



# HYDRAULIC SLIDE GATE Operators

**With Smart Touch Controller**

## **Installation and Reference Manual**

### **Models**

<b>SlideDriver 10</b>	(222 SS)	Standard
<b>SlideDriver 40</b>	(222 E)	Heavy gates
<b>SlideDriver 30F</b>	(222 EX 1.7)	Heavy, fast gates
<b>SlideDriver 50VF2*</b>	(222 X2)	Heavier, fast gates
<b>SlideDriver 50VF3*</b>	(222 X3)	Heavier, fastest gates
<b>SlideDriver 80</b>	(222 X1)	Very heavy gates
<b>SlideDriver 200</b>	(444 XS)	Ultra heavy gates

DC Battery, Modular, Correctional Facility, and Solar versions of most models

\* SlideDriver 50VF models use Installation and Reference Manual D0125. This can be downloaded at [www.hysecurity.com](http://www.hysecurity.com).



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## SlideDriver Quick Start

These instructions are provided as a quick reference guide to the experienced installer that is already familiar with all safety precautions and the installation of this gate operator. Do not attempt to install from this guide if you are inexperienced with this product.

1. Mount the operator with at least four mounting bolts. The operator must be square and spaced 1 $\frac{3}{4}$ " away from the gate.
2. Attach the drive rail to every vertical member of the gate at a height 9 1/4" above the base of the operator. Use 1/4" roll pins to splice multiple sections of rail.
3. Mount the limit switch trip ramps to the underside of the drive rail at each end. Drill 3/8" holes in a position that will allow the limit switches to be tripped 6-8" before full travel.
4. Connect the electrical power and grounding wire to the loose wires from the On/Off switch at the left corner of the control box. Be certain the labeled voltage and phase of the operator matches the available supply.
5. Operators are shipped configured for "right hand" operation. (From the secure side, the gate moves to right on opening). To change the handing, reconnect the hydraulic hoses at the pump in reverse order. There is a label near the hose connection point describing this procedure. Connecting the hose from the top motor to the left disconnect results in "left hand" operation
6. With neither limit switch tripped, engage the release mechanism to clamp the wheels to the drive rail and verify that the red spring is compressed to 2" in height.
7. Turn on the power switch. The Smart Touch LCD display should show, after a 2 second delay, the characters [uC\_0]. This is a setting for the UL user class that must be made before any gate function will be possible. Press the Select button, then the Next button and change the 0 to be class 1-4 as appropriate for the site. Press the Select button again to lock the setting.
8. Press the Next button to go to the setting for the gate hand. The LCD display should now show [Sh\_0]. The 0 must be replaced by an [Sh L] or [Sh r] before any gate function will be possible.
9. Press the Menu button and the display will jump to the close timer setting [Ct\_0]. If a close timer function is needed, set in the same manner as above. Press the Menu button again to exit to the Run Mode. The LCD display should now read StoP, but may read oPEn or CloS if any limit switch is tripped.
10. Test the normal operation of the gate. If the hoses are connected incorrectly, the gate will move the wrong direction. (see step 5). If the gate moves the correct direction, but triggers an Err1 alert, the handing is set wrong. (see step 8).
11. After normal function has been verified, connect any required accessory device wiring. Note that the control inputs (Except Fire Department Open and Emergency Close) are all one wire only to the main terminal strip while the other wire connects to the Common Buss on the nearby power supply board.
12. To access the User menu in the Smart Touch Controller, press the Menu button while there is no active Open or Close input. The display will scroll system values and stop at the [Ct\_] close timer setting. There are 11 menu items in the User Menu. To reach the more detailed Installer menu, the system must be in the User Menu first, then simultaneously press Open and Reset. The display will go to [uC\_] which is the first of 34 items in the Installer Menu. Read the instructions before attempting any adjustments!

## Smart Touch Controller Menu Guide for Sliding Gates

To gain access to the User Menu, press the Menu button when the gate is stopped. The LCD will scroll through several key items, then stop at the close timer setting [Ct].

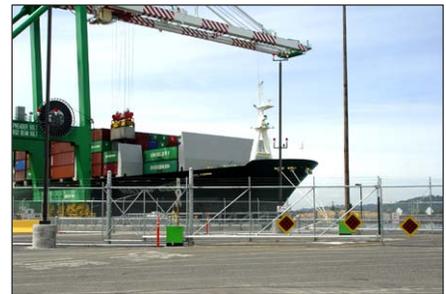
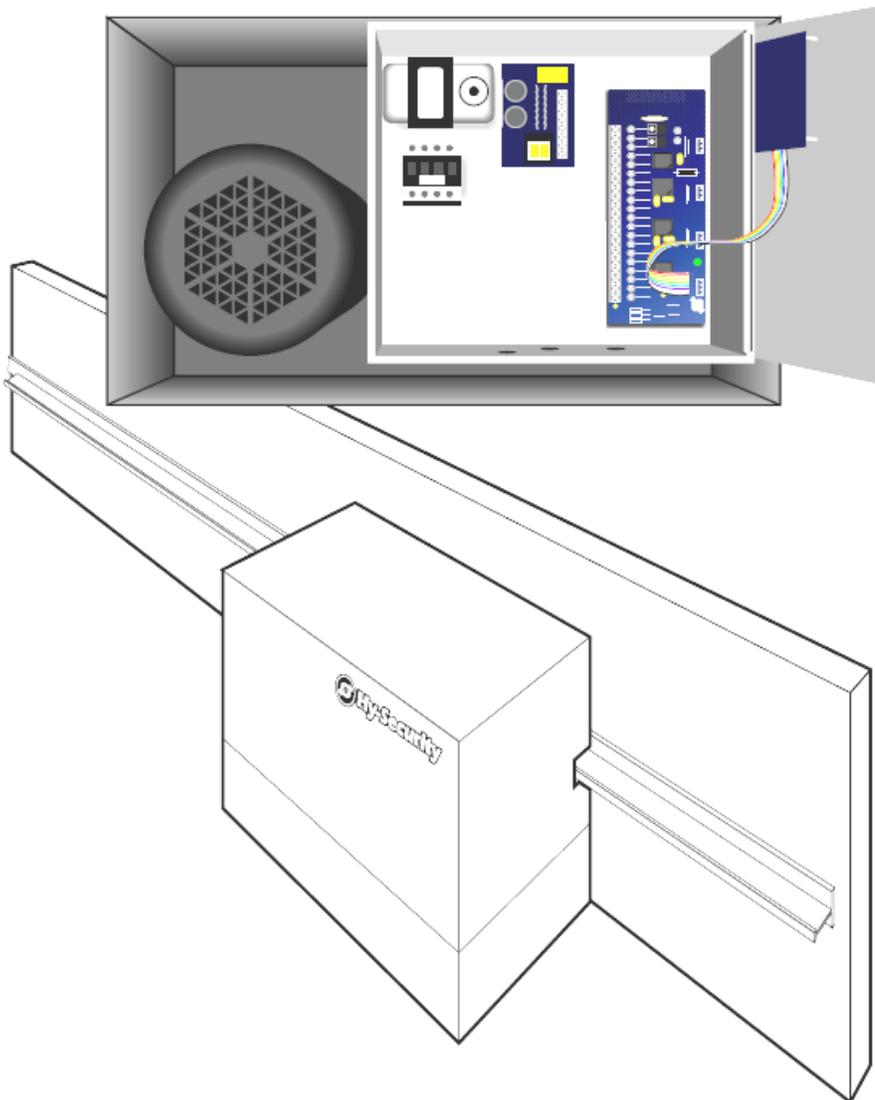
	User Menu Options	Default	Description
U1	[Ct 0] Close timer setting	0	0 = close timer off or 1 – 99 seconds
U2	[hC 0] Momentary Close	0	0 = momentary, 1= Constant hold PB required to close gate
U3	[ho 0] Momentary Open	0	0 = momentary, 1= Constant hold PB required to open gate
U4	[AP 0] Power loss function	0	0 – 3 (0 =Type A, 1 = B, 2 = C, 3 = D) See handbook
U5	[ro 0] Radio control option	0	0 = Open only, 1 = Adds Close capability when fully open
U6	[bF 2] Warn before operate	2	0 = none, 1 = Buzzer alerts 3 sec before & when in motion, 2 = Buzzer alerts 3 sec before + first 2 seconds in motion
U7	[FA 0] Forced open Alert and automatic gate reposition	0	0 = disabled, 1 = sound buzzer (2 pulses/sec) if forced open for more than four seconds, time out in 30 Sec
U8	[dA 0] Drift Closed Alert and automatic gate reposition	0	0 = disabled, 1 = sound buzzer (2 pulses/sec) if drift closed and cannot reopen within four seconds.
U9	[PE 0] Photo Eye Align Mode	0	0 = off, 1 = on (auto off when close limit triggered)
U10	[CL 0] Clock set (24 hour type)	0	0= display, 1= set mins, 2= set hours, 3= set day, 4= month
U11	[Ld 5] LCD Contrast set	5	1 - 9 = Adjusts contrast of the display
U12	[dS 0] Data Log (New Gen only)	0	0 = Std. 1 = Extended (resets automatically to 0 in 24 hr) (V4.xx software)

To access Installer Menu, press the Open & Reset buttons together while in the User Menu.

