

up and down directions. When settling into the down position, the Barrier Gate should clear the ramp modules without obstruction. If necessary, use a pry bar to adjust the location of any ramp module that prevents clear travel of the Barrier Gate into the ramp recess. It is essential that the travel of the Barrier Gate be verified prior to the installation of any anchor bolts. When Gate travel has been confirmed, insert anchor bolts in Control Cabinet, all ramp segments, and the Non-Control Cabinet. Ensure that anchors are installed in all locations of all components.



Figure 45 – Titen Head Anchor Bolt

| Tool Required | Tool Type | Tool Specification |
|---------------|---|---|
| | Hammer Drill or similar for concrete drilling | |
| | Concrete Bit | 5/8" masonry bit. Drill a minimum depth of 4" |
| | Air Compressor or similar | To remove dust and debris from drilling |
| | Wrench/Socket | 15/16" |
| | Concrete Anchors | 5/8" x 4" Titen Head Screw Anchor Zinc, Part Number THD62400H |

Section 3 – Hydraulic, Electrical, and Control Installation

3.1 Hydraulic Hose Installation

The factory pre-installs a set of hydraulic hoses to the Hydraulic Cylinder in the Control Cabinet. After the Barrier Gate ramps have been installed, adjusted and anchored, the two hydraulic hoses are threaded from the Control Cabinet through the ramps to the Non-Control Cabinet. Once routed through the ramps, the two hoses are attached to the Hydraulic Cylinder in the Non-Control Cabinet.

The two hoses that are to be threaded through the ramp are coiled up in the Control Cabinet as shown below. Start this portion of the installation by uncoiling the hydraulic hoses and extending them fully to ensure that there are no kinks or bends in the hoses.

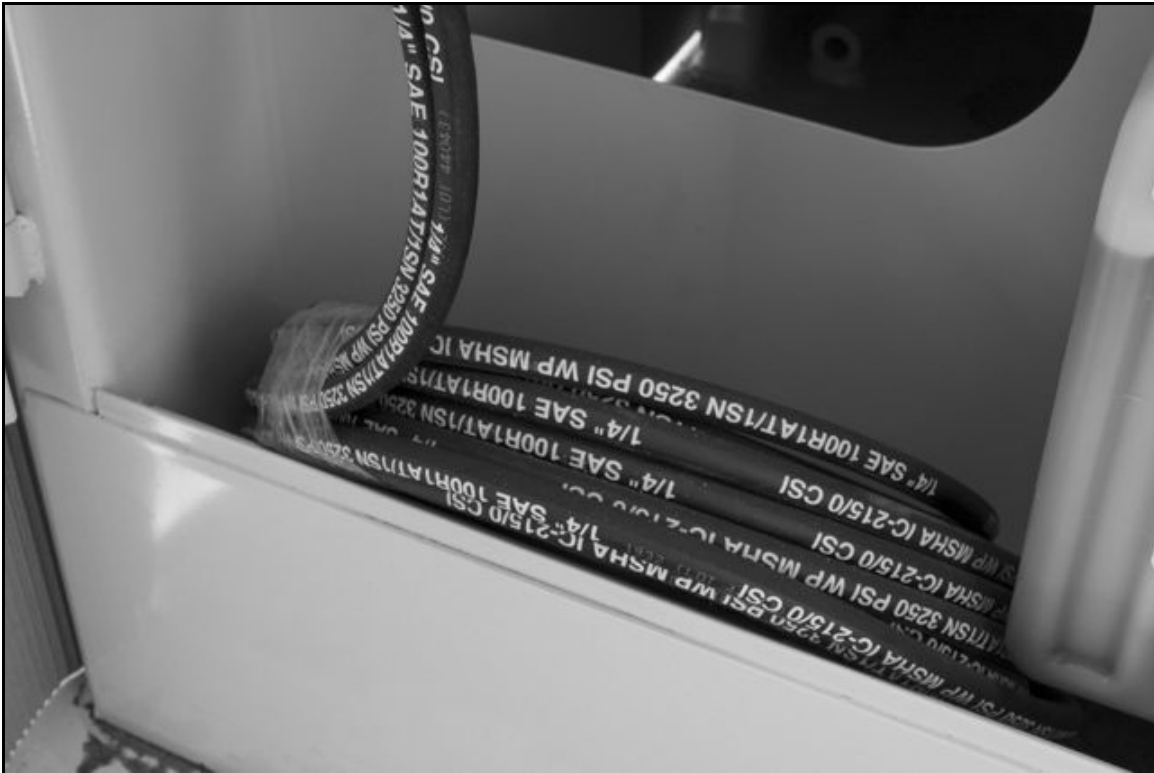


Figure 46 – Hydraulic Hose Location, As Shipped, Inside Control Cabinet

To connect the hydraulic hoses to the Hydraulic Cylinder in the Non-Control Cabinet, extend a fish tape through the recess of the ramps from the Non-Control Cabinet side to the Control Cabinet side. Carefully attach the hydraulic hoses to the fish tape using electrical or other strong tape. From the Non-Control Cabinet side, carefully pull the fish tape and hydraulic hoses through the ramp assemblies as shown below. When the hoses have been fully extended, remove the fish tape from the hydraulic hoses.

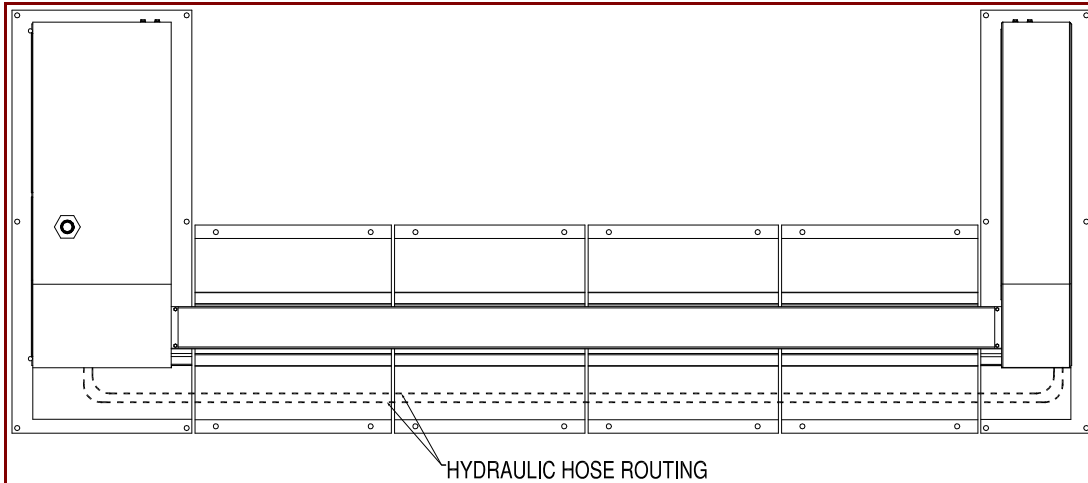


Figure 47 – Two Hydraulic Hoses Routed Through Ramp Gates to Non-Control Cabinet

| Tool Required | Tool Type | Tool Specification |
|---------------|--------------------------|--|
| | Fish Tape | 15' minimum for CBG-100, up to 25' for CBG-180 |
| | Tape (Electric or other) | Electric or other strong tape to attach 2 hydraulic hoses to fish tape |

When the hoses have been extended through the ramps to the Non-Control Cabinet, carefully route the hoses to the location of the Hydraulic Cylinder ensuring that there are no kinks or sharp bends in the hydraulic hoses.

Attach the hydraulic hoses to the Hydraulic Cylinder in two locations as shown below.

NOTE – Both hydraulic hoses are color coded to correspond to color codes on the hydraulic cylinder. Ensure that the RED coded hose is attached to the RED coded location on the hydraulic cylinder in the Non-Control Cabinet. In a similar fashion, ensure that the GREEN coded hose is attached to the GREEN coded location on the hydraulic cylinder in the Non-Control Cabinet.

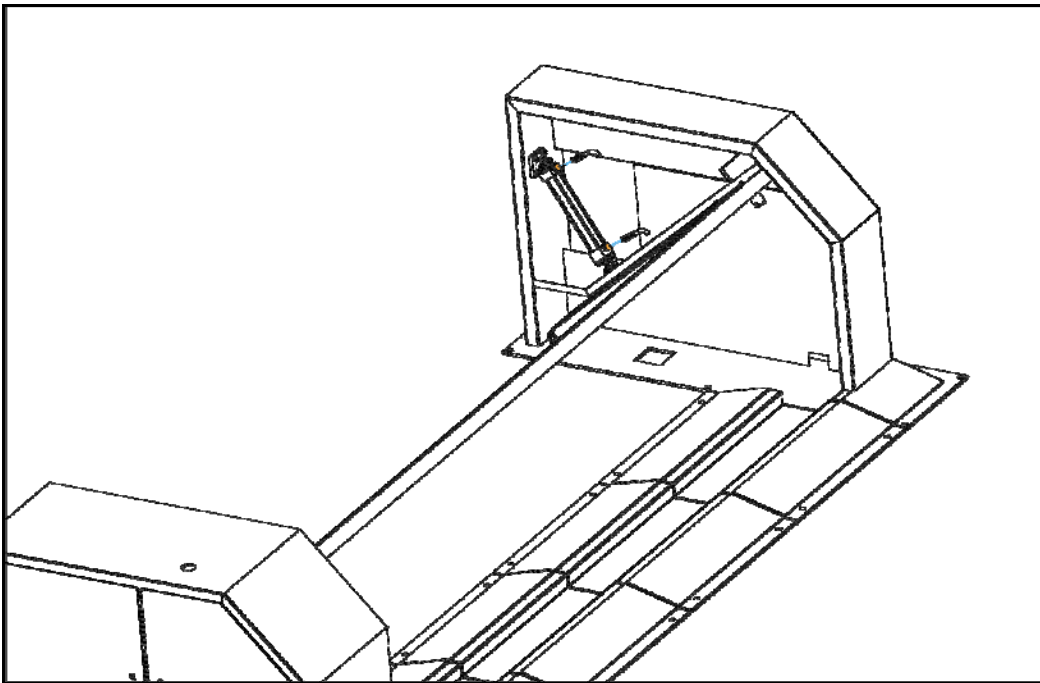


Figure 48 – Hydraulic Hose Connection, Non-Control Cabinet

| Tool Required | Tool Type | Tool Specification |
|---------------|-----------|--|
| | Wrench | 9/16" to attach Hydraulic Hoses, 2 locations |

3.2 Hydraulic System Bleeding

NOTE – When the Hydraulic Cylinder has been attached to the Barrier Gate, and the two hydraulic hoses have been attached to the cylinder on the Non-Control Cabinet, it is necessary to bleed hydraulic system to ensure air has been evacuated from the lines and the system.

The Spike Systems CBG family removes air from the hydraulic lines through normal use of the system. However, after installing the hydraulic hoses and cylinders, it is often advisable to manually bleed or purge air from the system. To do this, place a 3/8" drain hose on the upper bleeder valve in the Non-Control Cabinet, place the other end of the bleeder hose in a waste container, open the bleeder valve and operate the Barrier Gate up and down (manually) until air no longer comes through the bleeder tube. To avoid performing this step manually, which requires the lifting and lowering of the Barrier Gate, hydraulic system bleeding can be performed after the installation is complete by using AC power to lift and lower the Barrier Gate.

WARNING -- Use extreme caution to avoid injury if using AC power to raise and lower the Barrier Gate when performing hydraulic system bleeding.

