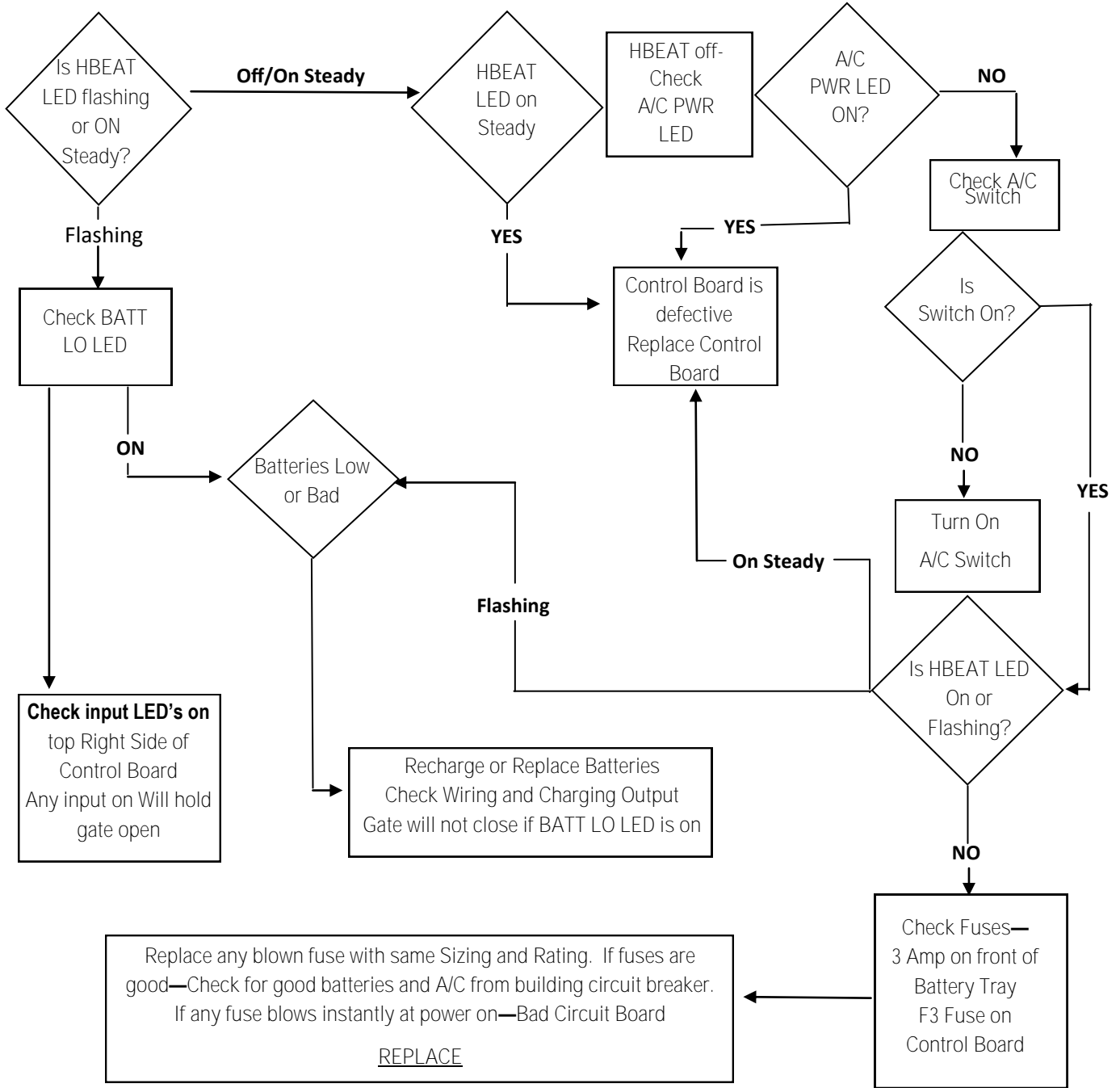
ELECTRICAL QUICK CHECK GUIDE

Follow the steps in this chart to see if you can restore service of your gate.

This is a visual check without the use of a voltmeter.

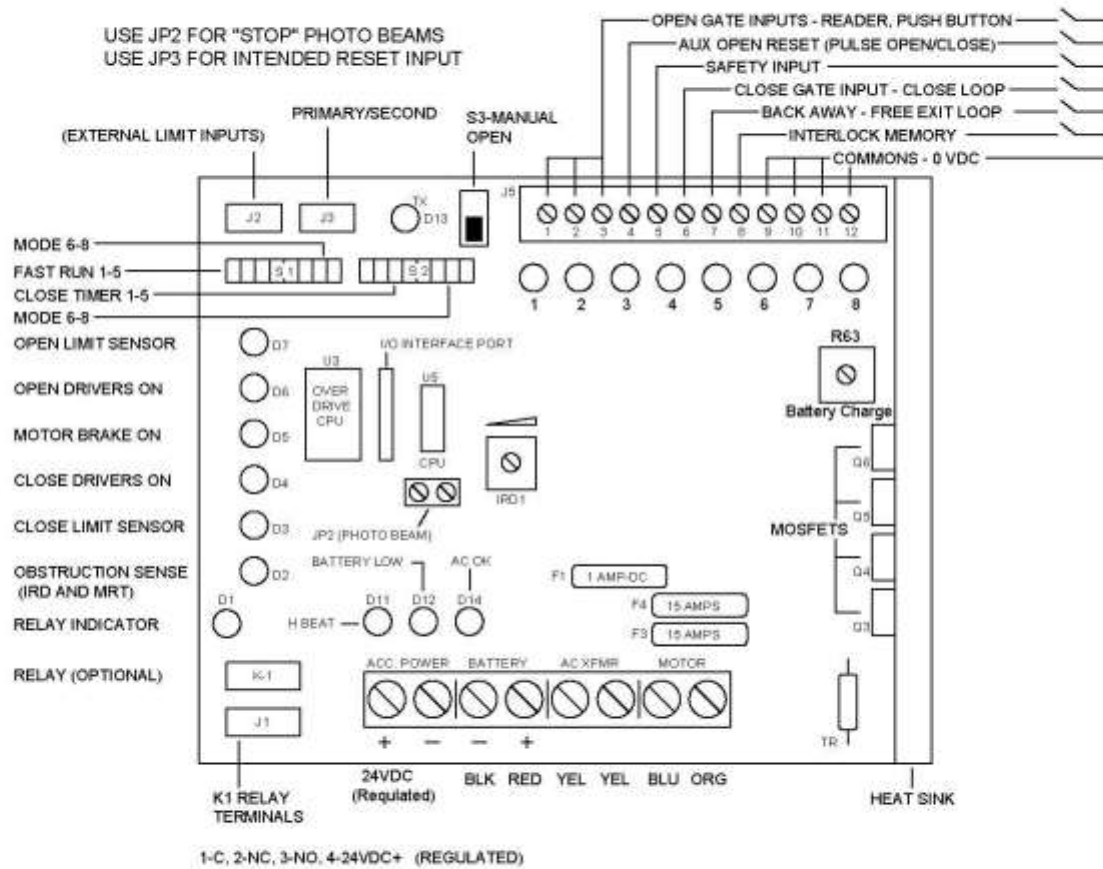
Start by opening the cabinet door to the operator.

Then open the electrical control box and look on the control board for the HBEAT LED, located at the lower left corner of the control box.



CONTROL BOARD LAYOUT

READ SAFETY INSTRUCTIONS BEFORE WIRING



- ACCESSORY POWER IS 24VDC REGULATED RATED AT 500 ma. [1/2 AMP]
[POWER AT ACCESSORY+ AND AT REALY PIN-4+ IS FUSED AT F1 WITH A 1 AMP FAST-BLO FUSE]
- J5 #4 FOR USE WITH HARD WIRED LINE OF SIGHT DEVICES TO OPEN GATE AND RESET UNIT
- D11 - HEART BEAT - SHOWS THAT PROCESSOR AND PROGRAM ROUTINE ARE RUNNING PROPERLY
- D12 - BATTERY STATUS - SEE DIAGNOSTIC PROCEDURES
- D14 - AC POWER INDICATOR - SHOWS THAT AC POWER IS PRESENT
- S3 - MANUAL OPEN - TO ALLOW GATE TO BE OPENED OR CLOSED DURING SERVICE OF UNIT
- F1 - 1 AMP FAST BLO FUSE (5mm x 20 mm). MAXIMUM CONTINUOUS DRAW IS 1/2 AMP (U.L. LISTED FUSE ONLY)
- F3 - 15 AMP ATO TYPE FUSE FOR 24VAC INPUT POWER (U.L. LISTED FUSE ONLY)
- F4 - 15 AMP ATO TYPE FUSE FOR 24VDC BATTERY INPUT POWER (U.L. LISTED FUSE ONLY)
- JP2 - INPUT FOR PHOT BEAM AS A SECONDARY ENTRAPMENT PROTECTION