	Installer Menu Options	Default	Description
I1	[uC 0] Set UL Usage Class	0	0 = gate disabled, Set Class 1 through 4 use
I2	[Sh 0] Set Handing of gate	0	0 = gate disabled, r = Right Hand, L = Left Hand
I3	[Fd 0] Load Factory Defaults	0	0 = User settings, 1 = Load defaults (resets entire menu)
I3a	[bu 0] Choose Buzzer Type	0	0 = Buzzer not set, 1 = Freq 1, 2 = Freq 2
I4	[dg 0] Set Master/Slave type	0	0 = Solo operator, 1 = Slave unit, 2 = Master unit
I5	[Ch 0] Set AC Charger or Solar	0	0 = DC + AC charger 1 = DC + Solar charger
I6	[Fo 0] Enable Fire Dept. Open	0	0 = input disabled, 1 = enabled
I7	[oC 0] Enable Emergency close	0	0 = input disabled, 1 = enabled
I8	[SE 3] Inherent Sensor sensitivity	3	1 = Maximum sensitivity, 9 = Lowest sensitivity
I9	[SS 0] Inherent Sensor function	0	1 = stop only (note, functions in usage class 4 only)
I10	[LC 0] Leaf delay Close	0	0 = none (1-7) ½ second steps (Master/slave only)
I11	[Lo 0] Leaf delay Open	0	0 = none (1-7) ½ second steps (Master/slave only)
I12	[rt 0] Maximum run timer	0	0 = 60 Seconds max run, 1 = 300 Seconds max run
I13	[Po 0] Partial Open distance	0	0 = input disabled, or 7 – 99 seconds of travel
I14	[EC 0] PEC reverse to open	0	0 = Close eye stops only, 1 = 2 sec reverse to open
I15	[EO 0] PEO reverse to close	0	0 = Open eye stops only, 1 = 2 sec reverse to close
I16	[gr 0] Edge reverse to open	0	0 = Edge reverses fully open, 1 = Edge reverses for 2 sec
I17	[Sr 1] IES reverse to open	1	0 = IES reverses fully open, 1= IES reverses for 2 sec
I18	[PC 0] Set PEO/ PEC – NO/NC	0	0 = Normally Open PE output, 1 = N.C. (Supervised mode)
I19	[gC 0] Set Edge input – NO/NC	0	0 = Normally Open Edge output, 1 = Normally Closed
I20	[tC 1] Time clock/ Interlock input	1	0 = select Time Clock, 1 = select Open Interlock
I20a	[dt 0] Disable Free Exit/Timer to Close	0	0 = disable Free Exit, 1 = disable Close Timer
I21	[or 1] OOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I22	[ir 1] IOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I23	[dL 1] Vehicle detector logic	1	1 = std, 2 & 3 = quick close, 4 = full anti-tailgate logic
I24	[r1 0] User relay 1 option	1	0 = disabled, 1 – 24 = see output options page
I25	[r2 0] User relay 2 option	6	0 = disabled, 1 – 24 = see output options page
I26	[r3 0] User relay 3 option	1	0 = disabled, 1 – 24 = see output options page
I27	[tL 0] Gate Open alert	2	0 = 0 sec, 1 = 15s, 2 = 45s, 3 = 75s, 4 = 105s, 5 = 135s
I28	[Lt 0] Loitering alert	3	0 = 0 sec, 1 = 15s, 2 = 45s, 3 = 75s, 4 = 105s, 5 = 135s
I28a	[SA 0] System Address	0	0 = no network, 1-99 = network “drop” address
I29	[ELd0] Test factory ELD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I30	[iLd0] Test factory IOLD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I31	[oLd0] Test factory OOLD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I32	[SLd0] Test factory SLD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4



# Ultra Reliable, Heavy Duty, Commercial, Industrial, High Security Slide Gate Operators



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## Table of Contents

Introduction .....	vii
Warranty Registration .....	viii
Available Models and Features.....	1-2
<b>I. Safe Gate Design</b>	
Important Information .....	3
Entrapment Protection Schematic.....	4
Install an Automatic Operator only When: .....	5
Important Instructions for Gate System Owners & Users .....	6
<b>II. Installation</b>	
Tools Required – Getting Started with an Automated Gate System.....	7-8
Installation Preparations and Installation .....	9-12
Mechanical & Hydraulic Adjustments .....	13
Technical Drawings.....	14-16
<b>III. Smart Touch Set up</b>	
Basics of Using the Smart Touch Controller .....	17-18
Installation Configuration for Smart Touch Controller .....	18
Wiring Control Inputs to the Smart Touch Controller .....	19-20
Connecting a Master/Slave Pair or an Interlocked Pair .....	21
Table of User and Installer Menu Functions .....	22-23
User Menu: Description Functions Available .....	24
Installer Menu: Description Functions Available.....	25-26
Correctional Facility – User Optional Wiring .....	27
Options for User Programmable Output Relays.....	28-29
Setting the Time and Date on the Clock.....	29
<b>IV. Entrapment Protection</b>	
Entrapment Protection Schematic.....	30
UL 325 Standard Requirements for Entrapment Protection Devices .....	31
Placement and Use of Secondary Pedestrian Entrapment Sensors.....	32
Installing Gate Edge (Contact Type) Reversing Sensor .....	33
Installing Photoelectric (Non-Contact) Sensor .....	34-35

## Table of Contents, cont.

### V. Detectors and Loops

Detector Loop Installation Guide .....	36-38
Vehicle Detector Installation & Adjustment Options.....	39
HySecurity HY-5A Vehicle Detector Installation .....	40
Standard 11 Pin Vehicle Detector Installation .....	41
Vehicle Detector & Loop Fault Diagnostics .....	42
Vehicle Detector Configuration and Anti-Tailgate Modes.....	43

### VI. Accessories

24 Hr / 7 Day Time Clock Option .....	44
Radio Remote Open Option.....	45
Remote Release Option .....	46
Internal Solenoid Lock Options .....	47-49

### VII. Troubleshooting and Maintenance

Troubleshooting.....	50-51
General Maintenance .....	52-53
Manual Release Mechanism.....	54

### VIII. Two part Operators (Battery types & 333)

Battery DC Systems (DS, DE, DX)	
Important Notes about DC Powered Gate Operators .....	55
Wiring & Control of DC Operators .....	56
Plan and Elevation for DC Power Supply.....	57
Battery Supply Diagram .....	58
Modular Systems (333 MS Series).....	59-60

### IX. Appendix

Wiring Size Schedules.....	61-62
444 Operator Components & Footprint.....	63
Components & Replacement Parts .....	64-70
Smart Touch Controller Electrical Connections .....	71
SlideDriver Wheel Change Procedure .....	72-73
Limited Warranty.....	74

# Introduction

Welcome – Thank you for purchasing our HySecurity premium gate operator. HySecurity has manufactured the finest hydraulic gate operators available since the 1970s. Our commitment to quality and innovation will become evident as you become familiar with the features and performance of this expertly engineered machine. All HySecurity operators are equipped with the Smart Touch Controller, a digital electronic brain that offers unparalleled user benefits.

Please take a few minutes to study the contents of this instruction manual. The benefits of taking a little extra time to align the gate operator properly and to verify a fully functional installation will ensure customer satisfaction and a longer life with minimal maintenance costs.