When air has been purged from the hydraulic system, retighten the bleeder valves, remove the drain hose and clean any hydraulic fluid that may have dripped inside either Cabinet.

| Tool Required | Tool Type | Tool Specification |
|---------------|----------------------|---|
| | Wrench | 3/8" |
| | 3/8" Rubber Hose | To attach to the bleeder valve for bleeding air from hydraulic system |
| | Disposable container | To capture hydraulic fluid that may be released while bleeding |
| | Rag | To clean area inside cabinets of any hydraulic fluid |

3.3 Verify Proper Alignment of Upper Limit Switch within Control Cabinet

Verify that the Barrier Gate, when elevated, makes proper contact with upper limit switch in the Control Cabinet. (Note that the Non-Control Cabinet does not have limit switches.)

It may be necessary to make a slight adjustment to the upper control limit switch location by bending the bracket slightly to ensure proper contact with the Barrier Gate arm in the raised position.

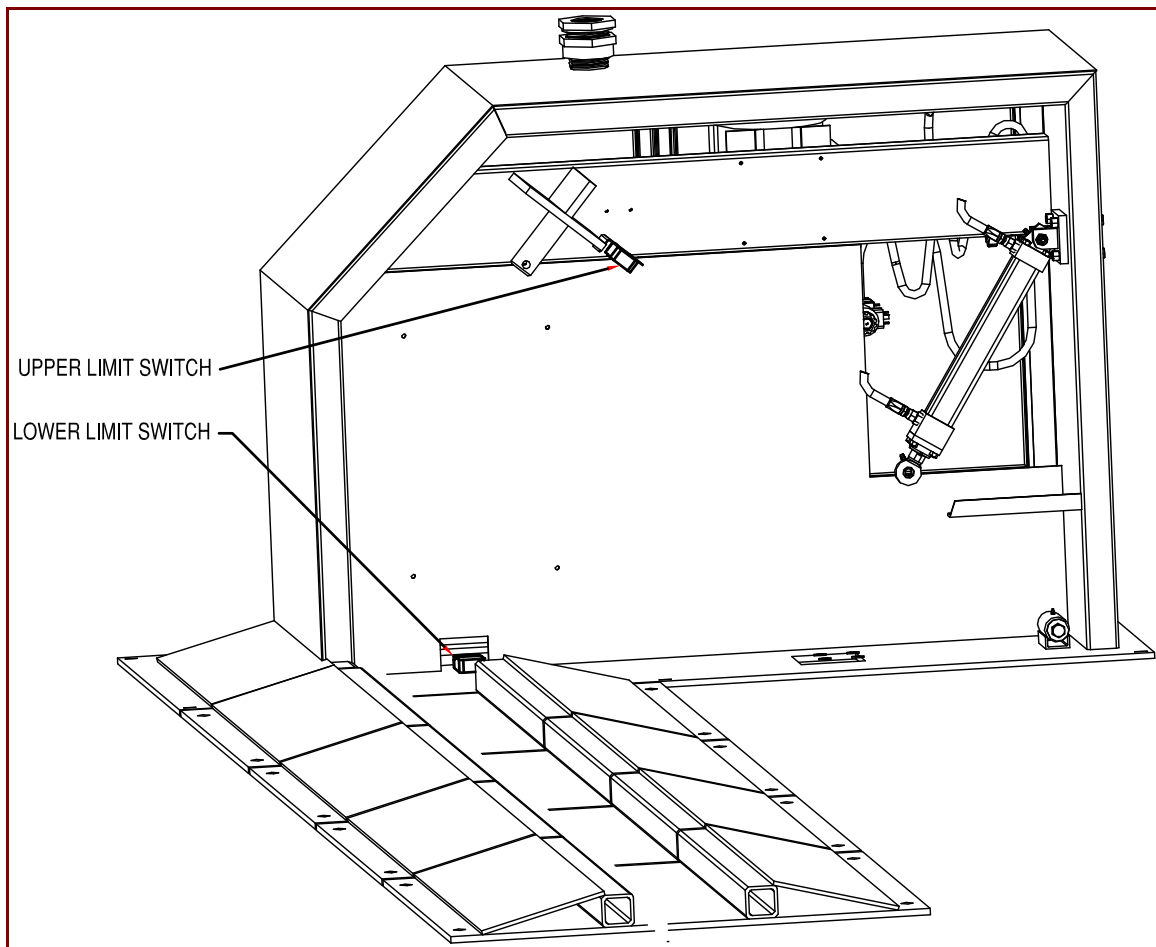


Figure 49 – View of Upper and Lower Limit Switches, Control Cabinet



Figure 50 – Location of Upper Limit Switch, Control Cabinet



Figure 51 – Location of Lower Limit Switch, Control Cabinet, Reference Only

3.4 Replace Inside Panels for Control and Non-Control Cabinets

At this time, replace the inner panels of both the Control and Non-Control Cabinets as shown in the figure below.

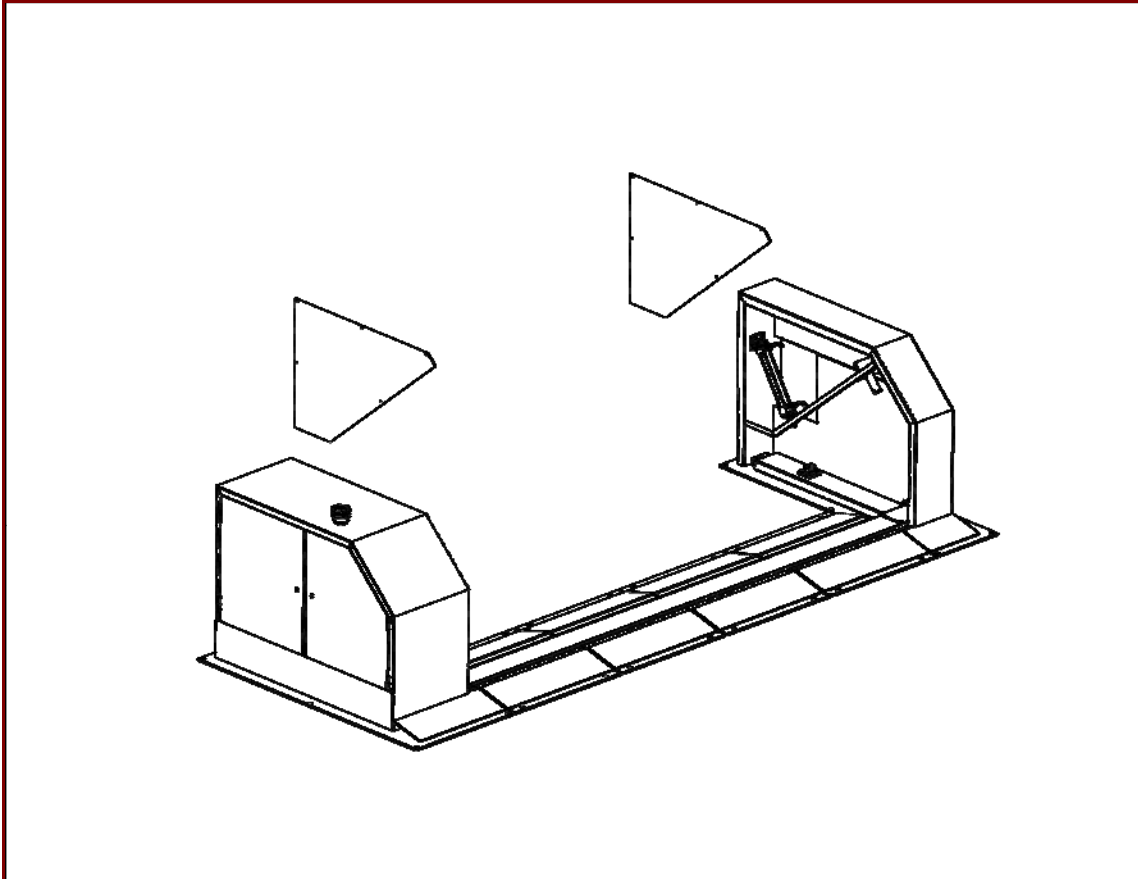


Figure 52 – Replacement of Inner Panels Control and Non-Control Cabinets

| Tool Required | Tool Type | Tool Specification |
|---------------|---------------|--------------------|
| | Wrench/Socket | 7/16 " |

3.5 Reflective Tape Installation on Barrier Gate

With a lint-free cloth, carefully clean the area of the Barrier Gate where the reflective adhesive tape will be applied.

Starting from the Control Cabinet side, peel off the backing of the adhesive tape and secure the tape to the Barrier Gate squarely and evenly. Ensure that no air bubbles are present as the tape is applied. If needed, trim any excess reflective tape on the Non-Control Cabinet side of the Barrier Gate.

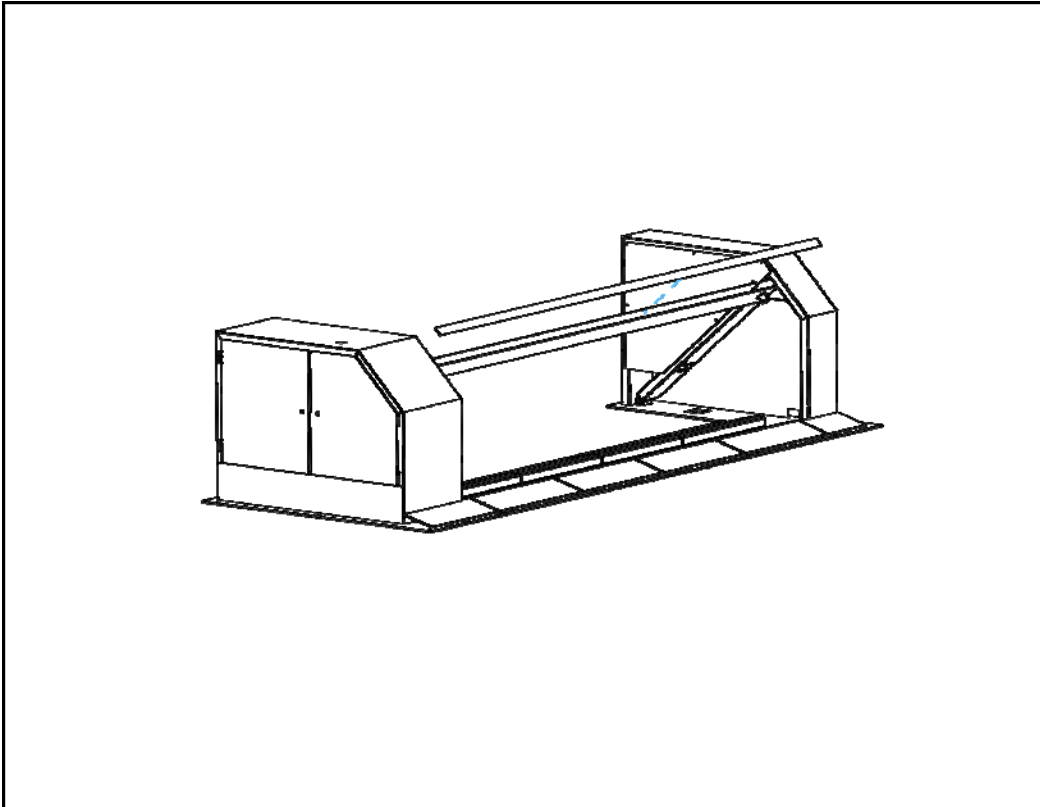


Figure 53 – Reflective Tape Application, Crash Barrier Gate

| Tool Required | Tool Type | Tool Specification |
|---------------|-------------------|---|
| | Lint Free Cloth | To clean and prepare surface where tape to be applied |
| | Razor or Scissors | To trim safety tape, if required |
| | Reflective Tape | Provided |

3.6 AC Power Connection

The client-supplied power is to be connected to the 4-gang junction box via flexible conduit. The flexible conduit and power wires are to be routed through the bottom of the junction box in the location shown in the photo below. Local code may require that a licensed electrical contractor perform this step.

NOTE – The Switch on the 4-gang junction box, when switched to the ON position, allows power to flow to the Spike system from the AC power source.