7306 Driver Rd, PO Box 50
Berlin Heights, Ohio 44814
Phone: 1 (800) 944-GATE
(419) 588-2796
Fax: (419) 588-3514

NOTICE					Date: 11/15/05	 Berlin Heights, Ohio FAX (419) 588-2814
THE INFORMATION CONTAINED ON THIS DOCUMENT IS CONFIDENTIAL AND DISSEMINATION UNAPPROVED. DISCLOSURE OR COPYING OF THIS INFORMATION IS STRICTLY PROHIBITED.					Dwn. By: MKS	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ANGLES ± 1° XX ± .02, XX ± .01, XXX ± .005					Supercedes: 8/23/04	
DO NOT SCALE					Dwg.: 109	
Rev:	Description:	Date:	Dwn. By:	Ckd. By:	Title: DC Control Board Layout	
B	Primary/Second "J3" was labeled as Master/Slave	06/06/14	MKS	DMR		
A	General revisions, new Title Block	04/07/09	MKS	DMR		

√ MKS 08/08/14

AG-SBS\Engineering\AutoCAD Drawings\Layout and Site Drawings\Standard VPL Drawings\109 Control Board Layout.dwg

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. Each item below has supporting illustrations and/or instructions in this manual. Contact AutoGate for any questions or issues. Maintenance is important to any gate system and can affect safety, warranty, quality operation, and life-cycle of the system.

ITEM	RECOMMENDED MAINTENANCE
Grease pivot points on Linkage Assembly (“LUBRIPLATE ‘R’ LOW TEMP” Grease)	10,000 cycles or 6 months
Grease all bearings: two (2) Operator Arm, four (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 1/4” deflection & between intermediate and final drive sheaves should be tightened to minimum deflection). Belt(s) loose or worn require replacement.	Every 6 months
Charge voltage for batteries should be 27.5 VDC with batteries disconnected check at battery terminal on control board (set at R63).	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 External entrapment protection devices. See page 23 and the external entrapment protection device(s) manufacturer's instructions.	Every month
Check and verify proper operation of the Internal entrapment protection reversing feature (see page 21, IRD—Instant Reversing Device).	Every month
Check gate balance (see page 30)	Four months after install, they annually

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) Disable the photo eye if equipped.

Step 3) Remove any upper "T" bolts completely

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

Step 5) 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 6) Turn Off AC & DC Power before gate "times out" and tries to close. Insert T/M Pin.

Step 7) Using a 1 5/16 wrench, loosen and remove the chain tension bolt with the damaged spring.

Step 8) Replace damaged spring

Step 9) Replace chain tension bolt. **NOTE:** Grease fitting must point up! Tighten bottom nut. **NOTE:** Chain **MUST** remain level and not twisted once tightened.

Step 10) Remove T/M pin and restore A/C & D/C power.

Step 11) 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 12) Turn off both A/C and D/C power.

Step 13) Thread the slide nut back down to the slide assembly and tighten.

Step 14) Replace the T-Bolts to their original location and tighten.

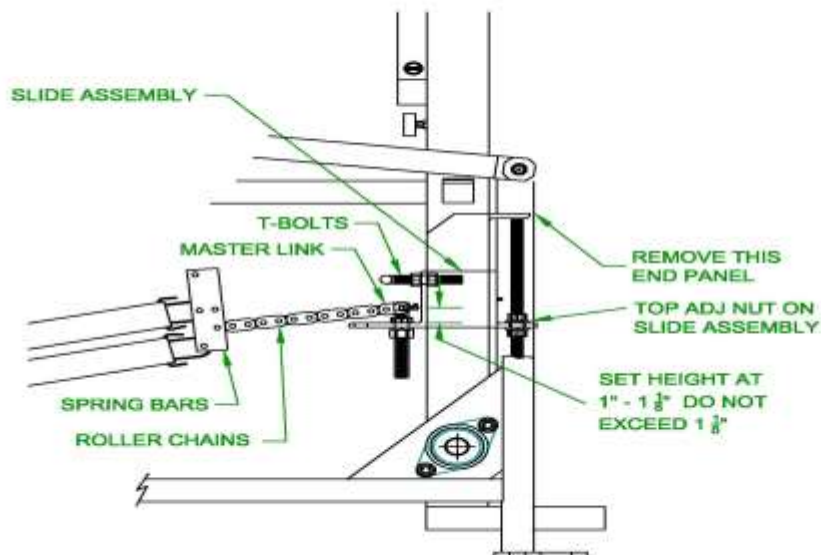
Step 15) Restore A/C and D/C power and hook photo eye back up.

Step 16) Cycle gate.

Step 17) 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 or the instructions on Page 30.

SLIDE ASSEMBLY DETAILS



QUICK REFERENCE GUIDE

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.

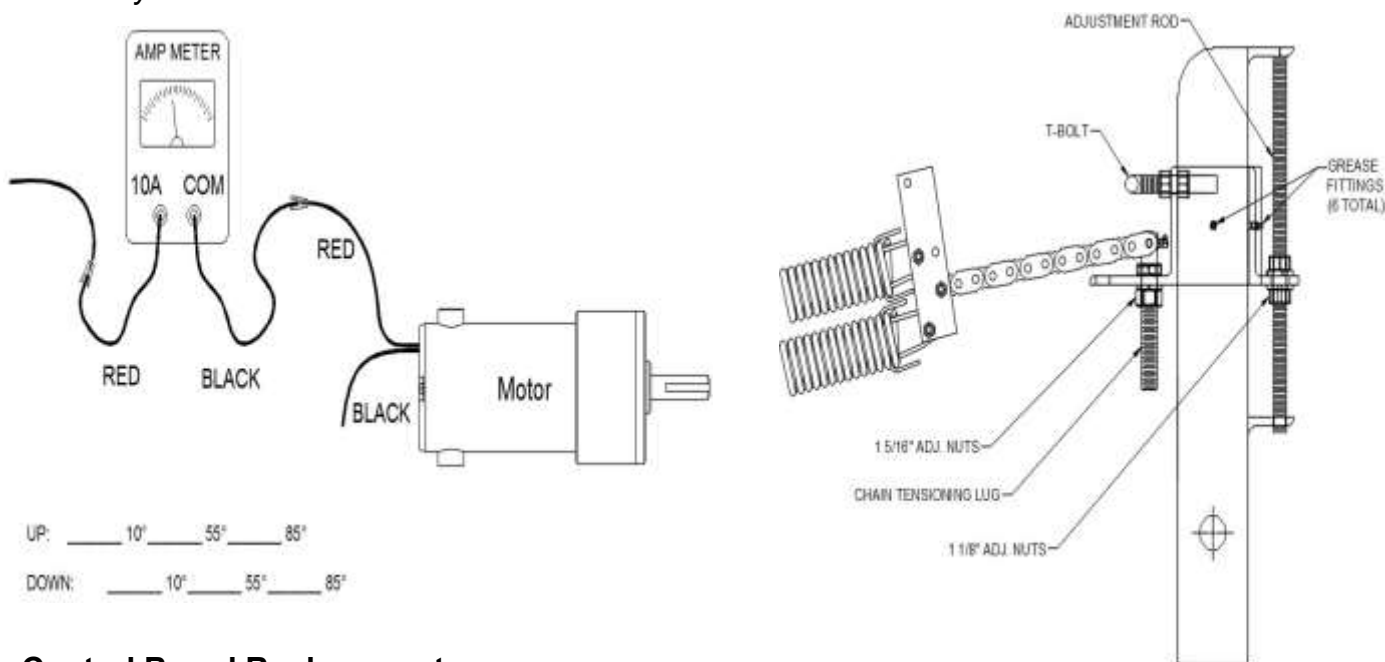
Balancing a Gate

Recommended four (4) months after installation, then annually. It is recommended to check the balance of the Operator. It is mandatory to re-check the balance if you change a spring(s). You can monitor it on the amp meter installed on the control box door. It is recommended to follow the instructions below for accurate balancing numbers using a commercial grade AMP meter.

Remove the wire nut on the **RED** motor lead and hook up one Amp Meter lead to the **RED** wire and the other Amp Meter lead to the **ORANGE** wire. Cycle the gate up and down and record the highest amp reading in both directions (reading should be in the 2.0 to 6.0 range). The highest reading for both the up and down cycles should be very close to the same. If not, you will have to adjust the SLIDE ASSEMBLY.

Loosen the 1 1/8" nuts on either side of the Slide Assy. Angle on the Threaded Rod. *If the gate Amps are too high in the OPEN mode, move the Slide Assy. UP to help it OPEN.* (This is the most common adjustment Made). *If the gate is flying open and struggling to close, move the Slide Assembly DOWN.* Only adjust the Slide Assembly 1/4" (3 to 4 turns) at a time when adjusting. After each adjustment, check your amp readings.