**Installers and owners must thoroughly review and understand the important Information regarding pedestrian entrapment protection contained in this manual. There are hazards associated with automatic gates that can be greatly reduced with proper design, installation and use. When an automatic gate is first commissioned, the installer must teach their owners and users how to correctly operate this system. When the installation is complete, installers should leave this manual for the owner's use and reference.**

Do not hesitate to give your HySecurity distributor a call if you experience any installation difficulties. Authorized HySecurity distributors are experienced and trained to assist in resolving any problems.

## OPERATOR BULLETIN / WARRANTY REGISTRATION

Fill out this form to register this operator(s). HySecurity distributes frequent maintenance, upgrade and Technical Bulletins to those who register their operators. Fax or mail this completed form to HySecurity.

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

Owner Name / Company: \_\_\_\_\_

Email: \_\_\_\_\_

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

City, State, Zip: \_\_\_\_\_

Telephone number: \_\_\_\_\_

HySecurity Distributor: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

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

Telephone Number: \_\_\_\_\_

Serial number of operator: \_\_\_\_\_

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

Operator Model: \_\_\_\_\_

### Warranty Registration

HySecurity Mailing Address:

6623 South 228<sup>th</sup> Street

Kent, WA 98032

FAX: (888) 321-9946

info@hysecurity.com

**Technical Support:** Call your installer or authorized HySecurity distributor for front line technical support. Call HySecurity at 800-321-9947 with the serial number of your operator and we will provide you with the name of your distributor.

**Training:** HySecurity provides regular installation, maintenance and troubleshooting training. Go to [www.hysecurity.com/support](http://www.hysecurity.com/support) or call HySecurity at 800-321-9947 for more information regarding HySecurity tech training.

## SlideDriver Models

**HySecurity** manufactures many hydraulic slide gate operator models to suit the desired gate panel size, weight and speed. All of the operator models are derived from the SlideDriver 10, upon which this manual is designed. Identify your operator model and note the changes in instructions and final adjustments.

	SlideDriver 10	SlideDriver 40	SlideDriver 30F	SlideDriver 50VF2*	SlideDriver 50VF3*	SlideDriver 80	SlideDriver 200
<b>General</b>	Commercial industrial, high security	Commercial industrial, high security	Commercial industrial, high security	Commercial industrial, high security	Commercial industrial, high security	Commercial industrial, high security	Commercial industrial, high security
<b>Gates</b>	Lighter gates	Heavier gates to 4,000 lbs.	Heavier gates (3,000 lbs.) and faster (20 inches/sec.)	Variable Frequency Drive (easy start and stop) heavy gates (5,000 lbs.) and fast (26 inches/sec.)	Variable Frequency Drive (easy start and stop) heavy gates (5,000 lbs.) and fast (36 inches/sec.)	Very heavy gates (up to 8,000 lbs.)	Heaviest gates (up to 20,000 lbs.)
<b>Duty</b>	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
<b>Part Number</b>	222 SS	222 E	222 EX 1.7	222 X2	222 X3	222 X1	444 XS
<b>Modular</b>	10-M	40-M	30F-M	50VF2-M	50VF3-M	80-M	-
<b>Prison</b>	10-C	40-C	30F-C	50VF2-C	50VF3-C	80-C	200-C
<b>24V UPS</b>	10 UPS	40 UPS	30F UPS	-	-	80 UPS	200 UPS
<b>Solar</b>	10-S	40-S	30F-S	-	-	80-S	200-S
<b>HP</b>	1 hp	1 hp	2 hp	2 hp	2 hp	2 hp	5 hp
<b>Speed</b>	12" / sec.	12" / sec.	20" / sec.	26" / sec.	36" / sec.	12" / sec.	12" / sec.
<b>Soft Stop</b>	yes	yes	yes	yes	yes	yes	yes
<b>Brake Valves</b>	no	yes	yes	yes	yes	yes	yes
<b>Soft Start</b>	no	no	yes	ultra soft start and stop	ultra soft start and stop	yes	yes
<b>Drawbar Pull</b>	300 lbs.	300 lbs.	300 lbs.	300 lbs.	300 lbs.	600 lbs.	1,200 lbs.
<b>Weight Capacity</b>	1,000 lbs.	4,000 lbs.	3,000 lbs.	5,000 lbs.	5,000 lbs.	8,000 lbs.	20,000 lbs.
<b>Drive Wheels</b>	2, 6" drive wheels	2, 6" drive wheels	2, 6" drive wheels	2, 8" drive wheels	2, 8" drive wheels	2, 8" drive wheels	4, 8" drive wheels
<b>UL Class</b>	I, II, III, IV	I, II, III, IV	III, IV	III, IV	III, IV	III, IV	III, IV
<b>Warranty</b>	5 years	5 years	5 years	5 years	5 years	5 years	5 years

\*SlideDriver 50VF models use Installation and Reference Manual D0125. Download at [www.hysecurity.com](http://www.hysecurity.com).

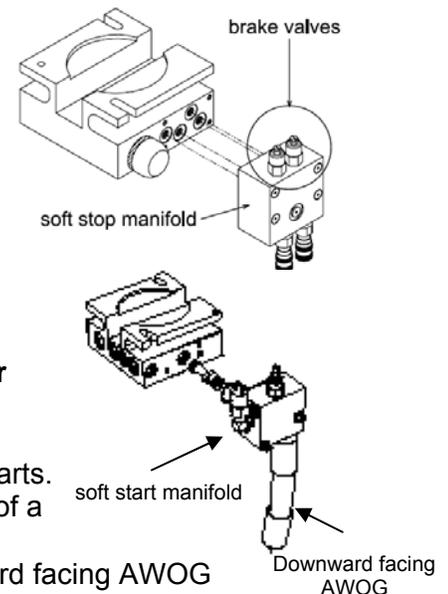
### Stopping the Gate

All models employ a time delay **Soft Stop** system. Additionally, brake valves are used to control the stopping of heavy or fast moving gates. These valves are exclusive to HySecurity operators. They are independently adjustable to allow the gate to stop predictably and without banging.

### Starting the Gate

When starting very heavy gates beyond one foot per second, it is necessary to **Soft Start** the load gently, in addition to stopping it smoothly. HySecurity accomplishes Soft Start with another exclusive feature we call an **Accumulator With Out Gas (AWOG)**, which diverts some of the start-up hydraulic flow and thereby allows the gate to accelerate over a period of about 2 seconds. This is much like letting your foot slowly off a car clutch – no lurching when the gate starts. The downward facing AWOG (shown right) improves the life and performance of a gate system and never needs adjustment.

NOTE: Operators purchased prior to May 2008 may be equipped with an upward facing AWOG hose which may periodically require “bleeding” the air pockets from the hose.



## Descriptions for Various Models Derived from SlideDriver 10

### **For Heavy Gates: SlideDriver 40** 222 E Models (UL class I, II, III, and IV)

This model uses a hydraulic manifold with two adjustable brake valves. The brake valves extend the maximum gate weight capacity from 1,000 pounds to up to 4,000 pounds. Brake valves are highly recommended for heavy-duty applications.

### **High Speed: SlideDriver 30F** 222 EX 1.7 Models (UL class III and IV only)

The AWOOG Soft Starting system and brake valves are keys to safely moving gates faster than one foot per second. These devices, together with our hydraulic drive, create smooth and predictable handling for both small, lightweight to 3,000 lb. gates. The SlideDriver 30F, 30F-C, and 30F UPS models use a higher flow rate pump to achieve a speed of 20 inches per second.

### **High Speed, Very Heavy: SlideDriver 50VF2, 50VF3** 222 X2, X3 Model (UL class III and IV only)

SlideDriver 50VF operators use a variable frequency drive, larger wheels and a higher flow rate pump to reach 36" per second. These operators are designed for very heavy, up to 5,000 lb. gates moving at very high speed. The Variable Frequency Drive moves very heavy gates at speeds to up to 36 inches per second (50VF3). SlideDriver 50VF models close gates to a very precise point and are extremely easy on gate hardware. These operators use the same powerful Smart Touch controller and simple, reliable HySecurity hydraulics as all SlideDriver models. Note: SlideDriver 50VF models use Installation and Reference Manual D0125.

### **For Heaviest Gate: SlideDriver 200** (444 XS)

The 444 type operators are for the heaviest gates, weighing up to 20,000 lbs. They employ a much larger chassis with four drive wheels and hydraulic motors, and a five horsepower electric motor to generate up to 1200 pounds of draw bar pull.