WARNING -- When servicing the system, this switch should be placed in the OFF position and the power going to the junction box should be shut off at the breaker box. When AC power is OFF at this switch and breaker box, voltages may still be present within the Spike System Control Box. Use caution.

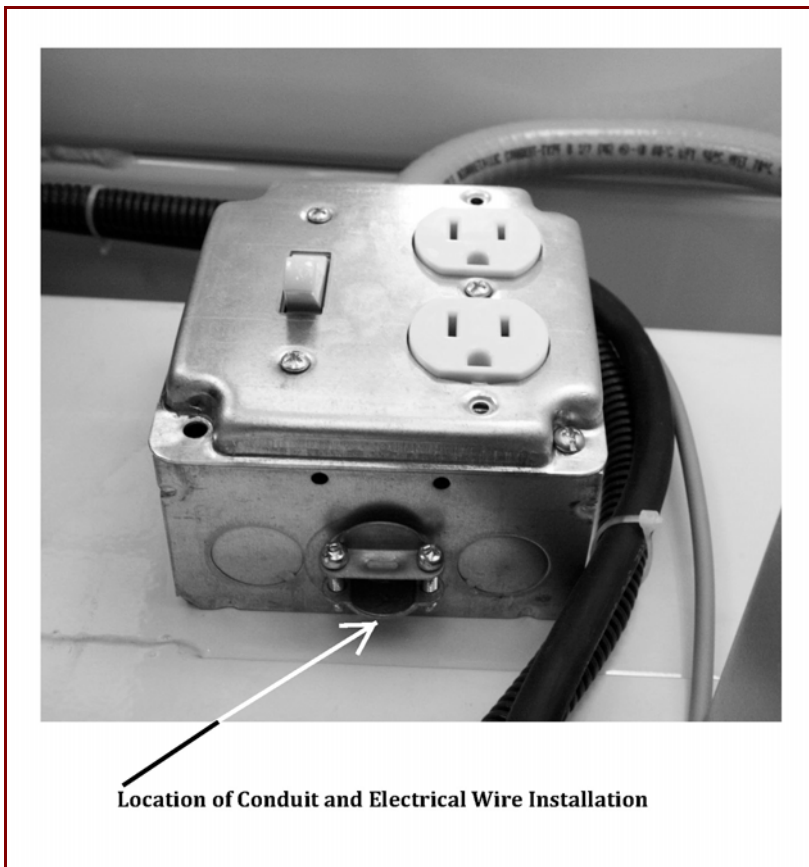


Figure 54 – AC Power Junction Box Inside Control Cabinet

| Tool Required | Tool Type | Tool Specification |
|---------------|-------------------------|---|
| | Flexible Conduit | To connect power conduit stub-up to 4 gang box |
| | Conduit Fitting | To connect flexible conduit to client-installed rigid conduit |
| | Flat Blade Screw Driver | To open junction box and terminate power cables |
| | Wire Strippers | To make electrical connection (Licensed contractor) |

The figure below shows a typical routing of the flexible conduit that will provide power to the CBG system. A locally licensed electrical contractor should perform electrical power connection to the Spike System.

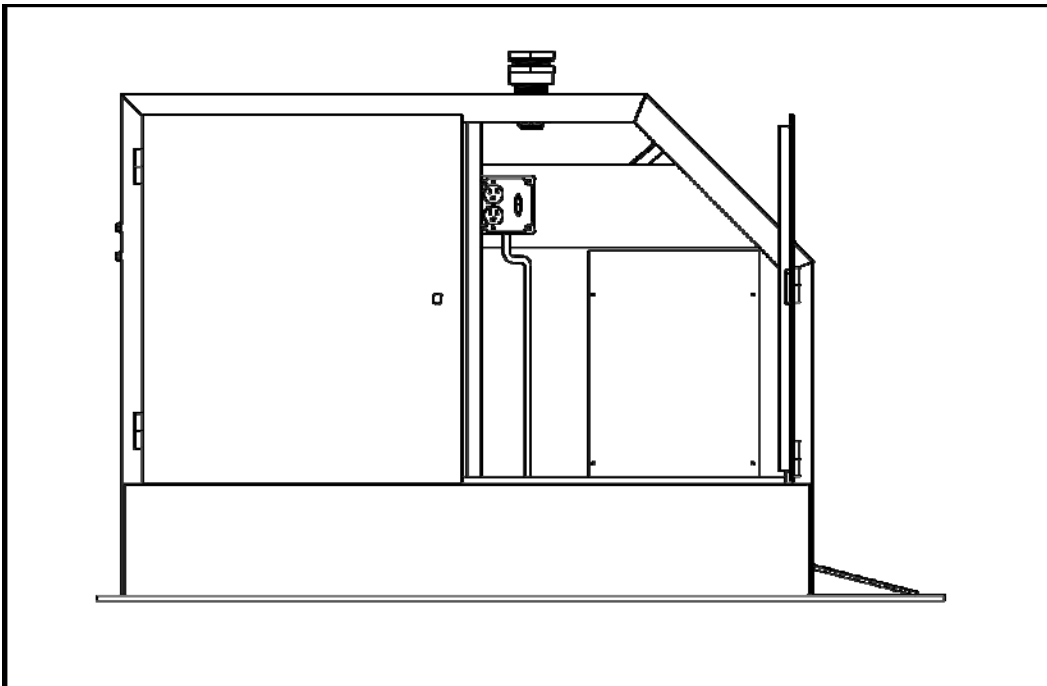


Figure 55 – Location of Flexible Conduit Installation to AC Junction Box, Control Cabinet

3.7 Traffic Control Signal Mounting

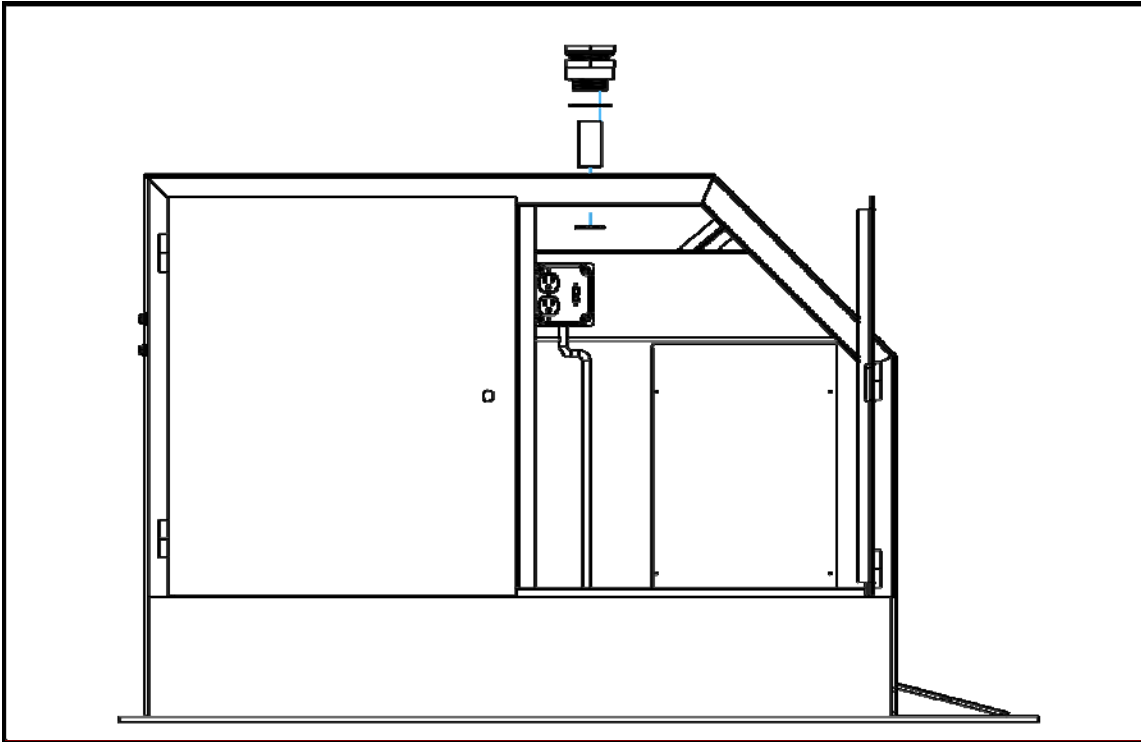


Figure 56 – Location of Traffic Control Mounting Adapter, Control Cabinet

Install the traffic control light fixture as shown in the figure above. This step is often performed at the factory. However, field installers should ensure that the flange is sealed with UV resistant silicon or other method to ensure that moisture does not enter the Control Cabinet. Thread the wires for the signal through the pole and flange for attachment at the control panel.

| Tool Required | Tool Type | Tool Specification |
|---------------|------------------------------------|---|
| | Channel Locks | Large size to secure mounting hardware |
| | Silicon UV-Resistant Sealant/Caulk | To ensure tight, water-resistant coupling |

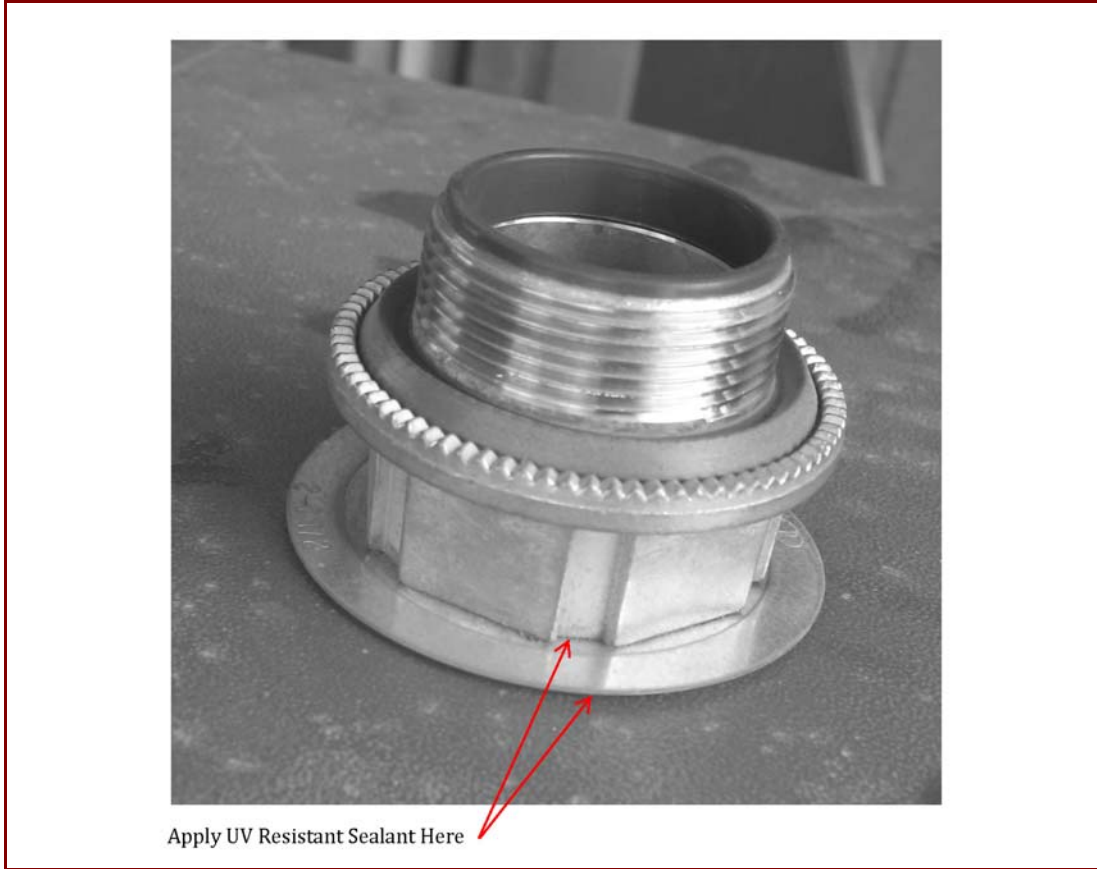


Figure 57 – Sealant Locations for Traffic Control Mounting Adapter, Control Cabinet

3.7.1 Wiring for Traffic Control Signal

As shown in the figure below, the wiring for the traffic control signal terminates on TB2 (terminal block on right side). The yellow light signal connects to terminal 9, the red light signal wire connects to terminal 10, and the common wire connects to terminal 47.