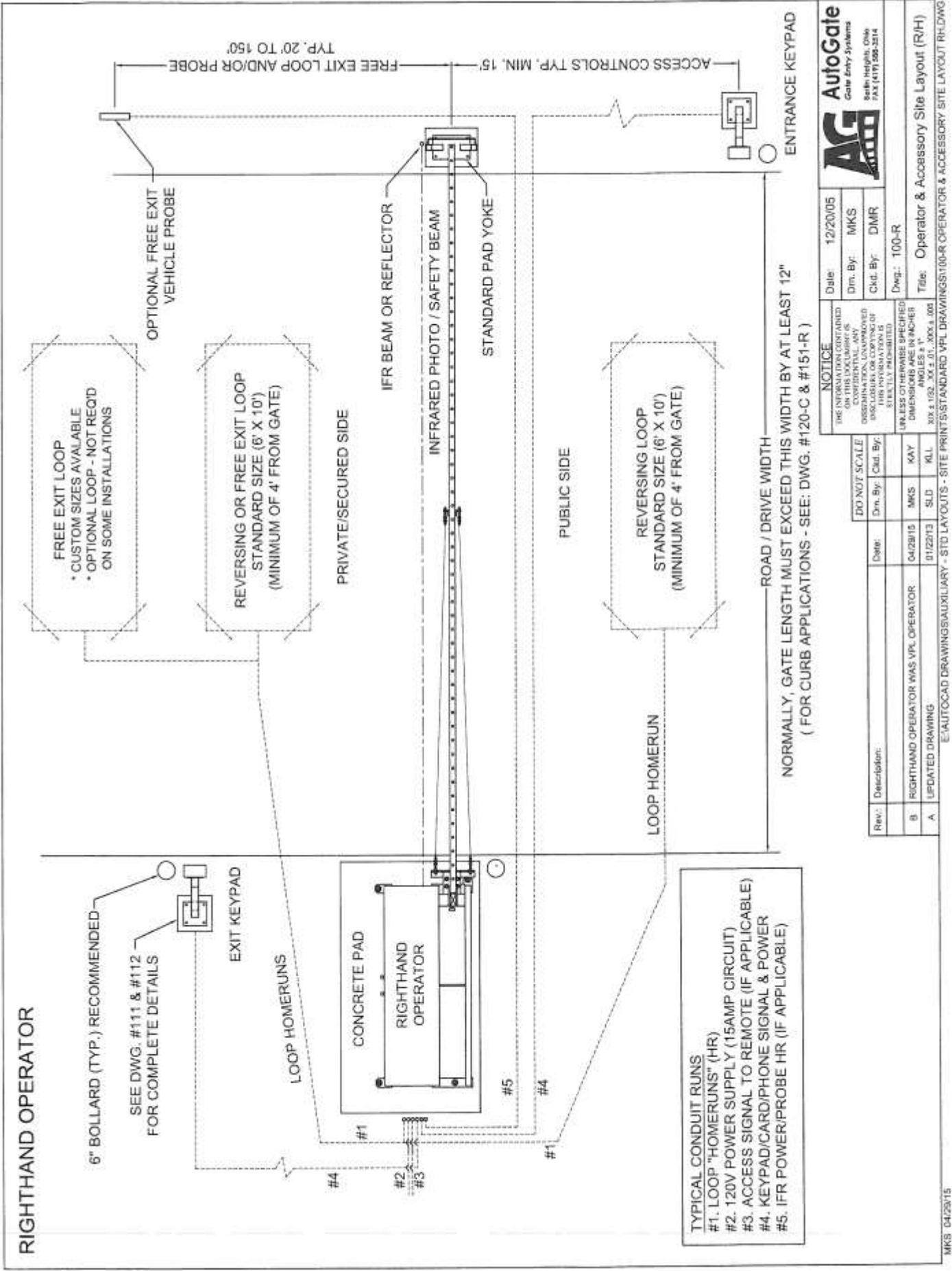
When you have the gate back in balance (within a half amp (.5) is minimal), tighten both nuts on Slide Assembly threaded rod.



Control Board Replacement

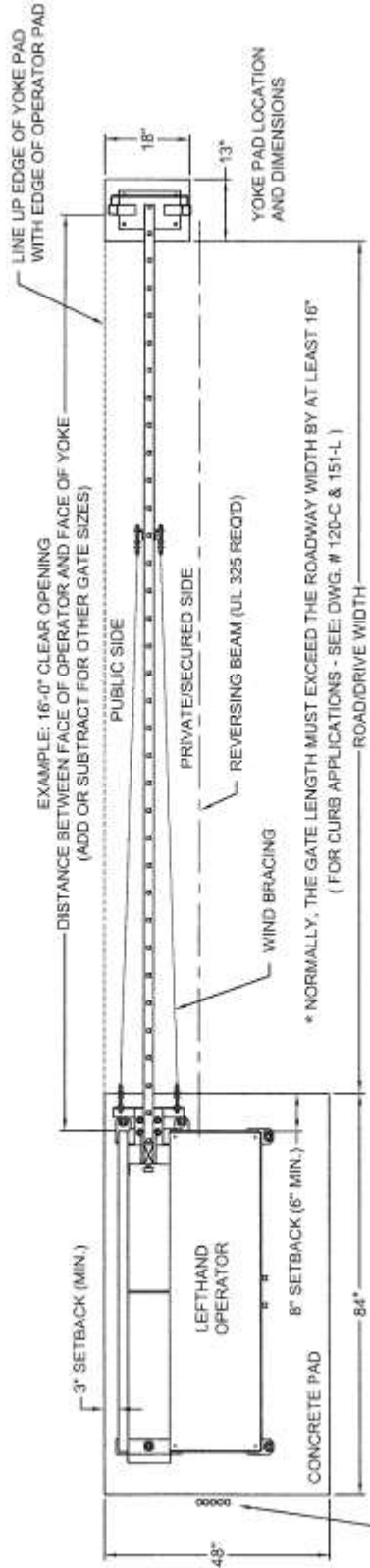
- Turn ALL power off (**AC & DC**) to the board.
- Remove (slide off) J2 "Open & Close" Limit Switch Terminal strip.
- Remove (slide off) Accessories 1 through 12 Terminal strip.
- Carefully remove the wires for the 24 VDC Acc. Power, Battery Power, AC Power & Motor wires.
- Take the board off the Standoffs and remove the two (2) mounting bolts and replace with your NEW circuit board and put all wires and connections back in the same place.

Double check the D.I.P. switch settings to be sure they are the same as your original board.



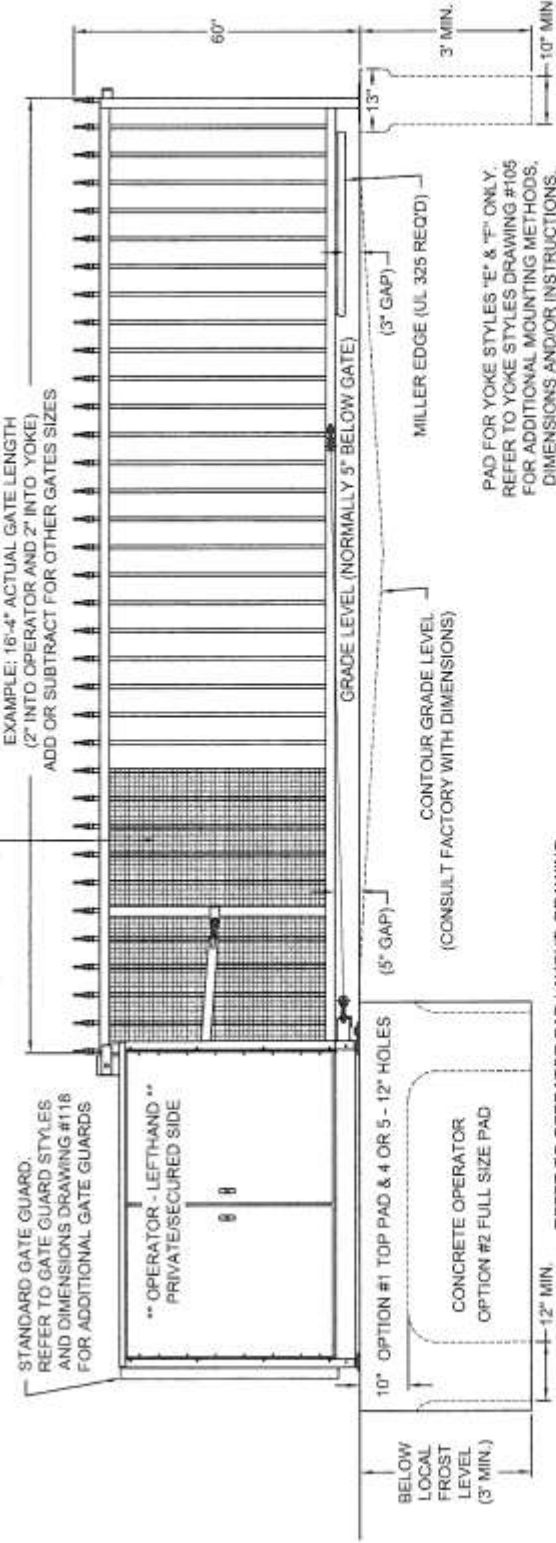
LEFTHAND OPERATOR

EXAMPLE SHOWN: 16' X 5' BUCKEYE STYLE 500 GATE
(GATE SIZE AND STYLE MAY VARY)



* NORMALLY, THE GATE LENGTH MUST EXCEED THE ROADWAY WIDTH BY AT LEAST 16" (FOR CURB APPLICATIONS - SEE: DWG. # 120-C & 151-L.)