### **SlideDriver, DC 24-Volt UPS (Uninterruptible Power Supply)** (UPS)

These gate operators function from 24 Volts DC Batteries all of the time to achieve a true UPS system. Our **Uninterruptible Power Supply** is the most certain way to know that your gate will work when the local AC power fails. This system features fully sealed maintenance free batteries in a separate insulated and ventilated enclosure and provides at least 3,000 feet of backup gate travel.

### **SlideDriver C, Correctional Facility** (-C)

The CF models offer an extra heavy 10-gauge cover with three different locking options. Type C operators are shipped ready to interface to the many options and interlocks commonly used at **correctional facilities**, such as gate position outputs, interlock capability for sally ports and an interface relay to control an external solenoid lock.

### **SlideDriver M, Modular** (-M)

This family of operators is a two part **modular** version of the standard SlideDriver operator. The motor, hydraulic pump and electric controls are located in a separate enclosure, often at a distance from the drive unit. This version allows for a more flexible placement of the operator, which may be required or desirable in some situations involving unique mounting, special security including blast mitigation, or those requiring a very quiet operator.

### **SlideDriver S, Solar** (-S)

Most SlideDriver operators are available in a DC drive, solar powered version. Call 1-800-321-9947 or visit our website at [www.hysecurity.com](http://www.hysecurity.com) for more information.

### **The Smart Touch Controller**

This is the brain of HySecurity's automatic operators. Groundbreaking technology built sturdy to reliably serve in the harshest environments. The Smart Touch Controller can quickly be configured by an installer or user to adapt to nearly any functional requirement for a specific site and comes standard on all HySecurity gate operators. All system settings are performed with the use of just four programming buttons and an LCD display. The Smart Touch Controller has no switches to set. An RS232 port for external communication is standard. A real time clock and an EEPROM record system events. A log of events can be downloaded from the RS232 port to a laptop computer to evaluate abnormal gate system operation. HySecurity HY-5A vehicle detectors set a new industry standard by communicating valuable performance data to the Smart Touch controller, allowing quick and in-depth, user-friendly diagnostics.

**READ FIRST!****Important Information – Review before Installation**

Automatic gate operators provide convenience and security to users. However, because these machines can produce high levels of force it is important that all gate operator system designers, installers and end users be aware of the potential hazards associated with improperly designed, installed or maintained systems. Keep in mind that the gate operator is only one component of the total gate operating system. It is the joint responsibility of the specifier, designer, purchaser, installer and end user to verify that the total system is appropriately configured for its intended use. All parties should be informed that entrapment in a moving gate could cause serious injury or death.

**Common Industry Symbols**

**Attention  
-Take Note-**



**-Danger-  
Keep Away**



**Entrapment  
Zone**



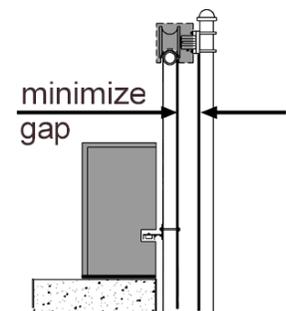
**Possible  
Pinch Point**

**Important Instructions for Gate System Designers & Installers:**

**WARNING:** To reduce the risk of serious injury or death, read and follow all instructions in the gate operator handbook and on the warning labels.

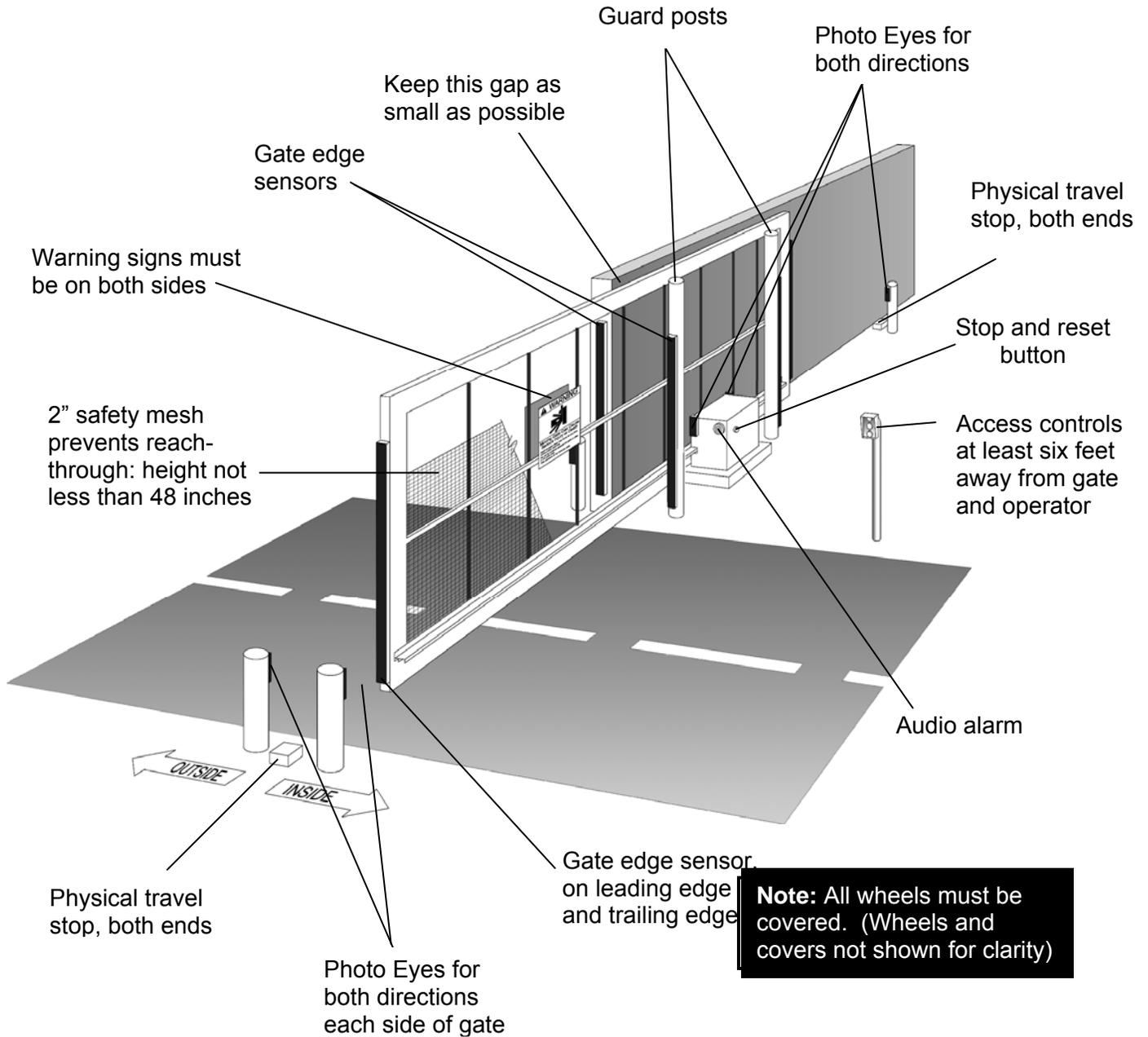
**Install an Automatic Gate Operator only When:**

- ❑ The entry is configured for vehicular use only. Pedestrians must be directed to a separate walk-through entrance. The Warning signs that have been supplied with this operator must be installed in a manner clearly visible on both sides of the gate.
- ❑ All openings of a horizontal slide gate are guarded or screened, from the bottom of the gate to a minimum of 4 feet (1.2 m) height above the ground, to prevent a sphere 2 ¼ inches (57 mm) in diameter from passing through an opening anywhere in the gate or the portion of the adjacent fence that is covered in the open position.
- ❑ All exposed pinch points, rollers and wheels are guarded. To reduce the risk of entrapment, the gate must also be installed so that enough clearance is provided between the gate and adjacent structures both when opening and closing. Minimize the parallel gap between the gate and the fence.
- ❑ The gate has been constructed with physical stops to prevent over-travel in both directions and has guard posts that prevent the gate from falling in the event of a roller failure.
- ❑ Review and meet all ASTM F-2200 and UL 325 automated gate system standards.