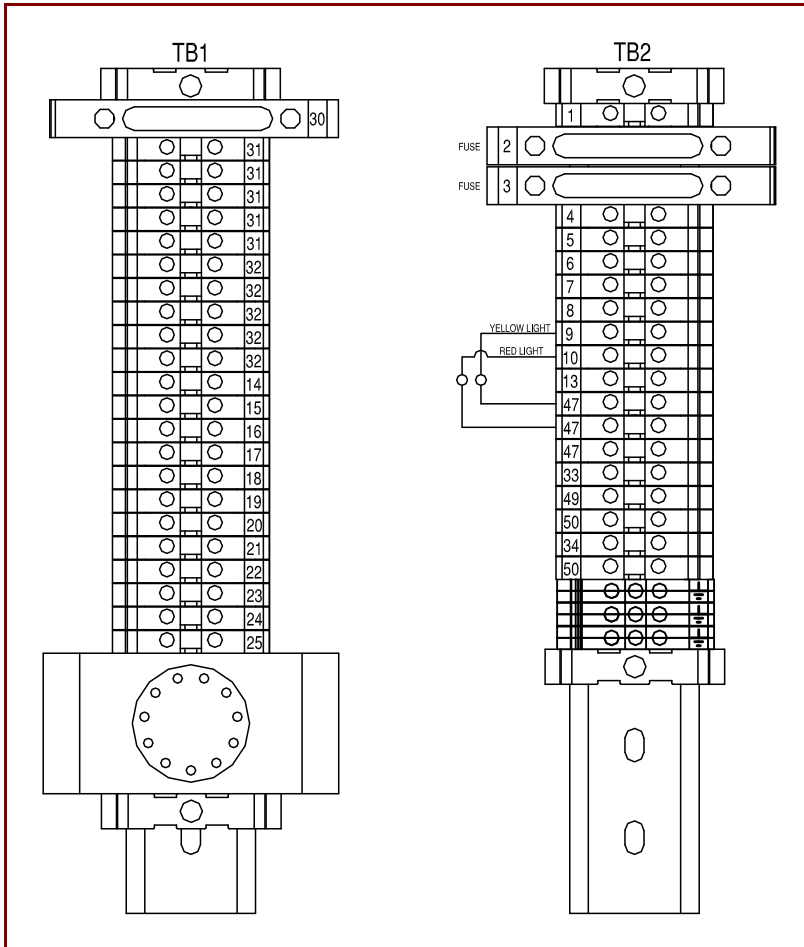


Figure 58 – Traffic Control Signal Wiring

| Tool Required | Tool Type | Tool Specification |
|---------------|----------------|----------------------------------|
| | Screw Driver | Flat, Small |
| | Wire Strippers | If required for cable connection |

3.8 Wiring for Remote Operating Switch (Guard Shack, Typically)

As indicated in the figure below, a field connection barrier operated switch or control is wired to TB2. The Common wire is attached to terminal 4, the Open wire is attached to terminal 5, and the Close wire is attached to terminal 6.

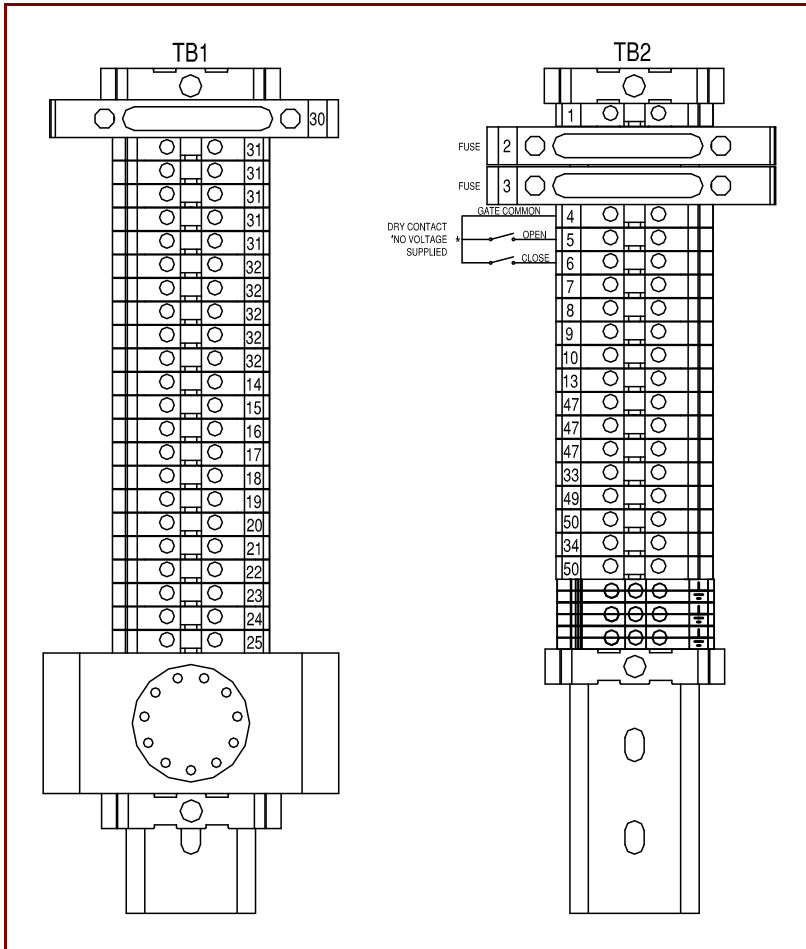
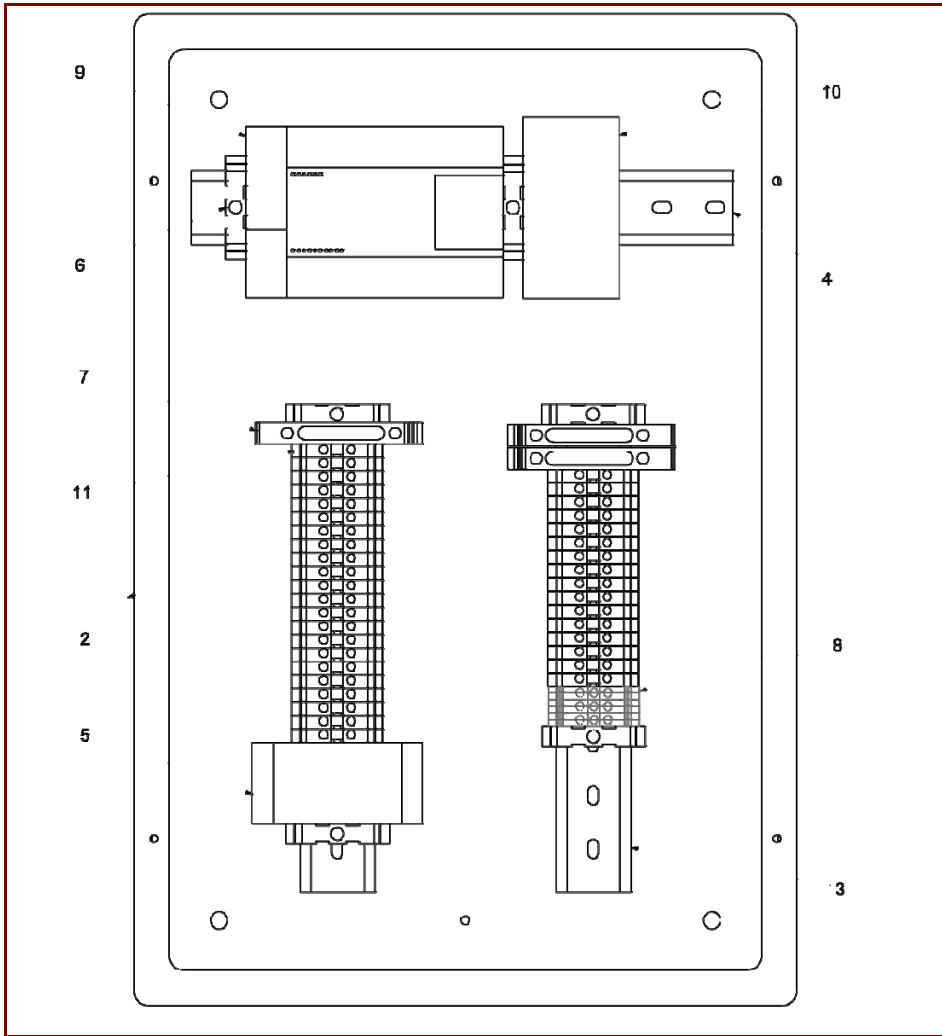


Figure 59 – Installation Location of Field Connection Barrier Operator

| Tool Required | Tool Type | Tool Specification |
|---------------|----------------|----------------------------------|
| | Screw Driver | Flat, Small |
| | Wire Strippers | If required for cable connection |

3.9 Installation Electrical Reference Information



| | | | |
|----|----|-------------------------|------------------|
| 11 | 38 | PHOENIX CONTACT 3044102 | TERMINAL BLOCK |
| 10 | 1 | SIEMENS 3RT1024-1A | SIRIUS CONTACTOR |
| 9 | 1 | SIEMENS S7-200 | MICRO PLC |
| 8 | 3 | PHOENIX CONTACT 3044128 | GROUND BLOCK |
| 7 | 3 | PHOENIX CONTACT 3004100 | FUSE BLOCK |
| 6 | 6 | PHOENIX CONTACT 0800866 | END STOP |
| 5 | 1 | RELECO S2-S | C2 RELAY |
| 4 | 1 | PHOENIX CONTACT 5400261 | 10 IN. DIN RAIL |
| 3 | 2 | PHOENIX CONTACT 5400261 | 9 IN. DIN RAIL |
| 2 | 1 | PIN JCKX | CONTROLLER BOX |
| 1 | 1 | CONTROLLER | CONTROLLER |