REFER TO #102C-R FOR CONDUIT DETAILS



PAD FOR YOKE STYLES "E" & "F" ONLY. REFER TO YOKE STYLES DRAWING #108 FOR ADDITIONAL MOUNTING METHODS, DIMENSIONS AND/OR INSTRUCTIONS.

REFER TO OPERATOR PAD LAYOUT DRAWING #102-P FOR OPERATOR PAD OPTIONS, NOTES, DIMENSIONS AND/OR FIELD INSTRUCTIONS.



AutoGate
Gate Entry Systems
East-Heights, Ohio
Tel: (419) 882-3314

DATE: 12/21/05
DRA: MKS
CHK: DMR

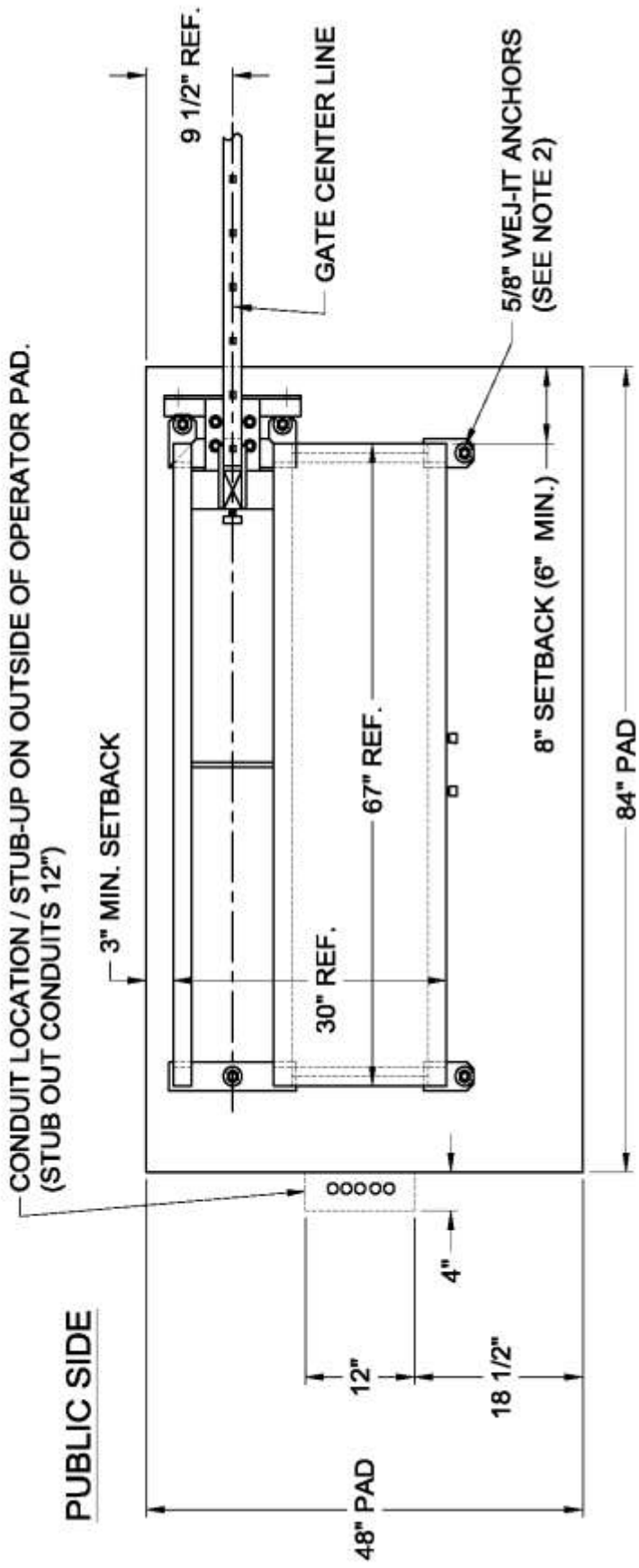
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
SCALE: 1/8" = 1'-0"

Rev.	Description	Date	Drawn By	Checked By
B	INCREASED BARRIER SCREEN COVERAGE (ICR# 010-15)	04/29/15	MKS	KAY
A	UPDATED DRAWING	01/22/13	SLD	KLL

AutoGate Standard Layout Dimensions - Lefthand

MKS 08/17/13

LEFTHAND OPERATOR



PRIVATE/SECURED SIDE

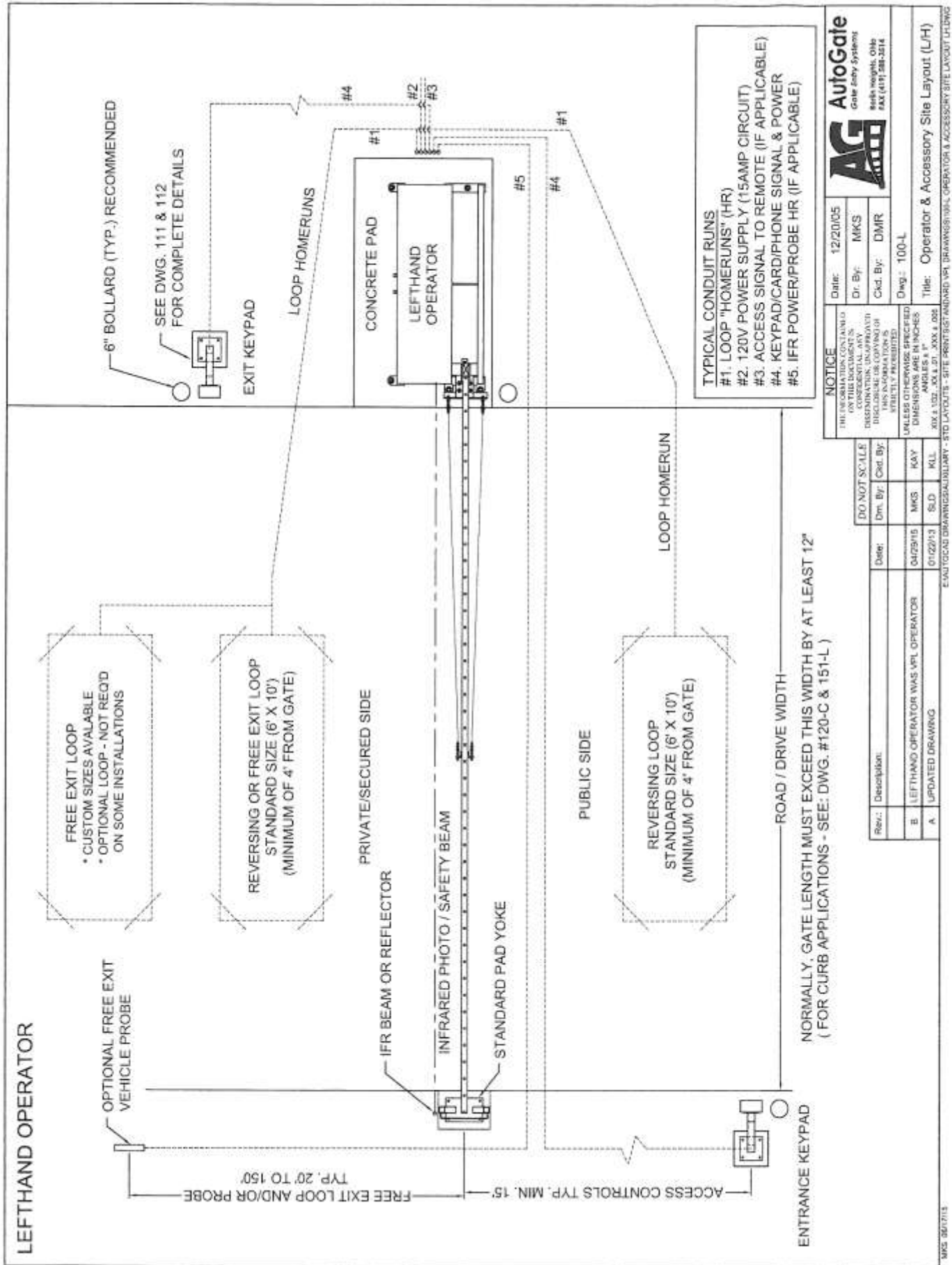
- POSSIBLE CONDUITS * (USE 3/4" CONDUIT ONLY) *
- * 120 VAC, MIN. 15 AMP CIRCUIT * FREE EXIT LOOP
- * "ENTRANCE" KEYPAD * OFFICE COMMUNICATION
- * "EXIT" KEYPAD * IFR BEAM POWER
- * REVERSING/SAFETY LOOPS * OPTIONAL SPARES