# Sliding Gate Entrapment Protection



This schematic view is not meant to recommend the only way to set up your configuration, but to point out the various elements of a proper automatic vehicular gate installation. The gate operator itself is only one component in the total system. **Always install a separate pedestrian gate.**

## Site, Gate, Equipment and Regulatory Requirements

- ❑ The gate moves freely in both directions. Never over-tighten a clutch or pressure relief valve to compensate for a stiff gate.
- ❑ The operator will be installed on the secured (non-public) side of the gate.
- ❑ The operator will be properly electrically grounded and the intended supply voltage matches the voltage label on the operator.
- ❑ The controls that operate the gate have been mounted far enough away from the moving gate such that users cannot touch the gate while operating the controls. All easily accessible controls must have a security feature to prevent unauthorized use.
- ❑ The operator controls will be located in a clear line-of-sight to the gate. Radio controls and other remote access controls must be connected only to the **Remote Open input**.
- ❑ The required external entrapment sensors will be installed. Be certain to carefully review the instructions for placement, installation and adjustment of these external entrapment sensors. External entrapment sensors must function to reverse the movement of the gate **in both the opening and closing directions**. If edge (contact) sensors are used, they are to be mounted on the leading and trailing edges of the gate, as well as post mounted on the inside and outside of the gate (See figure on page 4). If photo eyes or other non-contact sensors are used, they are to be mounted in locations most likely to guard against entrapment. A combination of contact and non-contact sensors may be used, but all must be recognized components under the UL 325 standard. See pages 31 and 32 for details on the requirements.
- ❑ If the Entrapment protection is provided by a continuous pressure actuation control, a placard stating “WARNING” – “Moving Gate has the Potential of Inflicting Injury or Death - Do Not Start Gate Unless Path is Clear” must be posted. Additionally, no other activation device shall be connected and an automatic closing device of any kind shall not be used.
- ❑ The automatic operator is labeled as appropriate for both the type and UL usage class of the gate.
 

**Note:** Sliding gate operators installed in Class I & II applications must not move the gate faster than one foot per second.

Class I: Intended to serve single to four family residential uses  
 Class II: Multi-family use, or any application intended to serve the general public  
 Class III: Commercial applications **not** intended to serve the general public  
 Class IV: Highest security. Security personnel prevent unauthorized access
- ❑ Sliding gate operators installed in Class III & IV applications do not have a speed restriction and the secondary entrapment sensor requirement is met if the system is configured as described for Class I & II use, or by the following alternate means: Employ the use of a 100dB buzzer, which sounds at least 3 seconds before the gate moves, and/or functions **only** by use of a constant hold type push button control.

## Important Information for Gate System Owners & Users



**WARNING:** To reduce the risk of serious injury or death, read and follow all instructions in the gate operator handbook and on the warning labels.

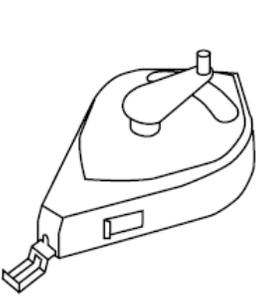
### Save These Important Owner and User Instructions:

(Installers – be certain to instruct the owners and users about the following items)

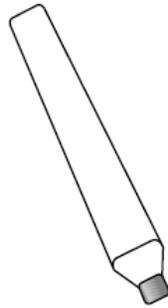
- ❑ Automatic gates are for vehicular use only! Provide walkways and signs to direct pedestrians to a separate walk-through entrance. Because an automatic gate can start at any time without warning, always keep people away from the area of the gate. The Warning signs that have been supplied with this operator must remain installed, in manner clearly visible on both sides of the gate.
- ❑ Never allow children to use or play with controls that operate the gate. Keep all remote controls, especially radio transmitters, away from children.
- ❑ Teach all users how to turn off the electric power and how to release and move the gate manually. Use the manual release only when the gate is not moving.
  
- ❑ Test the function of the gate operator monthly. The gate **MUST** reverse its direction of travel upon contact with a rigid object, and/or stop upon a sensing a 2<sup>nd</sup> sequential activation prior to reaching a full travel limit. Also test for the normal function of any non-contact sensors. If the gate system employs the use of a transmitting edge sensor, be especially certain to test and replace its battery on a routine basis.
  
- ❑ **KEEP AUTOMATIC GATES PROPERLY MAINTAINED.** Have a professional gate installer perform routine tests of the entrapment protection sensors, such as photo eyes and gate edges. Also, make all necessary repairs to the gate hardware to keep the gate running smoothly. Failure to adjust and test a gate operator properly can increase the risk of injury or death.
  
- ❑ In addition to appropriately placed external entrapment sensors, ask your installer to reduce the setting of the pressure relief valve to the lowest setting allowable that reliably operates the gate. This valve controls the force of the operator, and the sensitivity of the inherent reversing sensor.
  
- ❑ **Do not physically disable the Warning Buzzer and never disconnect or cut its wires.** The buzzer is required to function in event of entrapment, regardless of UL 325 classification. If modification of the buzzer function is required, the operational modes for the buzzer (warn before operate, etc.) can be selected within the Smart Touch menu settings.



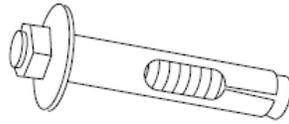
**Required Tools**



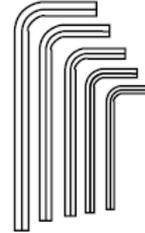
1. Chalkline or other builders string



2. Carpenters pencil or crayon



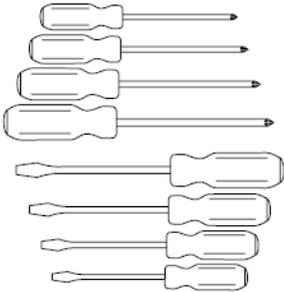
3. Concrete anchor bolts, four 1/2" x 4"



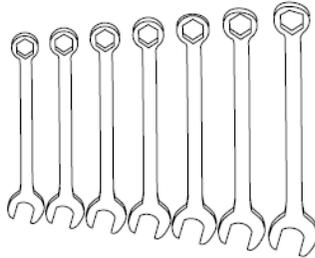
4. Allen wrench set



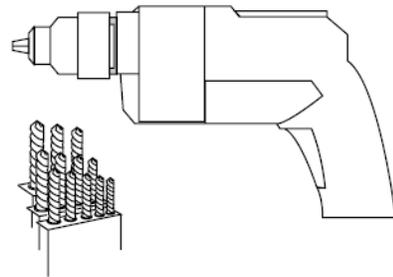
5. Hammer



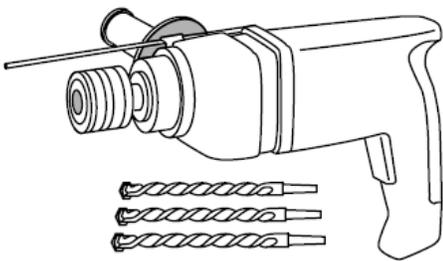
6. Screwdriver sets, Straight and Phillips



7. Wrench set, open end, 1/4" through 1"



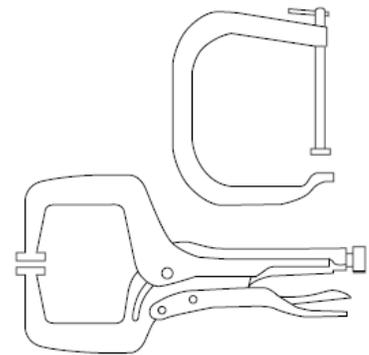
8. Electric drill and bits, 1/8" through 3/8"



9. Roto-hammer and bits



10. Level (installation must be level)

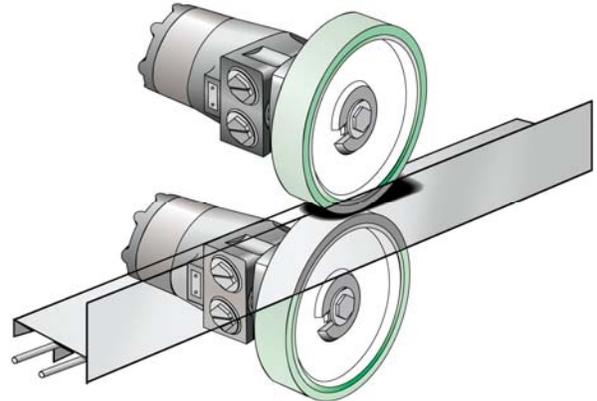


11. Two pair wide Jaw pliers or two C clamps, 4" cap.

## Getting Started

### • How this hydraulic operator works

HySecurity industrial slide gate operators rotate polyurethane treaded drive wheels which grip a rigid metal drive rail; right or left during the gate travel. The drive wheels are above and below the drive rail and are directly coupled to powerful hydraulic motors, which can easily move large gates. This simple yet durable drive system is one of the unique features giving our hydraulic operators their reputation for reliability.