Figure 61 – Electronic Control Panel Components, Control Cabinet

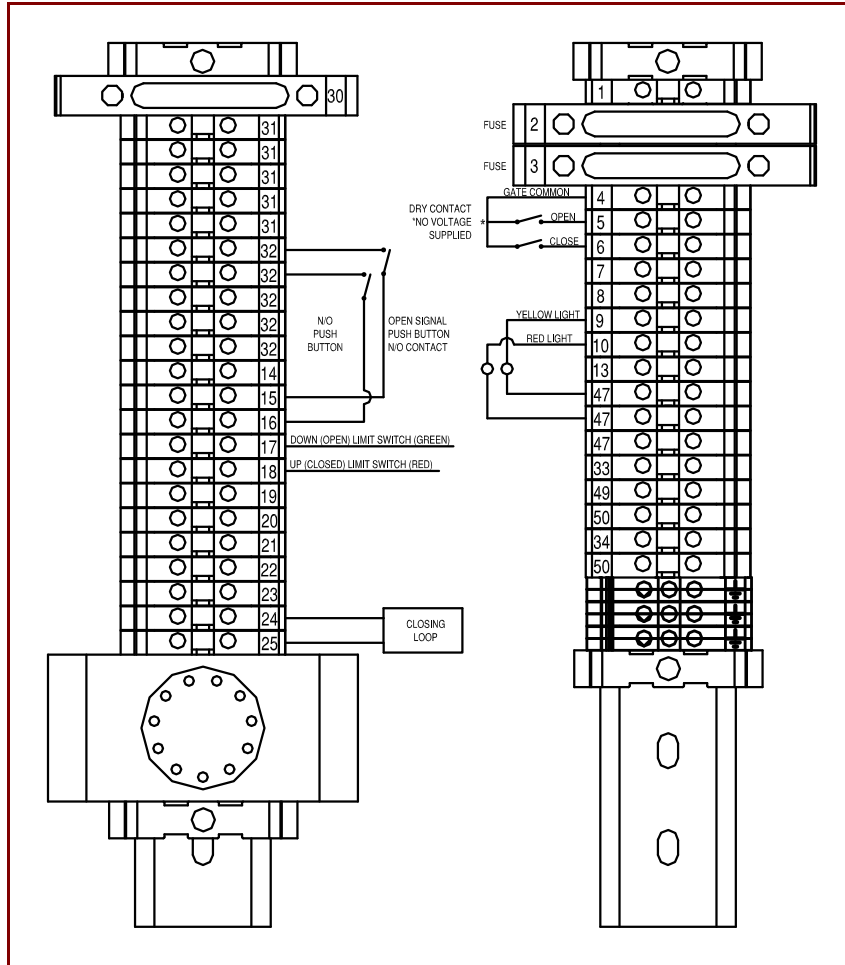


Figure 62 – Electronic Control Panel Terminal Blocks, Control Cabinet

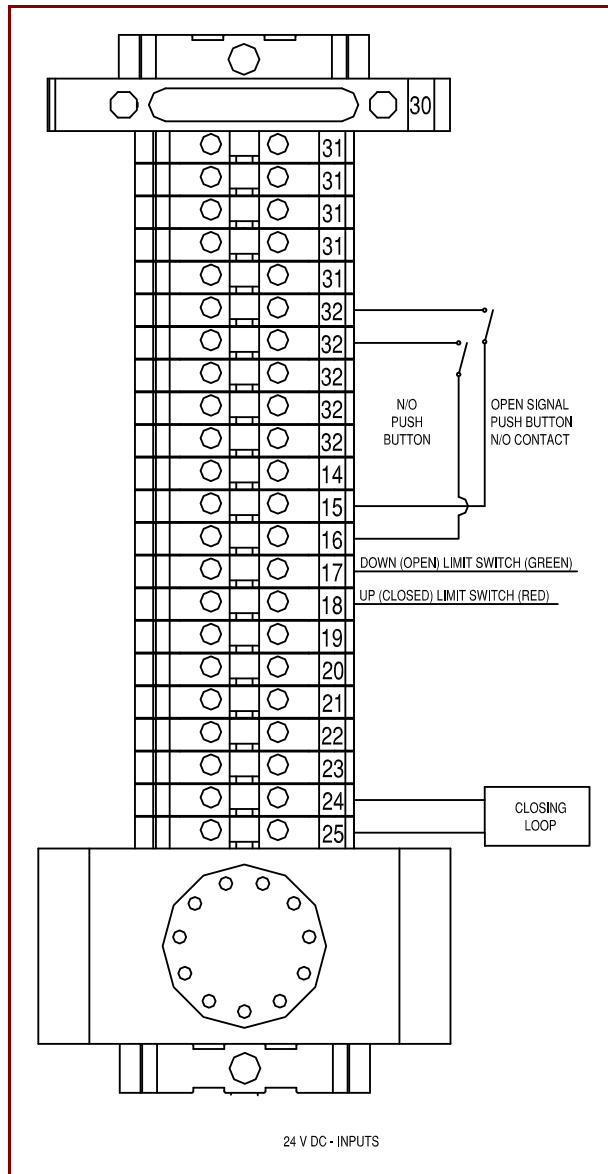


Figure 63 – 24 VDC Wiring Diagram, Control Cabinet

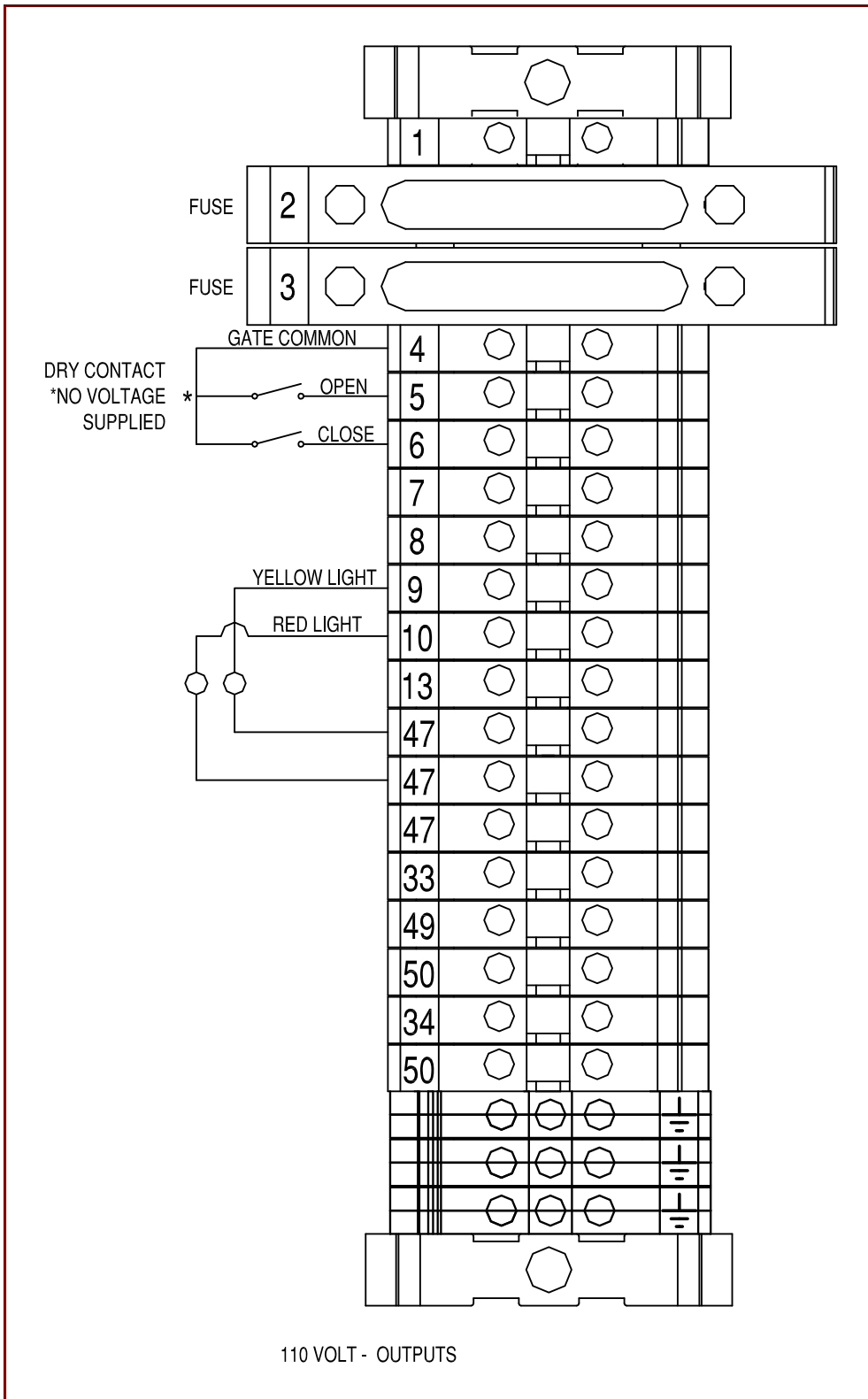


Figure 64 – 110 VAC Wiring Diagram, Control Cabinet

Section 4 - System Operation and Maintenance

4.1 Barrier Gate Manual Operation

When all electrical connections have been made for the system, including all options, apply power to the system via the AC circuit breaker. Next, ensure that the power switch on the 4-gang electrical junction box is placed in the ON position.

Before testing the remote access devices (for example from a control shack), it is recommended that the system operation be tested using the manual operating switch, located on the outside of the electronic control compartment within the Control Cabinet. This switch is identified in the figure below. When system functionality has been verified from the manual operating switch, verify all other system controls.

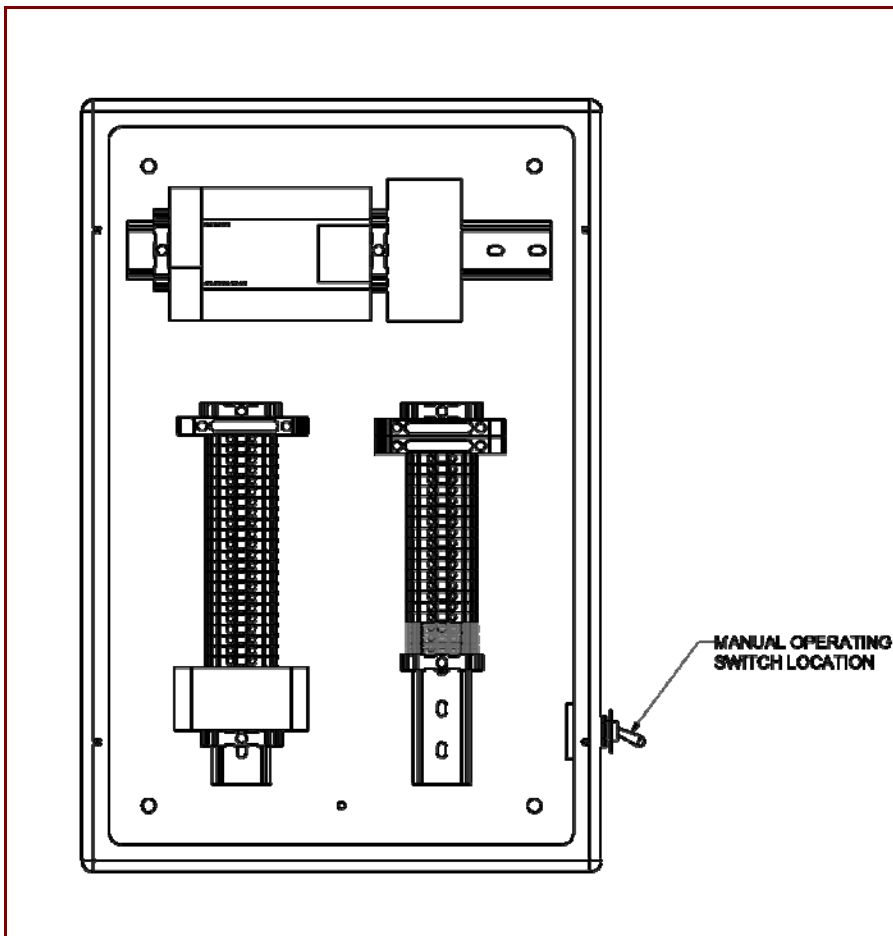


Figure 65 – Manual Operating Switch Location

4.2 Barrier Gate Emergency Operation: Manual Gate Lowering

If it ever becomes necessary to lower a Barrier Gate manually, for example in the event of power loss or other unusual situation, open the locking door on the Control Cabinet to gain access to the system hydraulic pump. As pictured below, turning the pump release valve in the clockwise direction will allow the gate to go down manually. Ensure that this valve is turned in the opposite direction (counter-clockwise) once system operation has been restored.