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

Rev.	Description	Date	Drawn By	Checked By	DO NOT SCALE	NOTICE	Date	Drawn By	Checked By	DWG	Title
D	COMBINED INFORMATION FROM 102-L	07/18/08	KAY	MKS	THE INFORMATION CONTAINED ON THIS DOCUMENT IS CONFIDENTIAL. ANY DISCLOSURE OR COPYING OF THIS INFORMATION IS STRICTLY PROHIBITED.	12/07/05	MKS	DMR	102C-L	Conduit Pad Location (Lefthand)	
C	LEFTHAND OPERATOR WAS VPL OPERATOR	04/28/03	KAY	KAY	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ANGLES ± 1°						
B	UPDATED DRAWING	01/23/03	SLD	DMR							
A	CONDUIT LOCATIONS WERE MOVED OUTSIDE THE PAD	07/18/08	MKS	DMR							

MKS 07/18/16 E:\AUTOCAD DRAWINGS\AUXILIARY - STD LAYOUTS - SITE PRINTS\STANDARD VPL DRAWINGS\102C-L CONDUIT PAD LOCATION LHD.DWG



AG AutoGate
Gate Entry Systems
Buckeye, Ohio
FAC (419) 281-2114

Dir: 12/20/05	Dir: MKS
Dr. By: MKS	Cr. By: DMR
Dwg: 100-L	
Title: Operator & Accessory Site Layout (L/H)	

NOTICE

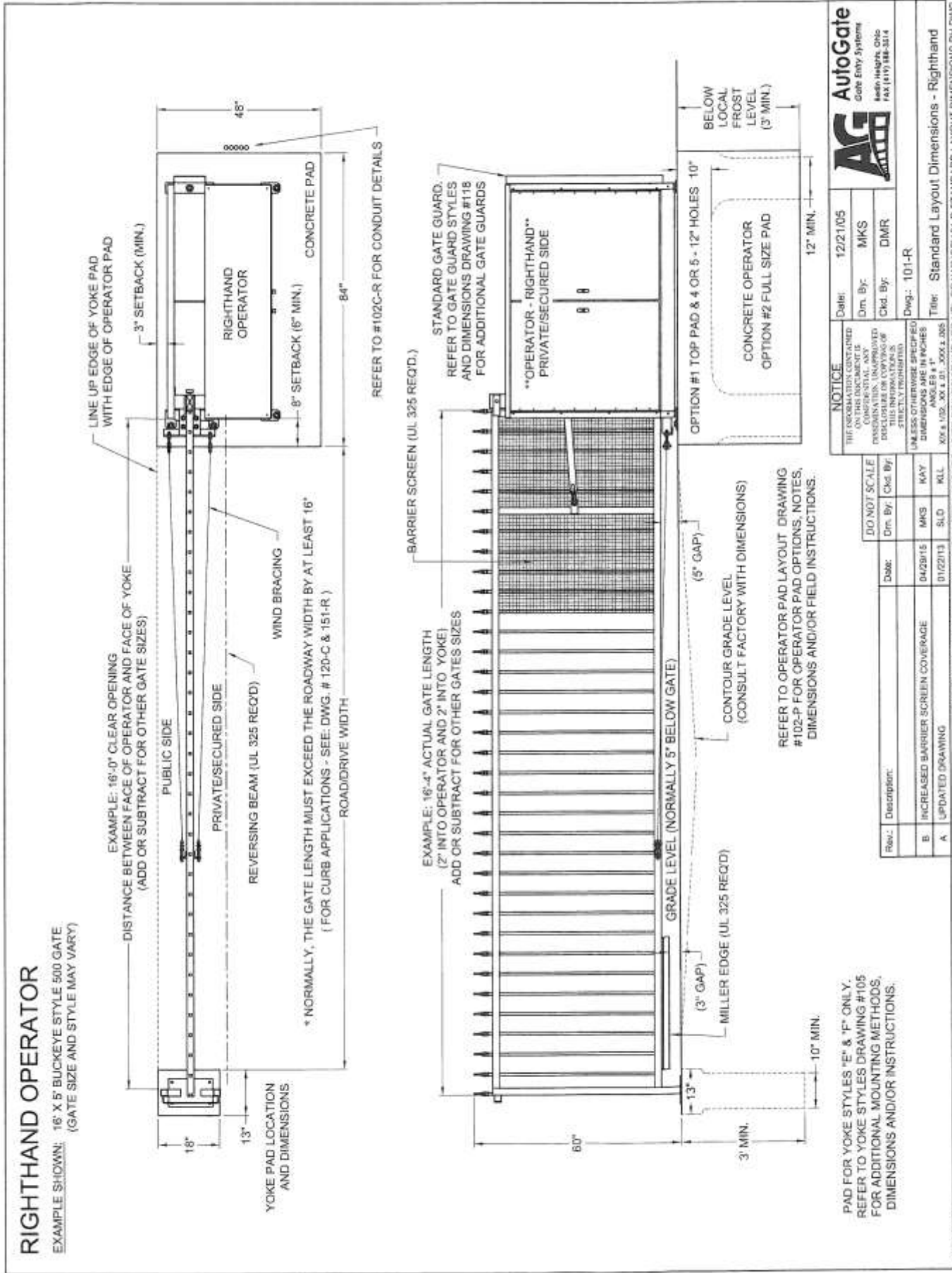
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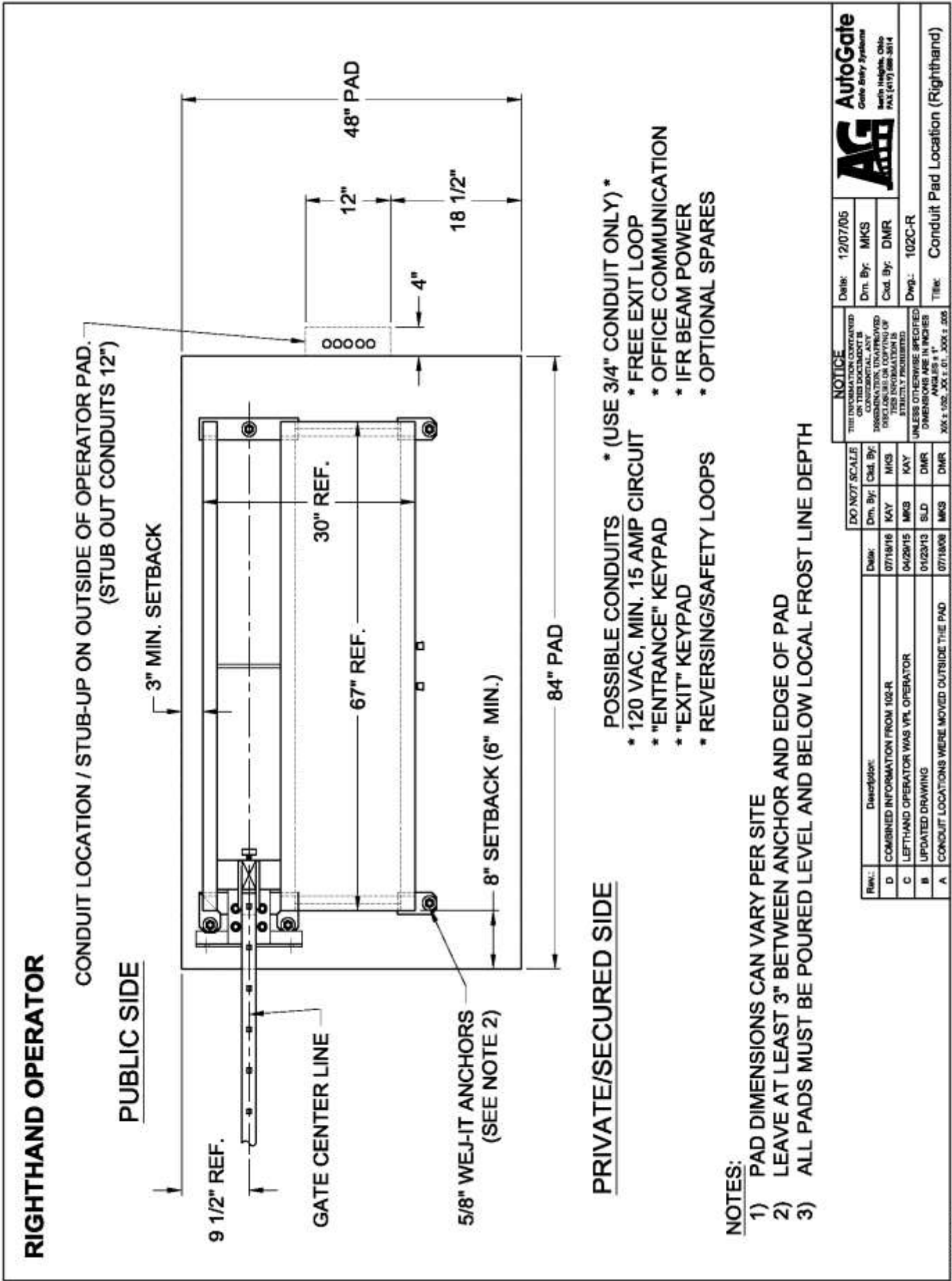
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.