### • Accessory Compatibility

HySecurity's Hydraulic Slide Operators are fully compatible with all standard access control devices and entrapment protection devices, some of which are listed below.

### • Pedestrian Entrapment Protection

Read and understand all the Important Information in Section 1, the Entrapment Protection Schematic on page 4 and the UL requirements on page 3 before beginning the installation. Be absolutely certain that the required type and quantity of Entrapment Protection devices have been supplied and that you understand how to install them correctly. Contact your local distributor with questions about Entrapment Protection.



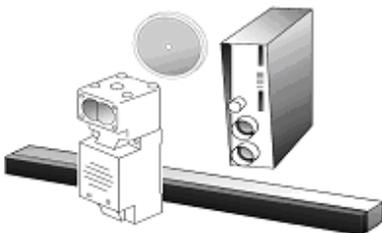
**Basic Access Control**  
 Radio Transmitter  
 Long Distance Control  
 Pushbutton Control Station  
 Programmable Time Clock  
 Card Reader



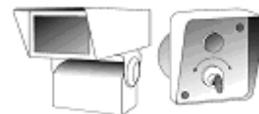
**Advanced Access Control**  
 Access Control Interface  
 Card Reader  
 Keypad  
 Telephone Entry  
 Input/Output  
 Computer Interface  
 RS232/485



**Information**  
 Signs  
 Labels  
 Warnings



**Obstruction Sensing Devices**  
 Inherent Sensing Device  
 Gate Edges  
 Photo Eyes  
 Vehicle Detectors



**Security**  
 Key Locks  
 Closed Circuit Television  
 Gate Position Indicator  
 Interlock/Sally Port  
 Gate Status Indicator

## Installation Preparation Checklist

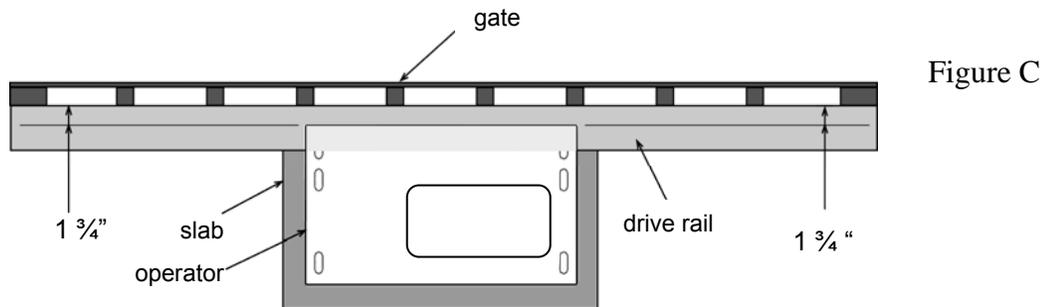
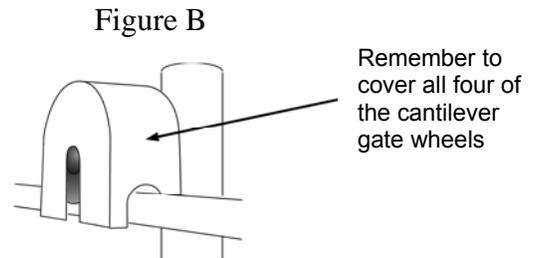
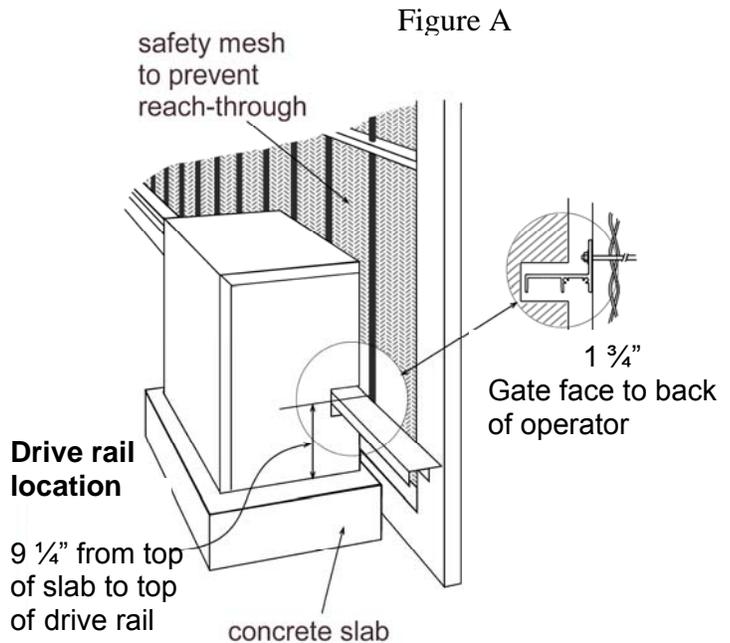
1. Read *all* of the instructions, especially the Important Information in Section 1 at the beginning of this manual, before you attempt installation. This section is focused upon mechanical installation. For electrical setup, refer to Section 3, on system configuration and use of the Smart Touch Controller.

2. Check to see that the mounting slab is the recommended size and ready to have an operator attached. Also check that electrical conduits are correctly located to enter the chassis. HySecurity recommends a slab reaches below the local frost line and extends somewhat above grade. See the footprint plan and elevation view on pages 14 and 15.

3. Make sure the gate rolls smoothly in both directions, without any binding of the gate hardware. If the gate is warped or hard to move, stop and fix the gate before attempting to automate.

4. Verify that you have covers for all exposed gate support wheels. These **must** be installed. Also, look around to identify all of the potential pinch points and hazardous areas, and plan the best location for the entrapment protection devices and warning signs. Remember that you are required to advise the owner regarding the potential hazards of an automatic gate and about the function of the entrapment protection sensors that you have selected and installed.

5. There are 3 steps to a perfect install: location, location, location. One of the most critical adjustments in installation will be to make sure the operator is located the proper distance from the gate, and that the gate and operator are as parallel as possible. See Figure C below. Prepare some shims for aligning the drive rail.

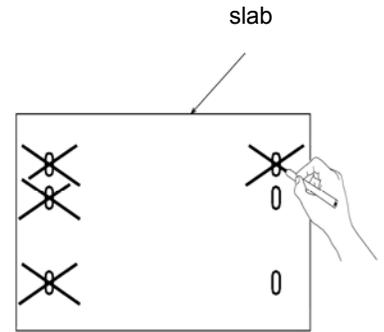


Note: If necessary, shim the drive rail so that it is straight  $\pm 1/4$ " throughout the travel distance of the gate.

# Installation

## 1. Drill four holes for concrete anchors

A paper template can be made by setting the operator on a large sheet of paper and tracing the outside edges and anchor slots. Place the template or operator on the slab; making sure that it is parallel to and 1 3/4" from the gate face. Trace the slots, remove the template, and then scribe the locations for your anchor bolts. Drill holes for the anchor bolts in the center of at least 2 slots per side so that you will have some room for adjustment. Install at least four 1/2" x 6" concrete anchor bolts, using at least two per side.



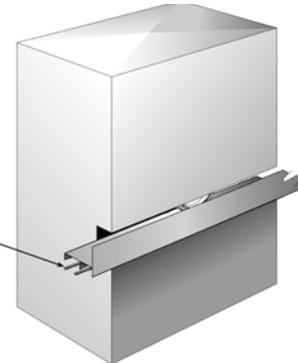
## 2. Line up the operator

Put the operator in position onto the anchor bolts. Verify that the operator is parallel and 1 3/4" away from the gate. Tighten the anchors securely.