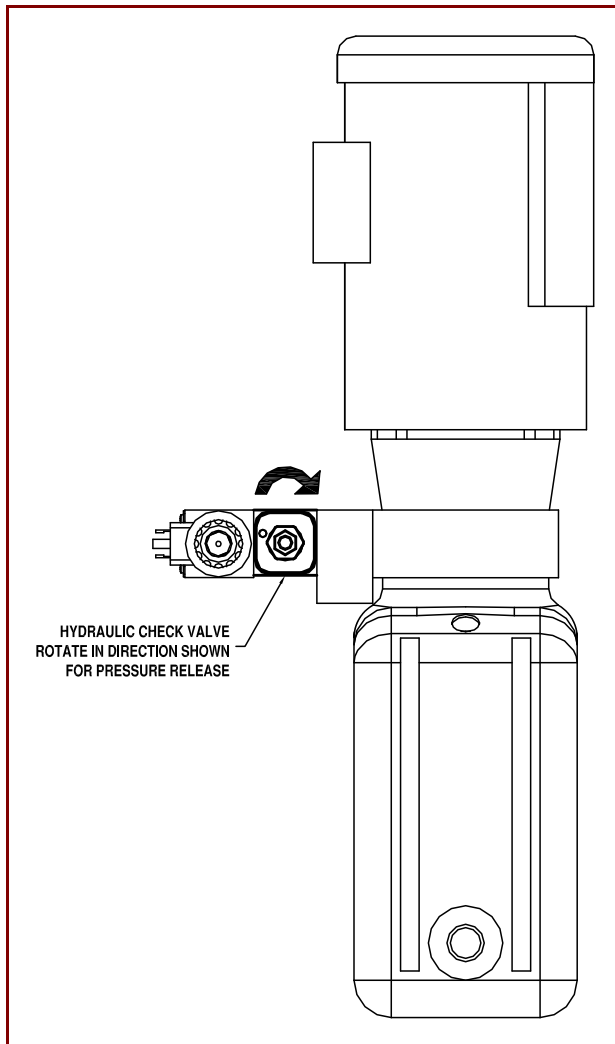


Figure 66 – Manual Gate Lowering in Case of Power Loss or Other Unusual Event

4.3 Important Hydraulic Power Unit (Pump) Information

Observations and Recommendations

When connecting AC current, please observe the indicated rotation of the electric motor. Running the motor in the opposite direction of the indication will result in

shaft seal damage. All electric connections should be done according to local standards. Failure to comply with local standards **and use of non-certified components may result in injury**. All hydraulic connections should be made, and the proper fluid should be present in the reservoir before, running the Hydraulic pump.

Seal Kits and Components

To obtain a seal kit, the model number and serial number of the powerpack is needed. Most parts are available separately, however the pump is only replaced in whole and separate trust-plates or loose shafts cannot be obtained. In order to ensure the quality and performance of our product, all Hydraulic pumps are tested for performance at the factory.

Connections

Hoses and fittings connected to the pump should be clean and free of any burs, oxidation and carbon deposits. The hydraulic connections must be of adequate pressure rating, and should be inspected on a regular basis to avoid leakage or possible bursting due to high pressure. The size of the hydraulic connections must be determined with the oil flow of the hydraulic pump in mind (1000 PSI) to avoid back-pressure in the system. This could create unwanted heat buildup. **The fluid level in the reservoir should be monitored at regular intervals.** A fluid level below the intake strainer will cause damage to the pump due to cavitations of the pump. The hydraulic pump is designed to stand vertically.

Adjustments

Since the hydraulic pump has a fixed displacement pump installed, oil flow is constant and determined by the speed of the electric motor. Therefore, the pump flow cannot be adjusted. The adjustment for the pressure relief valve will adjust pressure only. It will not increase pump flow. The relief valve is set to a pressure specified when the hydraulic pump was tested. The specified pressure applies to the specific system in which it is installed. The setting can be changed in the field and should be as close as possible to the maximum working pressure of the system. The standard pressure relief valve protects the pump; it should only be adjusted if the pressure reaches an unwanted high level. It is an emergency valve only. It should not be blocked off or turned in completely to avoid bursting of components. Adjustments are made by first removing the cap nut and loosening the lock nut. A clockwise rotation of the adjustment stem increases the pressure and a counter-clockwise rotation decreases pressure. The lock nut should be tightened after adjustment, and the cap nut should be re-installed to avoid changing the setting by vibration and to avoid hydraulic fluid leakage.

Please contact the factory if you have any questions or concerns relating to your hydraulic pump.

4.4 Barrier Gate Cable Maintenance Considerations

When new systems are shipped to an installation site, the security cable is already in place inside the Barrier Gate, and the access plates are secured. For a new installation, it is not necessary to modify the security cable in any way.

From a maintenance perspective, if a vehicle contacts the Barrier Gate and bends or distorts the Barrier Gate, replacement of the Barrier Gate is required. When this occurs, the security cable can be removed from the damaged Barrier Gate and installed within the replacement Barrier Gate.

To remove a security cable from a damaged Barrier Gate, remove both square access plates (right and left) from the Barrier Gate assembly using a $\frac{1}{2}$ " wrench or socket. It may be necessary to use a flat blade screwdriver to pry the cable loop off of the circular internal support on both sides. Pull the cable through the damaged Barrier Gate from either side.

To install a security cable inside a Spike Systems Gate, ensure that both access plates (left and right) have been removed from the replacement Barrier Gate using a $\frac{1}{2}$ " wrench or socket. From either side of the Barrier Gate, thread the cable through the Barrier Gate and place the loop of the cable over the circular support on each side of the Barrier Gate. Once the cable is placed over both circular supports, replace the right and left access plates.

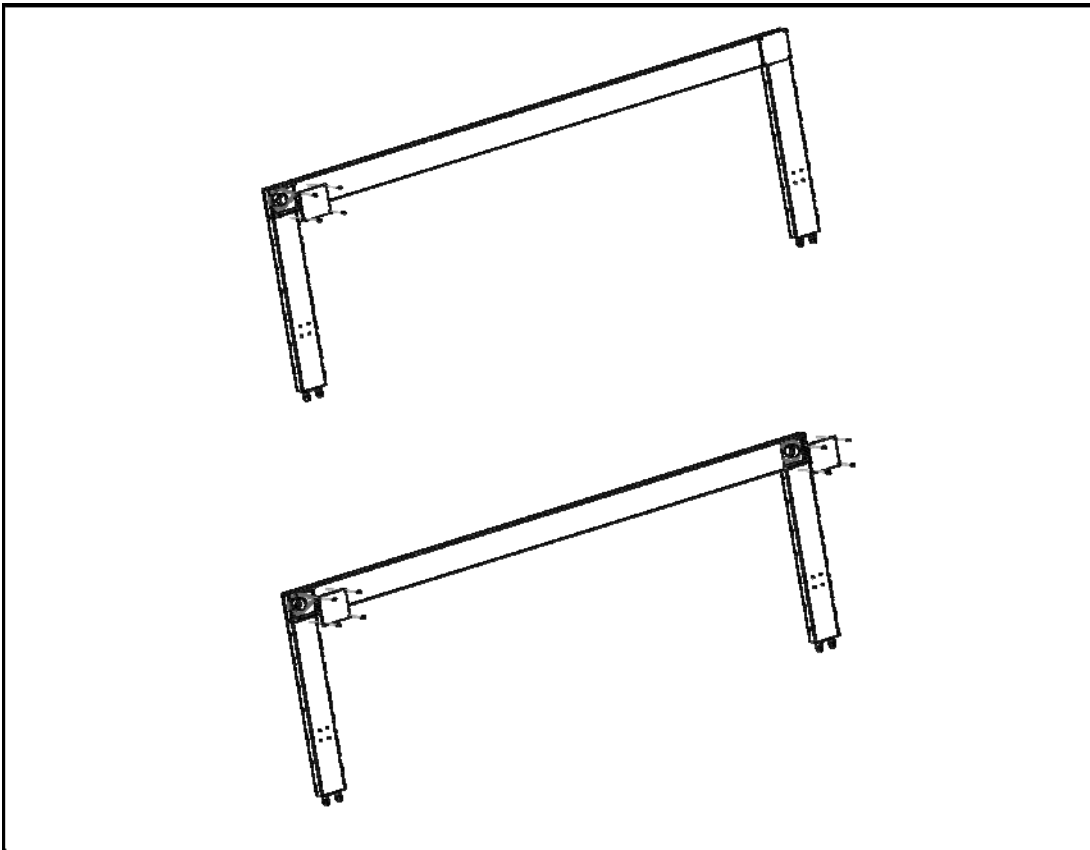


Figure 67 – Barrier Gate Cable Access Panel Removal, Maintenance Only

| Tool Required | Tool Type | Tool Specification |
|---------------|-------------------------|--|
| | Wrench/Socket | ½" to open remove safety cable cover plate |
| | Flat blade screw driver | To pry cable loop from circular internal support |

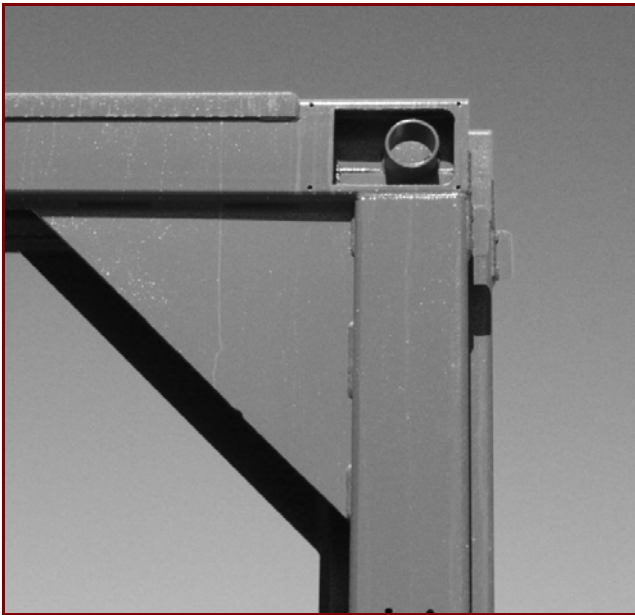


Figure 68 – View Behind Gate Access Plate for Security Cable Removal and Replacement (Right Side Shown)

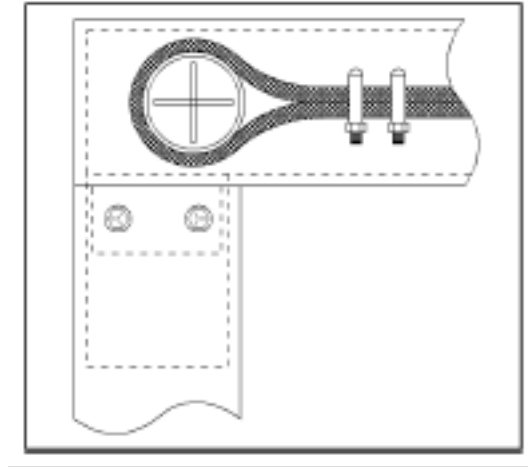


Figure 69 – View of Security Cable as Connected inside Barrier Gate (Left Side Shown)

4.5 On-Going Maintenance Tasks

WARNING: BEFORE YOU USE A MATERIAL, REFER TO THE MANUFACTURERS' MATERIAL SAFETY DATA SHEETS FOR SAFETY INFORMATION. SOME MATERIALS CAN BE DANGEROUS.