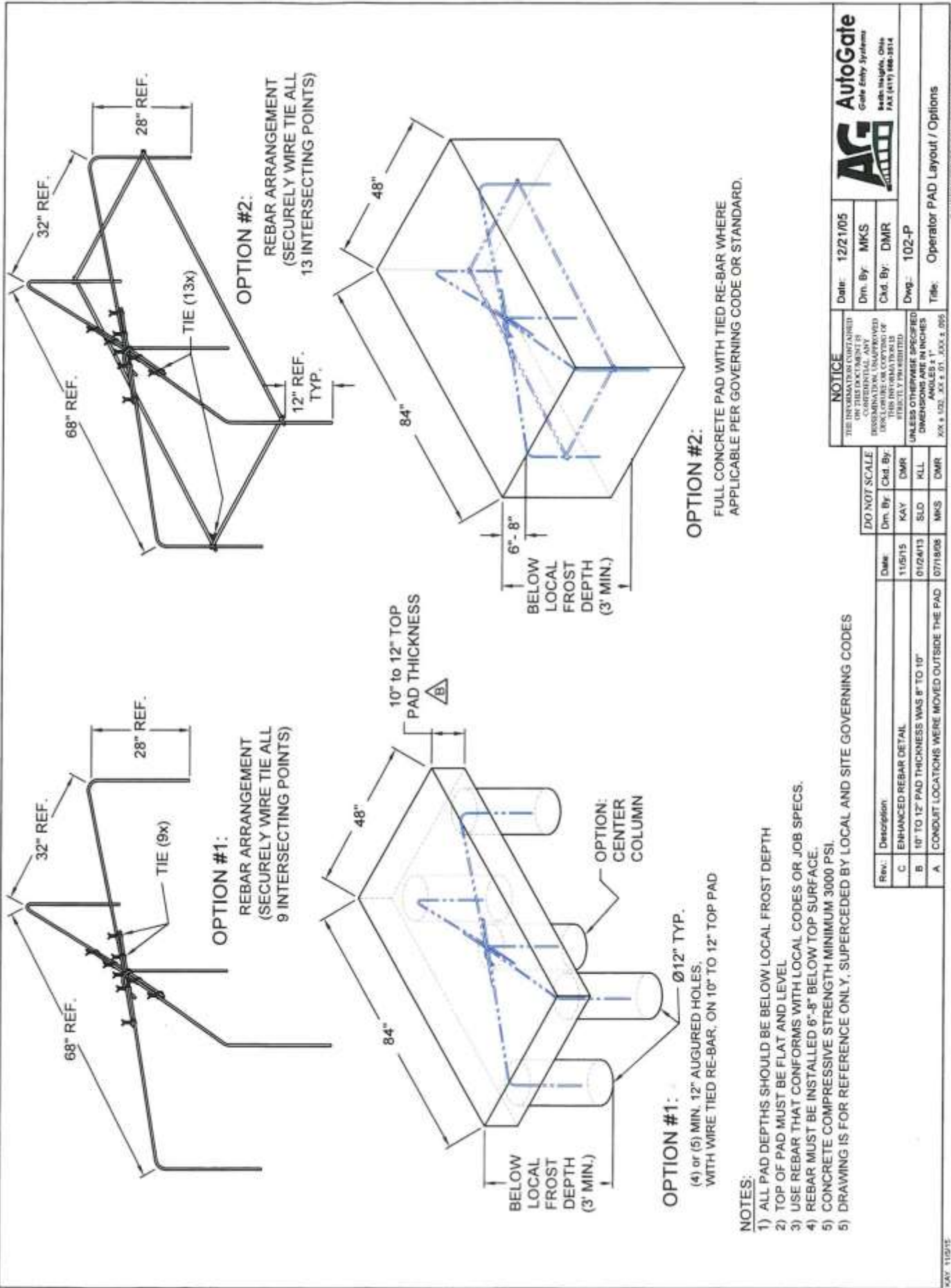
XIX & XX - XX L.O.T. XXX & 028

EVALUATED DRAWING/ALTERNATE - STD LAYOUTS - SITE PRINTS/STANDARD VPL DRAWINGS/OPERATOR & ACCESSORY SITE LAYOUT L/H/DWG

Rev.	Description	Date	Dim.	By	Cr.	By
B	LEFTHAND OPERATOR WAS VPL OPERATOR	04/29/15	MKS	MKS	KAY	KAY
A	UPDATED DRAWING	01/22/13	SLD	KLL	KLL	KLL







- NOTES:**
- 1) ALL PAD DEPTHS SHOULD BE BELOW LOCAL FROST DEPTH
 - 2) TOP OF PAD MUST BE FLAT AND LEVEL
 - 3) USE REBAR THAT CONFORMS WITH LOCAL CODES OR JOB SPECS.
 - 4) REBAR MUST BE INSTALLED 6'-8" BELOW TOP SURFACE.
 - 5) CONCRETE COMPRESSIVE STRENGTH MINIMUM 3000 PSI.
 - 5) DRAWING IS FOR REFERENCE ONLY, SUPERCEDED BY LOCAL AND SITE GOVERNING CODES

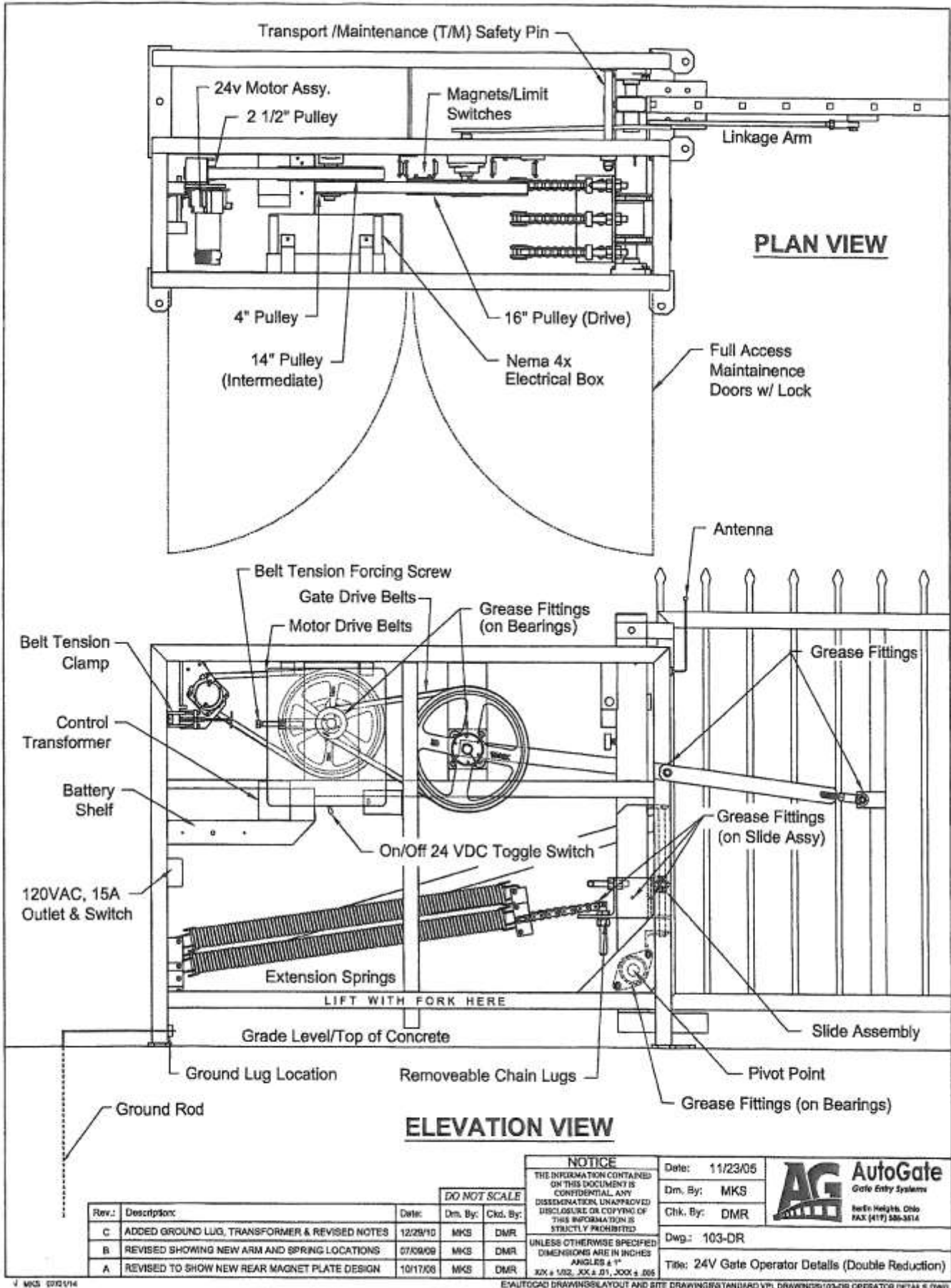
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 ANGLES ± 1°
 XX ± .02; .XX ± .01; .XXX ± .005