## 3. Two part Operators (DC models and 333 modular models)

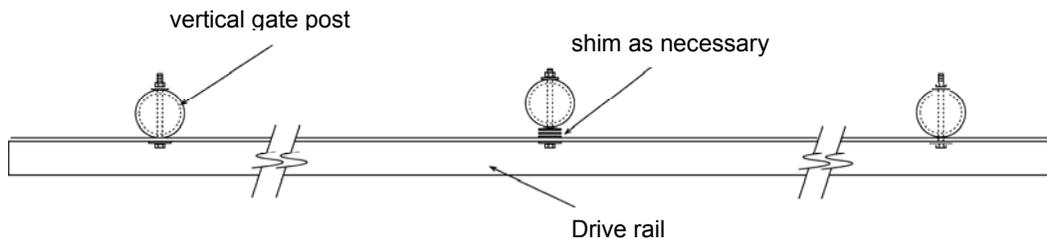
These two part operators come with a separate enclosure, which should be mounted between 10 and 100 feet of the operator. We recommend wall mounting or using two 4" posts, with horizontal mounting strut to create a support for this enclosure.

Roll pins line up drive rail segments to assure perfect splicing



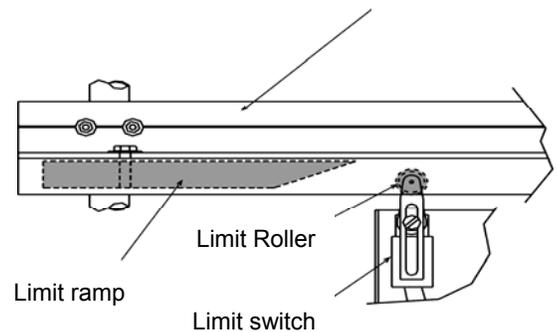
## 4. Bolt the Drive Rail to the Gate Panel

Connect multiple sections of drive rail together with 1/4" roll pins for a perfect splice. The drive rail must be bolted to each vertical member of the gate panel. This may be done with U-bolt clamps or through bolts, however U-bolt clamps allow for easy up down adjustment. If the gate is bent or warped, shim the drive rail so that it is straight  $\pm 1/4$ " throughout the travel of the gate. When the drive rail has been installed at the correct height, the top surface is 9 1/4" above the operator base. A label and notch on each side of the operator indicates the correct height.



## 5. Install Limit Ramps on Underside of Drive Rail

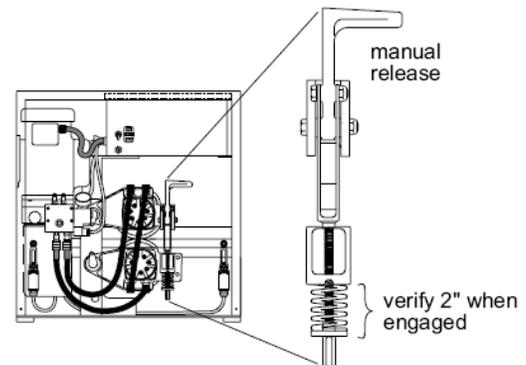
Push the gate to the fully closed position and drill two 3/8" holes through the drive rail to mount a 12" plastic limit ramp under the drive rail, in the wheel channel. Locate drive rail so that it will trip the limit switch approx. 6" before the exact spot you want the gate to stop. Adjust the ramp left or right to achieve exact stopping point. Fully secure by tightening both bolts. Adjust the lever arms on the limit switch so that the roller clears the underside of the drive rail by at least 1/4 inch. Push the gate fully open and repeat this procedure with the other limit ramp. See the Drive Rail drawing S22 on page 16.



## Installation

### 6. Clamp the Drive Wheels to the Drive Rail

When the wheels are fully clamped on the drive rail, the red spring should be compressed to 2" in height. If adjustment is necessary, turn the nut at the bottom of the threaded rod assembly. Slightly less compression is okay for lighter gates. See Use of Manual Release on page 54

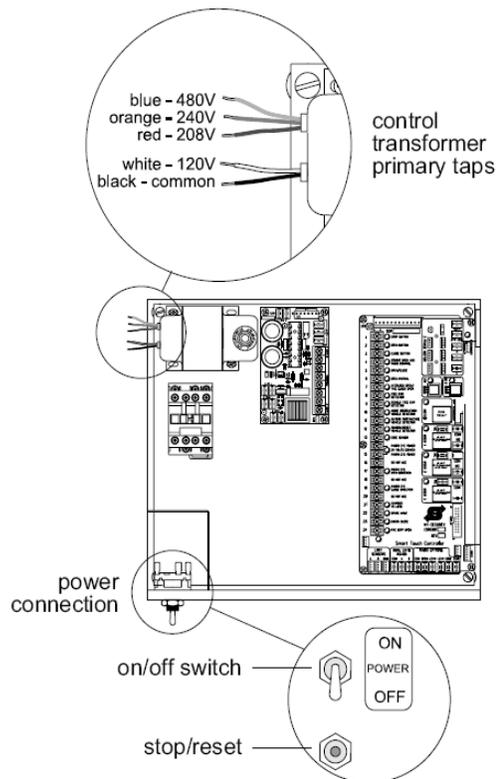


### 7. Electrical Power Connection

This operator is intended for permanent installation, so all electrical conduits must be properly connected to the control box. The entry for the primary power is a 1/2 - 3/4" knockout on the left side of our control box next to the on-off switch. When this operator was manufactured, it was built to run on a specific voltage and phase for line power. Make sure you have compared the line voltage and phase available with the nameplate on this machine. They must match! Be certain that the wire size of the branch circuit that will supply the operator vs. the distance of the run from the main panel is large enough to avoid excess voltage drop. At a minimum, a 20 amp circuit (protected with a 20 Amp Inverse Time Breaker) should be provided. Also be sure the operator is electrically well grounded per NEC Article 250 and local codes. See pages 61 and 62 for correct wire sizes and detailed electrical wiring information.

### 8. Primary Tap of Control Transformer (not on battery operators)

Check to make sure that the primary tap on the control transformer matches the line voltage you have connected to the operator. Measure the line voltage carefully to distinguish between 208V and 230V branch circuits. A label on top of the transformer identifies the various voltage taps.



### 9. Electrical Power for Two Part 333 type operators

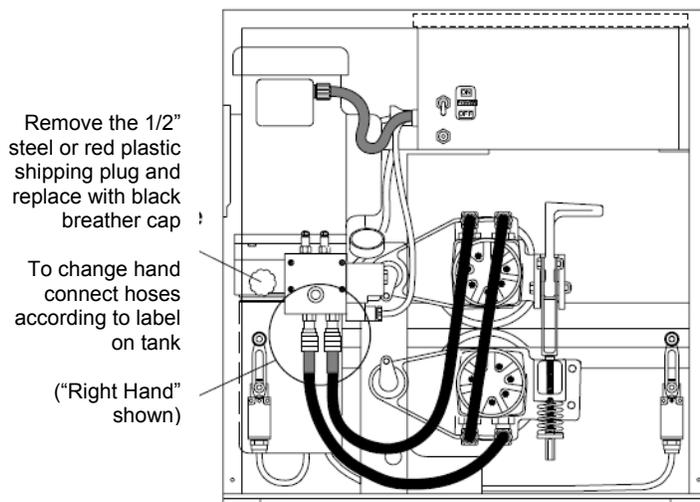
The primary AC power must be routed to the controller enclosure with the pump, but there must also be conduits between the gate operator and the controller enclosure.

Note: AC power is not needed in the gate operator, unless there is an optional heater. A minimum of two separate conduits must be provided, 2" for the hydraulic hoses and 3/4" for the electrical interconnections. Unless there are accessories in the gate operator, the only electrical interconnection between the two enclosures will be three wires between the two terminal strips for the limit switches. Join the hydraulic hoses by plugging the quick coupling together according to the hand of the gate. See the on page 59.

## Installation

### 10. Connections for Two Part Battery Operators

The primary AC power must be routed to the DC power supply enclosure, but there must also be at least one 2" conduit between the gate operator and the DC supply enclosure. Note: AC power is not needed in the gate operator enclosure, unless there is an optional heater. Three separate DC circuits are required between the battery supply and the gate operator. Heavy gauge wires to supply the motor and two 14-gauge circuits for the controls. The heavy gauge wire must be at least 6-gauge if the DC supply is within 20 feet of the operator, but must be increased to 2-gauge if the DC supply is located farther from the operator or this is a SlideDriver 30F (222 EX 1.7) – 1.7ft/sec model. Also see page 56 titled "Wiring and Control Configuration for DC Operators" and Drawing E125 on page 58.