Scheduled Maintenance

| Period | Maintenance |
|---------------|--|
| Daily | Check HPU manifold for leakage. |
| Weekly | Check HPU reservoir fluid level. |
| Semi-Annually | Change hydraulic fluid (heavy use). |
| Annually | Change hydraulic fluid (moderate use). |

Material Part Numbers

| Description | Brand | Part No. | Quantity |
|-----------------|----------------------|----------|----------|
| Hydraulic Fluid | DEXRON III ATF Fluid | HO-2 | 3 Liters |

4.6 Maintenance Reference Information

4.6.1 Hydraulic Control Unit Wiring

Gate Access Controller I/O

| Terminal No. | PLC Address | Description | Voltage | Notes |
|--------------|-------------|-------------------------------|---------|------------------|
| L1 | X | Main Power Terminal Block | 110 VAC | |
| 1 | X | Switched Power Terminal Block | 110 VAC | |
| 2 | X | PLC Fuse Block | 110 VAC | Fuse size 1A |
| 3 | X | PLC Output Fuse Block | 110 VAC | Fuse size 8A *** |
| 47 | X | Neutral | 110 VAC | |
| 49 | X | Pump Neutral | 110 VAC | Pump Terminal |
| 50 | X | Pump Power | 110 VAC | |

Gate Access Controller Input 24 VDC

| Terminal No. | PLC Address | Description | Voltage | Notes |
|--------------|-------------|--|-------------------|---------------------|
| 30 | X | Fuse block F4 +24 VDC fusing PLC power supply | +24 VDC | Fuse size 500mA *** |
| 31 | X | -24 VDC PLC sensor power return | -24 VDC | |
| 32 | X | Fused from F4 +24 VDC fusing PLC sensor power supply | +24 VDC | Fused @ 500mA *** |
| 15 | I0.0 | Trip signal (OPEN) | Sinking 24 VDC | |
| 16 | I0.1 | Retract signal (CLOSE) | | |
| 17 | I0.2 | Limit switch signal (Down position) | Sinking 24 VDC | |
| 18 | I0.3 | Limit switch signal (Up position) | Sinking 24 VDC | |
| 19 | - | - | - | |
| 20 | - | - | - | |
| 21 | - | - | - | |
| 22 | - | - | - | |
| 23 | - | - | - | |
| 24 | - | Loop Wire | - | |
| 25 | - | Loop Wire | - | |

Gate Access Controller Output

| Terminal No. | PLC Address | Description | Voltage | Notes |
|--------------|-------------|---|---------|--------------------------|
| 4 | 3L | Gate arm controller signal common | N/A | No power from controller |
| 5 | Q 0.7 | Gate arm controller signal open dry contact | N/A | No power from controller |
| 6 | Q 1.0 | Gate arm controller signal closed dry contact | N/A | No power from controller |
| 7 | Q 0.0 | Solenoid Control Valve (down/open) | 120 VAC | |
| 8 | Q 0.1 | Solenoid Control Valve (up/close) | 120 VAC | |
| 9 | Q 0.3 | Green / Yellow light | 120 VAC | |
| 10 | Q 0.4 | Red light | 120 VAC | |
| 11 | - | - | - | |
| 12 | - | - | - | |
| 13 | Q 0.2 | Pump contactor | 120 VAC | |

Terminal Board 1

| From | To |
|-----------------|---------------------------|
| 30 | PLC L (24 VDC+) |
| 31 | PLC M (24VDC -) |
| 22 | PLC 1.5 |
| 21 | PLC 1.4 |
| 20 | PLC 1.0 |
| 19 | PLC 0.7 |
| 23 | PLC 0.4 |
| 18 | PLC 0.3 |
| 17 | PLC 0.2 |
| 16 | PLC 0.1 |
| 15 | PLC 0.0 |
| - | PLC 1M |
| 32 jumper to 30 | |
| 23 | SIRIUS 3R, 2-T1 |
| 14 | Inductive Loop Detector 5 |
| 32 | SIRIUS 3R, 1-L1 |

Terminal Board 2

| From | To |
|-----------------|--------------------------------|
| - | Siemens 1L loop 2L |
| - | 7 0.0 |
| Jumper 1 to 2 | - |
| Jumper 3 to 4 | - |
| 1 | SIRIUS 3R, 5L3 |
| 4 | 3L |
| 5 | Q 0.7 |
| 6 | Q 1.0 |
| 7 | Q 0.0 |
| 8 | Q 0.1 |
| 9 | Q 0.3 |
| 10 | Q 0.4 |
| 13 | Q 0.2 |
| - | Q 0.2 to SIRIUS 3R, A1 |
| N-PLC | Siemens N |
| N-CR-A2 | SIRIUS 3R, A2 |
| Terminal Ground | Siemens GRD |
| 7 (GRN) | Solenoid Control Valve UP |
| 8 (RED) | Solenoid Control Valve Down |
| 47 | Solenoid Control Valve UP |
| 48 | Solenoid Control Valve Down |
| 49 (White) | Hydraulic Motor |
| 50 (Black) | SIRIUS 3R, 6-T3 |
| 49 | Jumper from input power source |
| 50 | Jumper from input power source |

Inductive Loop Vehicle Detector Model LMA-1150-HV

| | |
|----|--|
| 1 | AC Line 120V |
| 2 | AC Neutral |
| 3 | NC |
| 4 | NC |
| 5 | Output Relay, Common |
| 6 | Output Relay, Normally Open (Closes for DETECT) |
| 7 | Loop Input |
| 8 | Loop Input |
| 9 | NC |
| 10 | Output Relay, Normally Closed (Opens for DETECT) |
| 11 | NC |

SIRIUS 3R

| (Relay) | |
|----------------|-------------------|
| A1 | Siemens PLC Q 0.2 |
| A2 | TB2-N-CR |
| 1 L1 | TB1-32 |
| 2 T1 | TB1-23 |
| 5L3 | TB2-1 |
| 6T3 | TB2-50 |

Manual Override Switch (Wired at Factory)

| | |
|--------|--------|
| Up | TB1-15 |
| Center | TB1-32 |
| Down | TB1-16 |

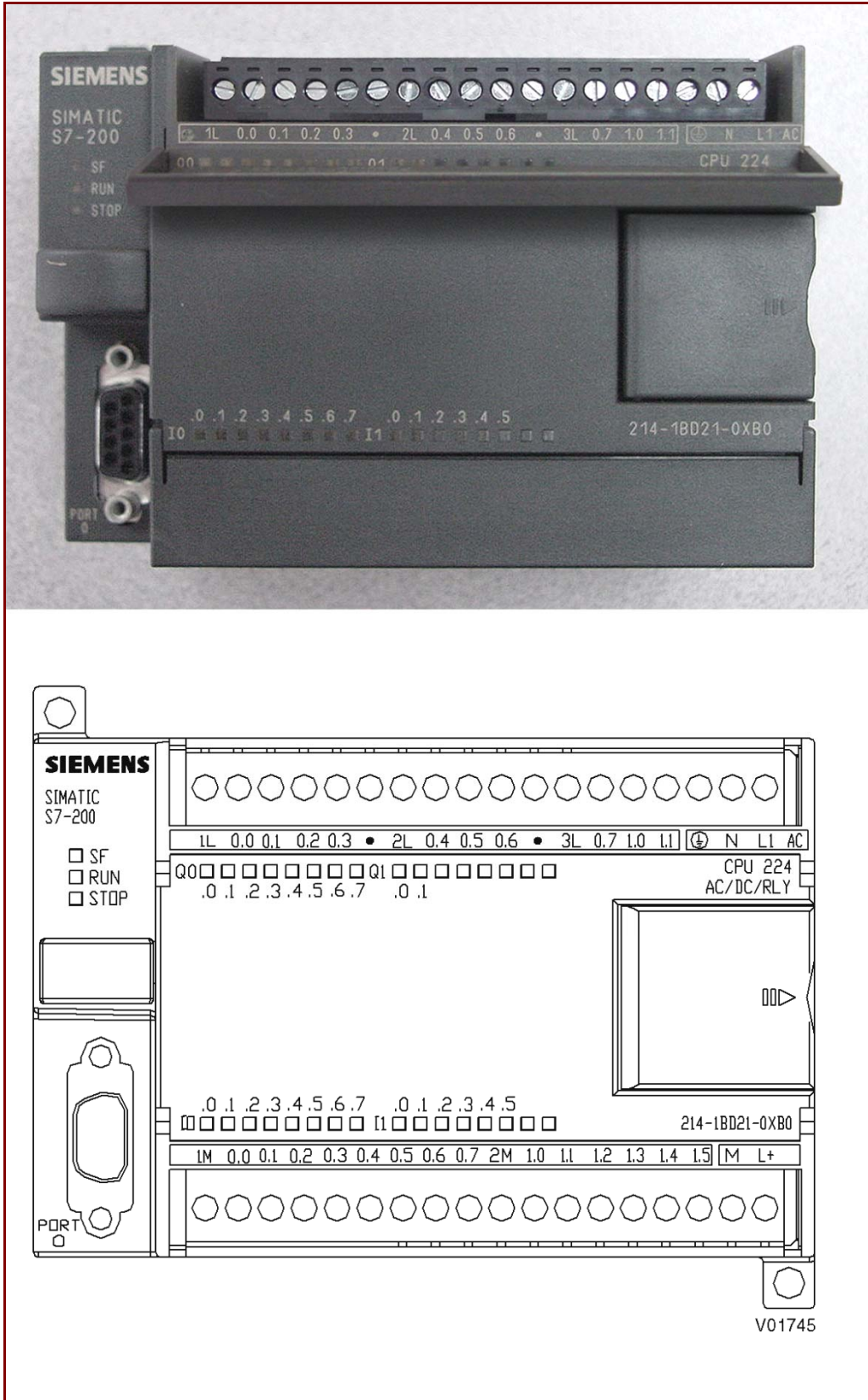


Figure 70 – Programmable Logic Controller

Appendix A - Warranty

SPIKE SYSTEMS, Inc., hereinafter referred to as **Spike Systems**, warrants its products will be free from defects in workmanship and materials when installed, and used and serviced as intended, for a period of one (1) year from date of original invoice.

CBG – Automated Hydraulic Crash Barrier Gate
Model Numbers – CBG-100/-120/-140/-160/-180

Spike Systems agrees to repair or replace, at **Spike Systems** choice and expense, any defective product at no additional charge. This warranty extends only to the original Purchaser. It is not transferable to anyone who subsequently purchases, leases, or otherwise obtains the Product from the original Purchaser. This warranty does not cover road surfaces, concrete or other structures, underground equipment or fittings, repair labor, travel time, mileage, shipping, or freight charges, taxes, preventive maintenance and inspections or the replacement of items that are by nature, consumable. No allowance for damages to equipment due to power fluctuations will be considered; a clean power supply is the responsibility of the customer. The warranty is voided if any modifications, changes or additions to the equipment are performed without written approval from **Spike Systems**. In addition, this warranty may be voided or further limited if required and or recommended repairs, maintenance, or inspections are not carried out as specified, or if defect is due to normal wear, misuse, abuse, accident, installation not in accordance with instructions or applicable codes, unauthorized repair or incidents commonly referred to as Acts of God. **Spike Systems** retains the right to the final determination as to the cause of any defect.

Except for the warranties set forth herein, **Spike Systems** disclaims all other warranties, expressed or implied or statutory, including but not limited to the implied warranties of merchantability, or fitness or suitability for any particular purpose, activity or location.

Spike Systems will in no event be liable for any loss of business, profits, data or use, or any direct, indirect, incidental or consequential damages resulting from any such defect in materials or workmanship. You agree that repair, replacement or refund, as applicable, under this warranty described herein is your sole and exclusive remedy with respect to any breach of the **Spike Systems** Limited warranty set forth herein.

Appendix B – Optional Inductive Loop Vehicle Detector Installation

For Specific Installation Instructions, Refer to Manufacturer’s Documentation

Cut the rectangle for Inductive Loop Vehicle Detector per manufacturer’s instructions and ensure that the loop makes proper connection to the cut that runs under the Control Cabinet. Ensure there is enough spare loop wire to reach the control panel, leaving at least 12 inches of slack (beyond what is required to reach the control panel termination point) as a service loop.

Specific installation instructions can be found at the following Internet sites.

<http://www.editraffic.com/>

<http://www.renoae.com>

B.1 Inductive Loop Vehicle Detector (Saw Cut Control Loop) General Guidelines

Use the table below as a guideline for cutting the saw cut loop to correspond with the Spike Systems CBG system being installed.

| Saw Cut Guideline | Spike Systems Model | Saw Cut Rectangle Dimensions |
|-------------------|---------------------|---------------------------------|
| | CBG-100 Gate (10') | 2' x 6' |
| | CBG-120 Gate (12') | 2' x 6' |
| | CBG-140 Gate (14') | 2' x 6' or custom size (Note 1) |
| | CBG-160 Gate (16') | 2' x 6' or custom size (Note 1) |
| | CBG-180 Gate (18') | 2' x 6' or custom size (Note 1) |

Note 1 – All systems that include an Inductive Loop Vehicle Detector option ship with sufficient material for a 2' x 6' saw cut loop. It may be advisable to create a custom saw cut loop for 14', 16' and 18' Barrier Gates. To do this, locally acquire sufficient lengths of 18 or 16 gauge wire (14 gauge is acceptable if 16 or 18 gauge are not available). Hand-twist the locally acquired wire per manufacturer’s specification for twists per foot. Install the module within Control Cabinet as per normal instructions.