AG AutoGate
 Gate Entry Systems
 8400 Ingleton, Ohio
 FAX: (419) 860-3514

Date: 12/21/05
 Dwn. By: MKS
 Cld. By: DMR
 Dwg: 102-P
 Title: Operator PAD Layout / Options

Rev.	Description	Date	Dwn. By:	Cld. By:
C	ENHANCED REBAR DETAIL	11/5/15	KAY	DMR
B	10" TO 12" PAD THICKNESS WAS 8" TO 10"	01/24/13	SLO	KLL
A	CONDUIT LOCATIONS WERE MOVED OUTSIDE THE PAD	07/18/08	MKS	DMR

KAY 11/5/15 © 2008 AUTO GATE SYSTEMS, INC. ALL RIGHTS RESERVED. 102-P PAD LAYOUT.DWG



Rev.:	Description:	Date:	Drn. By:	Chk. By:
C	ADDED GROUND LUG, TRANSFORMER & REVISED NOTES	12/28/10	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

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 ANGLES ± 1°
 XXX ± .002, .XXX ± .01, .XXX ± .005

Date: 11/23/05
 Drn. By: MKS
 Chk. By: DMR
 Dwg.: 103-DR



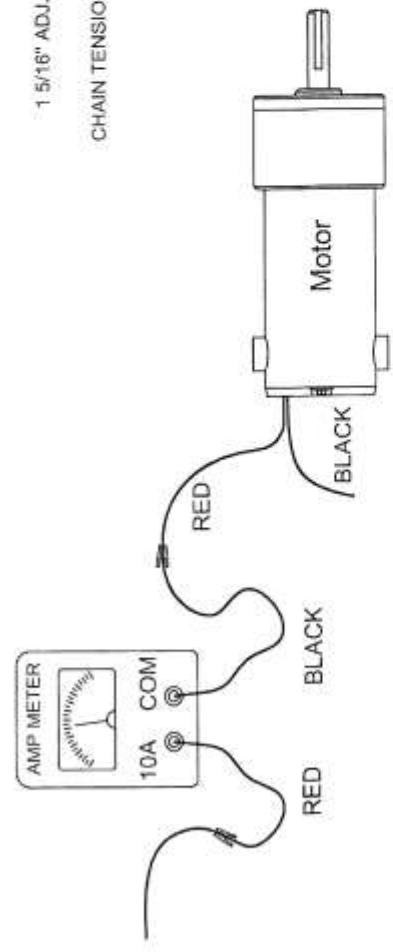
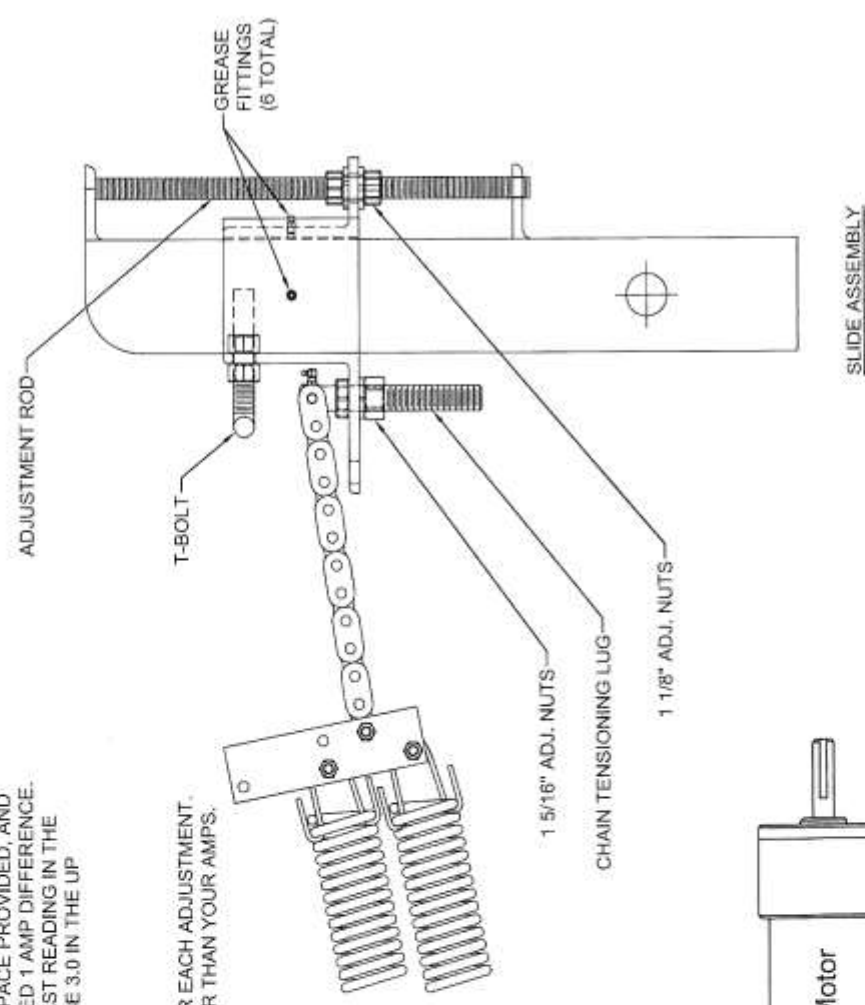
Title: 24V Gate Operator Details (Double Reduction)

J MKS 07/09/14

E:\AUTOGAG DRAWINGS\LAYOUT AND SITE DRAWINGS\STANDARD VPL DRAWINGS\103-DR OPERATOR DETAILS.DWG

TESTING AMPERAGE:

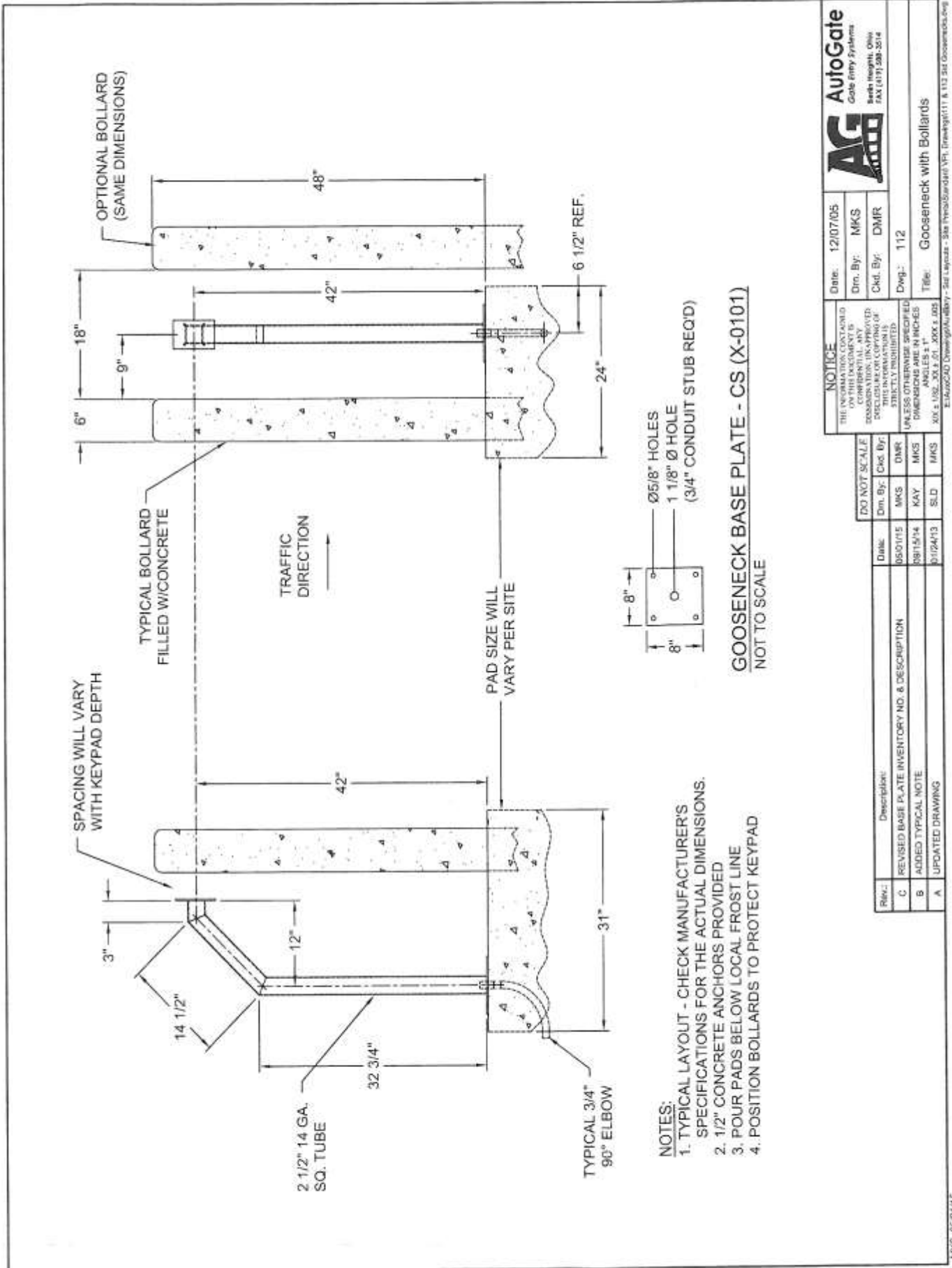
1. CONNECT AMP METER IN SERIES BY REMOVING THE WIRE NUT FROM THE RED MOTOR LEAD.
2. CYCLE GATE UP AND DOWN RECORDING THE HIGHEST AMPERAGE IN THE SPACE PROVIDED, AND ADJUST IF NECESSARY. HIGHEST UP & DOWN READING SHOULD NOT EXCEED 1 AMP DIFFERENCE. FOR EXAMPLE: IF YOUR HIGHEST READING IS 6.5 IN THE UP, 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"