When all saw cuts have been made, blow out any debris and moisture from the sawed area with an air compressor or similar device.

Place Inductive Loop Vehicle Detector wires in place by positioning the wires over the cuts, ensuring the proper twists per foot per manufacturer instructions. Standard 2' x 6' loops are shipped with proper wire twists in place.

Using a pizza wheel, putty knife or screwdriver, carefully press wires into cut groves.

When the wires are in place, seal the groove that runs beneath where the Control Cabinet will be installed. Once all wires are in place, seal the cut grooves with self-leveling concrete or Sikaflex SL Self-Leveling Sealant or similar.

B.2 Inductive Loop Vehicle Detector (Saw Cut Control Loop) Relay Connection

The figure below indicates the location where the Inductive Vehicle Loop Detection module is to be attached within the electronic control panel. The pins on this device are keyed so that there is only one correct way to plug in the module. Attach the loop wires to pins 24 and 25 on the Terminal Block marked TB1. Note – TB1 is the vertical terminal on the left in the figure below, and TB2 is on the right.

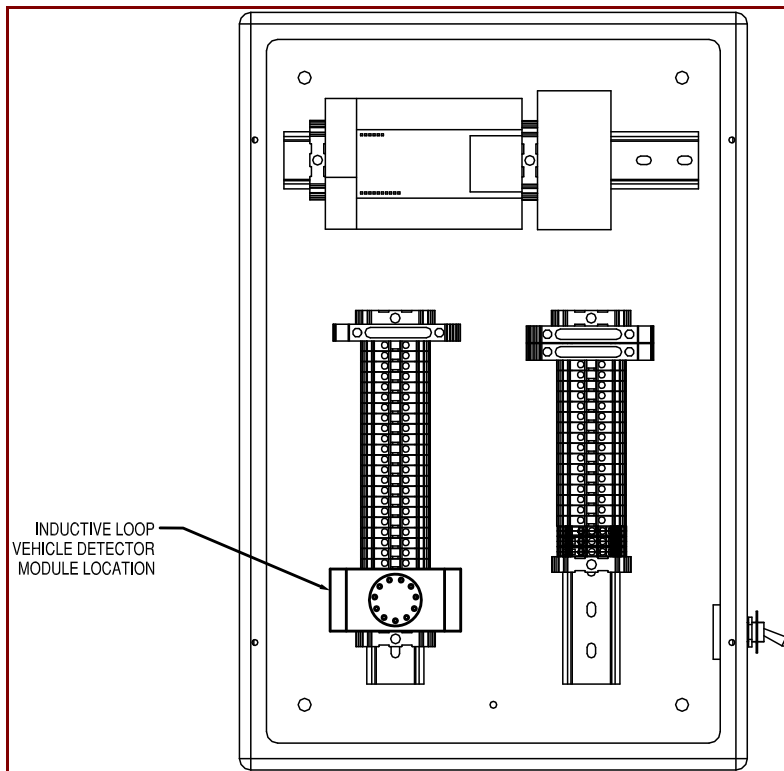


Figure 71 – Installation Location of Optional Inductive Vehicle Detection Module (Saw Cut Control), Control Cabinet



Figure 72 – Typical Inductive Vehicle Detection Module (Saw Cut Control)

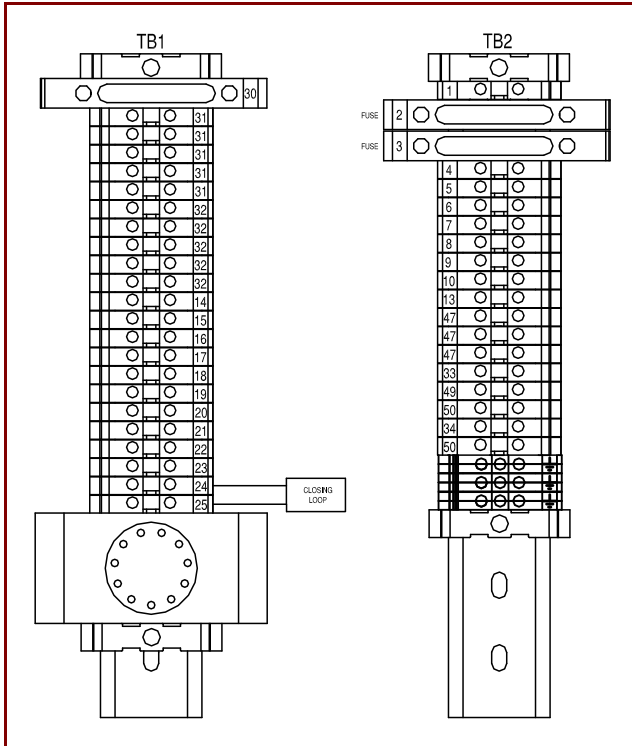


Figure 73 – Wiring of Optional Inductive Vehicle Detection Module (Saw Cut Control), Control Cabinet

| Tool Required | Tool Type | Tool Specification |
|---------------|----------------|----------------------------------|
| | Screw Driver | Flat, Small |
| | Wire Strippers | If required for cable connection |

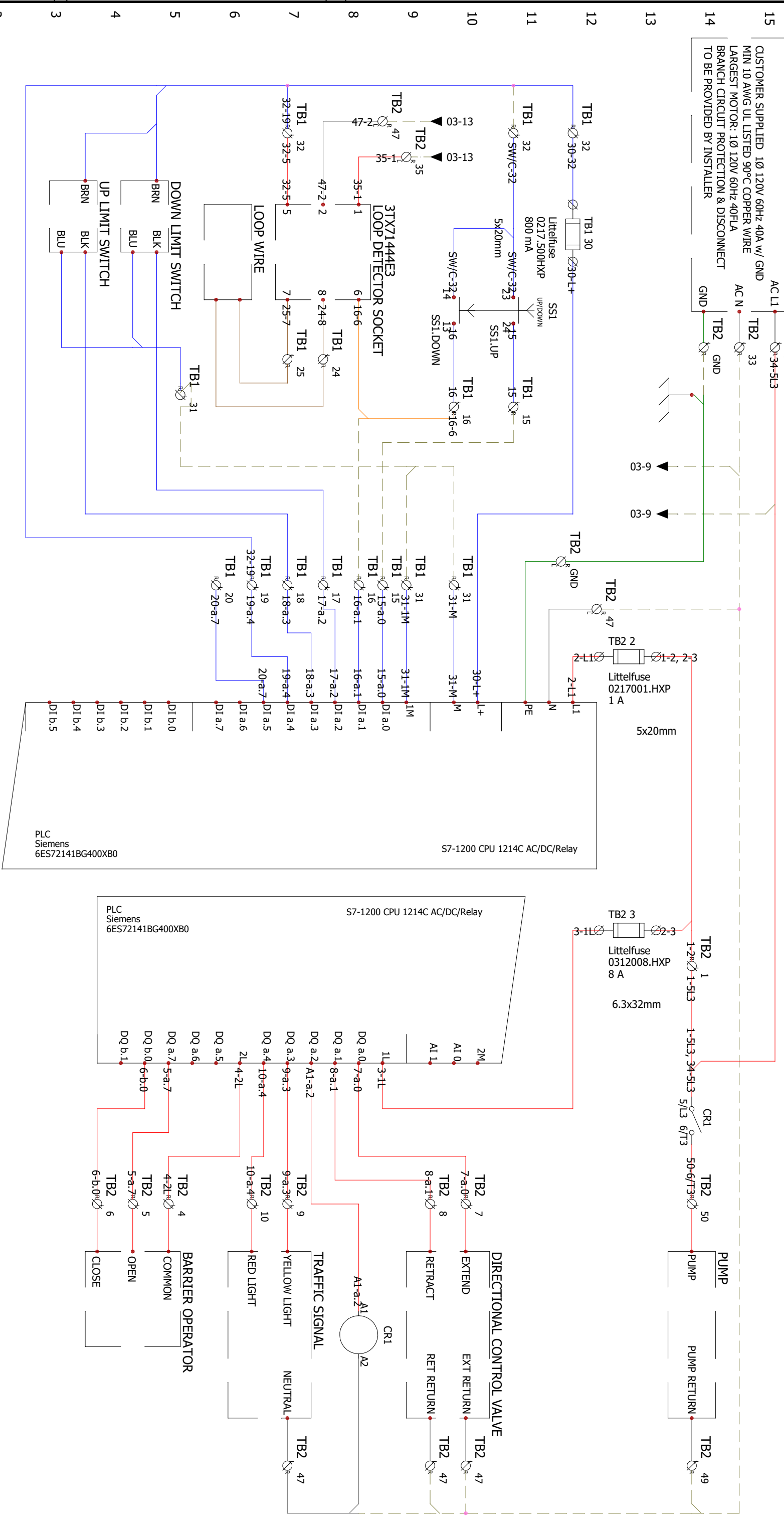
Appendix C - General Safety

The following safety instructions, and any/all applicable local, city, state and federal regulations/laws/codes are to be observed for the installation and operation of this barricade.

1. Locate the barrier away from pedestrian traffic and restrict all pedestrian traffic away from the barricade.
2. Locate the barricade far enough from the street so an exiting or entering vehicle can clear the barricade completely while waiting to pull into or out into traffic.
3. The closing and opening actions must be observed. The mounting of operating switches or signals outside the field of direct view is not permissible; there must be a line of site between the barrier and the control switches.
4. It is forbidden for person or goods to be anywhere within the swing zone or the barrier while in operation. Severe damage, injury or loss of life may occur.
5. Provide adequate nighttime illumination of the unit and signs warning of it's presence.

SWITCHED JUNCTION BOX

CUSTOMER SUPPLIED 1Ø 120V 60Hz 40A w/ GND
 MIN 10 AWG UL LISTED 90°C COPPER WIRE
 LARGEST MOTOR: 1Ø 120V 60Hz 40FLA
 BRANCH CIRCUIT PROTECTION & DISCONNECT
 TO BE PROVIDED BY INSTALLER



CREATED: 1/9/2017 LAST MODIFIED: 4/28/2017

| | | | | | | | |
|--|--|--|--|---|--|--|--|
| <p>HEITEK AUTOMATION 2102 W. Quail Ave. Ste. 4 PHOENIX, ARIZONA 85027 PH 602.269.7931 FX 602.269.8037 www.heitek.com info@heitek.com</p> | | | | <p>Spike Systems 3623 S 7th Street Phoenix, AZ 85040</p> | | | |
| <p>CONTRACT No: HTA-SSS-091615-000-00</p> | | | | <p>LOCATION: L1</p> | | | |
| <p>APPROVED BY: shillmeyer APPROVED DATE: 4/3/2017</p> | | | | <p>APPROVED BY: shillmeyer APPROVED DATE: 4/3/2017</p> | | | |
| <p>DRAWN BY: shillmeyer DATE: 1/9/2017</p> | | | | <p>DRAWN BY: shillmeyer DATE: 1/9/2017</p> | | | |
| <p>CHECKED BY: shillmeyer CHECKED DATE: 4/3/2017</p> | | | | <p>CHECKED BY: shillmeyer CHECKED DATE: 4/3/2017</p> | | | |
| <p>SHEET: 03 OF: 11</p> | | | | <p>SHEET: 03 OF: 11</p> | | | |