		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 UNAPPROVED FOR RELEASE OR DISTRIBUTION WITHOUT THE EXPRESS WRITTEN PERMISSION OF AG. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. ANGLES ± 1°.	
Description:		DDO NOT SCALE	
C	Black motor wire was blue and added thread details	Dwn. By:	MKS
B	Revised motor and slide assembly to current style	Ckd. By:	DMR
A	General Revision - new Title Block	Dwn. By:	MKS
		Ckd. By:	DMR

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



AutoGate
Gate Entry Systems
North Heights, Ohio
FAX (419) 208-2014

AG

Date: 12/07/05
Dwn. By: MKS
Ckd. By: DMF
Dwg.: 112
Title: Gooseneck with Bollards

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DIMENSIONS ARE IN INCHES
XREF: 30 & 31, XXX & 305

DO NOT SCALE
Date: 05/01/15
Dim. By: MKS
Ckd. By: DMF
08/15/14
KAY
MKM
01/24/13
SLD
MKM

Rev.	Description	Date	Dim. By	Ckd. By
C	REVISED BASE PLATE INVENTORY NO. & DESCRIPTION	05/01/15	MKS	DMF
B	ADDED TYPICAL NOTE	08/15/14	KAY	MKM
A	UPDATED DRAWING	01/24/13	SLD	MKM

MKS: 05/01/15

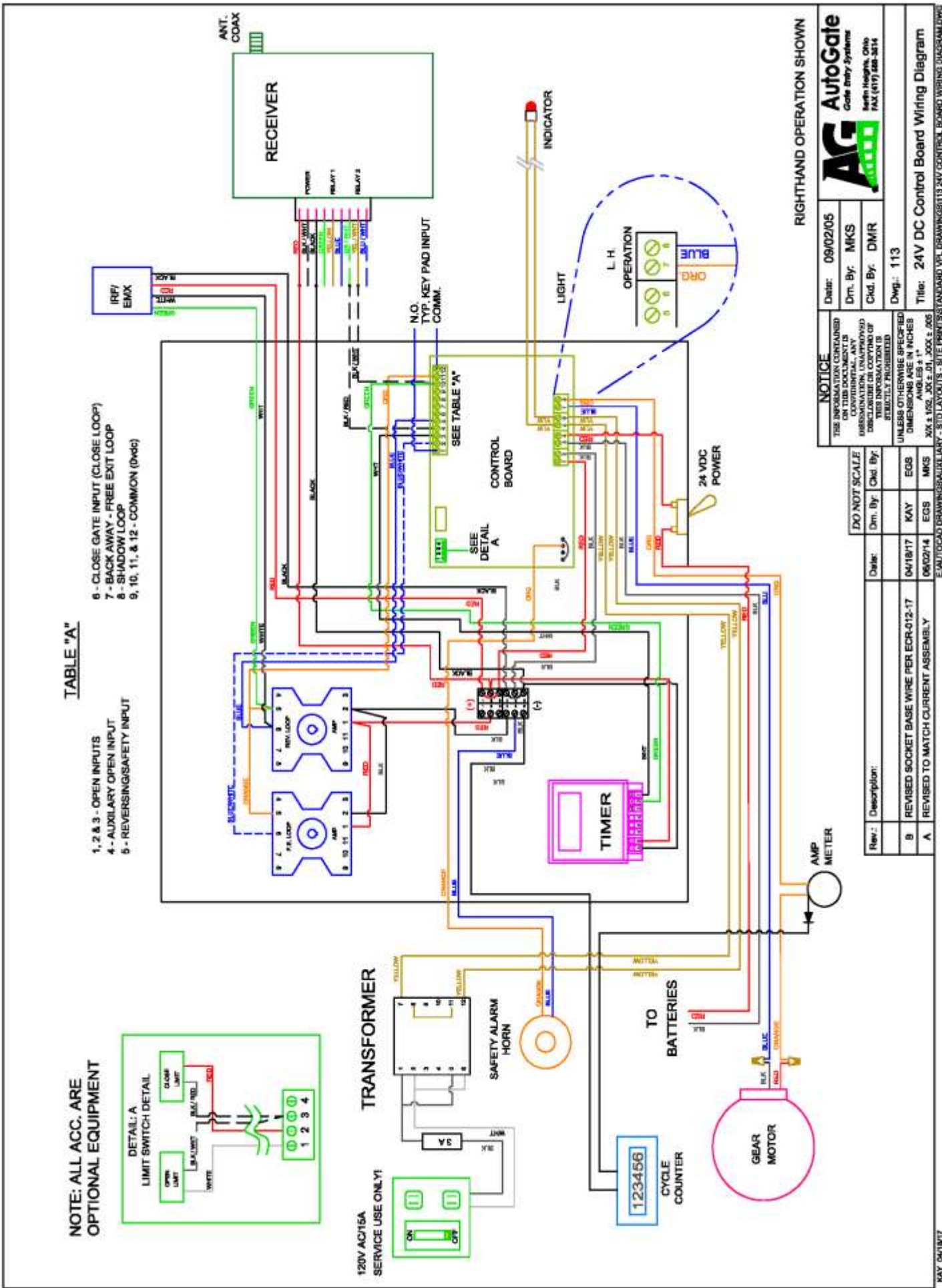
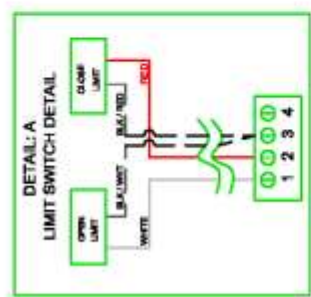


TABLE "A"

- 1, 2 & 3 - OPEN INPUTS
- 4 - AUXILIARY OPEN INPUT
- 5 - REVERSING/SAFETY INPUT
- 6 - CLOSE GATE INPUT (CLOSE LOOP)
- 7 - BACK AWAY - FREE EXIT LOOP
- 8 - SHADOW LOOP
- 9, 10, 11, & 12 - COMMON (Dvdc)

NOTE: ALL ACC. ARE OPTIONAL EQUIPMENT



AutoGate
Gate Entry Systems
North Heights, Ohio
FACT (419) 486-5814

Date: 09/02/05
Dwn. By: MKS
Cld. By: DMR
Dwg.: 113

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XX ± .05; .XX ± .01; .XXX ± .005

Rev.	Description:	Date:	Dwn. By:	Cld. By:
B	REVISED SOCKET BASE WIRE PER ECR-012-17	04/18/17	KAY	EGG
A	REVISED TO MATCH CURRENT ASSEMBLY	06/02/14	EGG	MKS

RIGHTHAND OPERATION SHOWN

Title: 24V DC Control Board Wiring Diagram

MAY 04/18/17