**11. Check the operator "Hand"** All slide operators must have their "hand" set before they can function. The "handing" must be set both by the proper hydraulic hose connection and electrically. The hose connection for proper handing is described on a label near the hose connection point. Also, see the instructions to set handing on page 18 "Installation Configuration for Smart Touch Controller." Handing is viewed by standing in the middle of the road on the secure side looking out. A gate which opens to the right is a right handed gate. A gate which opens to the left is a left handed gate.

### 12. Replace the Shipping Plug!

Replace the 1/2" steel or red plastic shipping plug on the front side of the pump with the black breather cap. Failure to do so may contribute to premature shaft seal failure.

### 13. Setup Smart Touch Controller

The operator controls will not allow the gate to function until the Smart Touch Controller has been configured. Wait to connect external controls until you have reviewed Smart Touch Controller instructions and tested operator basic functions.

**Note:** HySecurity has an installation CD available free of charge. Call a HySecurity distributor for your copy.

## Mechanical and Hydraulic Adjustments

### 1. Drive Wheel Spring Tension

When the drive wheels are fully clamped on the rail, the red spring should be compressed to 2" in height. Turn the nut at the bottom of the threaded rod assembly to adjust. Slightly less compression is okay for lighter gates. (See Figure on page 11)

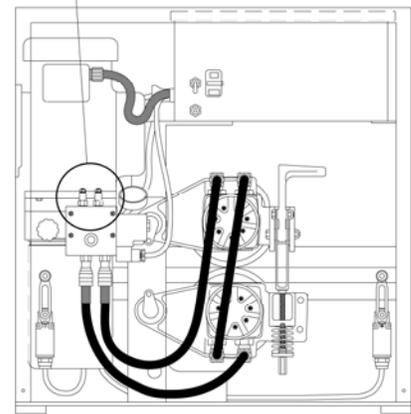
### 2. Drive Rail

With wheels unclamped and manually moving the gate, verify that the drive rail does not vary more than 1" up and down, or 1/4" in and out throughout the entire horizontal travel of the gate. Re-alignment is simple if the rail is mounted with U bolts. To adjust in and out, loosen the U bolts and add or remove shim stock. To adjust up or down, loosen the U bolts and simply tap the rail with a hammer until the correct height is reached. Adjusting the rail in or out requires inserting shims between the rail and the gate where necessary.

### 3. Brake Valves SlideDriver 40 & 30F (222 E & EX 1.7) models only

If your operator is equipped with brake valves, their proper adjustment is important for smooth operation of the gate. In order for the brake valves to have time to function, the limit ramp must trigger the limit switch at least six inches before the point at when you want the gate to stop. Adjustment of the brake valves, one for each direction of travel, will determine how quickly the gate actually stops. If adjustment is needed, loosen the 9/16" lock nut on the top of the brake valve and turn the adjustment stem, in about 1/4 turn increments, with an Allen wrench. The adjustment works opposite of typical, a counter-clockwise adjustment will stop the gate more rapidly. If the adjustment is set too loose, the limit ramps will bang into the drive wheels. If the adjustment is set too tight, the system pressure will increase, the gate speed may decrease and the gate will jerk to a stop. Set the brake valves to achieve a controlled smooth stop, with the limit ramp 1.5" to 3" from the wheels, then retighten the locking nut to hold the setting.

Optional brake valves CCW = quicker stop  
 Left valve controls open  
 Right valve controls close



"Right Hand" Hose connections shown

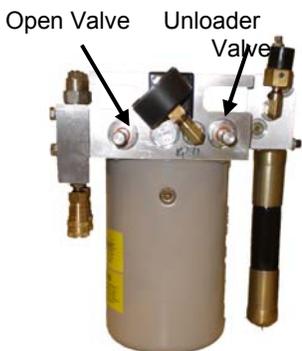
### 4. Pressure Relief Valve

The operating pressure limit is factory preset to a level that will operate most gates well. A gate may require pressure relief valve adjustment on install. To provide maximum entrapment protection, do not set the pressure limit higher than necessary for good operation (see procedure and maximum settings on page 52). This valve, which governs the maximum system hydraulic pressure, is located on the backside of the pump, above the AWOG on SlideDriver 40 and on the same manifold but facing the operator chassis on other operator models.

Reduce the relief valve setting to the lowest pressure that will reliably operate the gate. A lower setting reduces the operator's maximum force.



**Pressure Relief Valve**  
 Left: SlideDriver 40, 80, 200 Behind black switch  
 Right: All other models



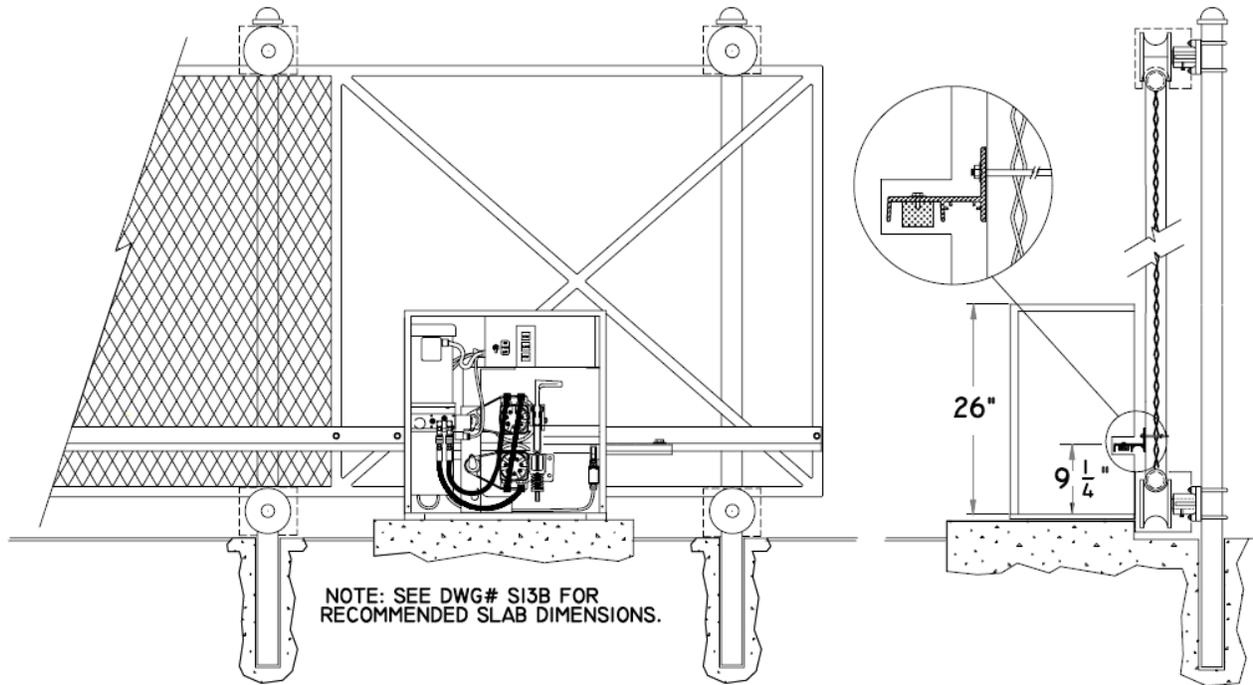
### 5. Open and Unloader Valves

These two valves are solenoid operated. The Open valve is below the motor near the front of the pump and energizes in order to direct the hydraulic flow to open the gate. The Unloader valve, which is near the back of the pump energizes at the beginning of a cycle to allow no load motor starts and at the end of each cycle to aid in decelerating the gate. No adjustment of these valves is possible or necessary. Valves are wrapped with black plastic valve coils.

NOTES:

DRIVE RAIL HEIGHT IS MARKED ON THE SIDE OF EACH CHASSIS.

COVERS MUST BE USED FOR PROTECTION ON ALL EXPOSED WHEELS AND/OR HARDWARE. COVERS ARE SHOWN HERE AS DOTTED LINES.



ELEVATION

SECTION

NOTES:

CONSULT FENCE CONTRACTOR FOR RECOMMENDED CANTILEVER POST SPACING. 50% OF GATE OPENING GENERALLY PROVIDES SMOOTH OPERATION.

RIGHT HAND CANTILEVER GATE IS SHOWN IN THE FULLY CLOSED POSITION. OPERATOR COVER OMITTED FROM DETAIL. (DO NOT SCALE).

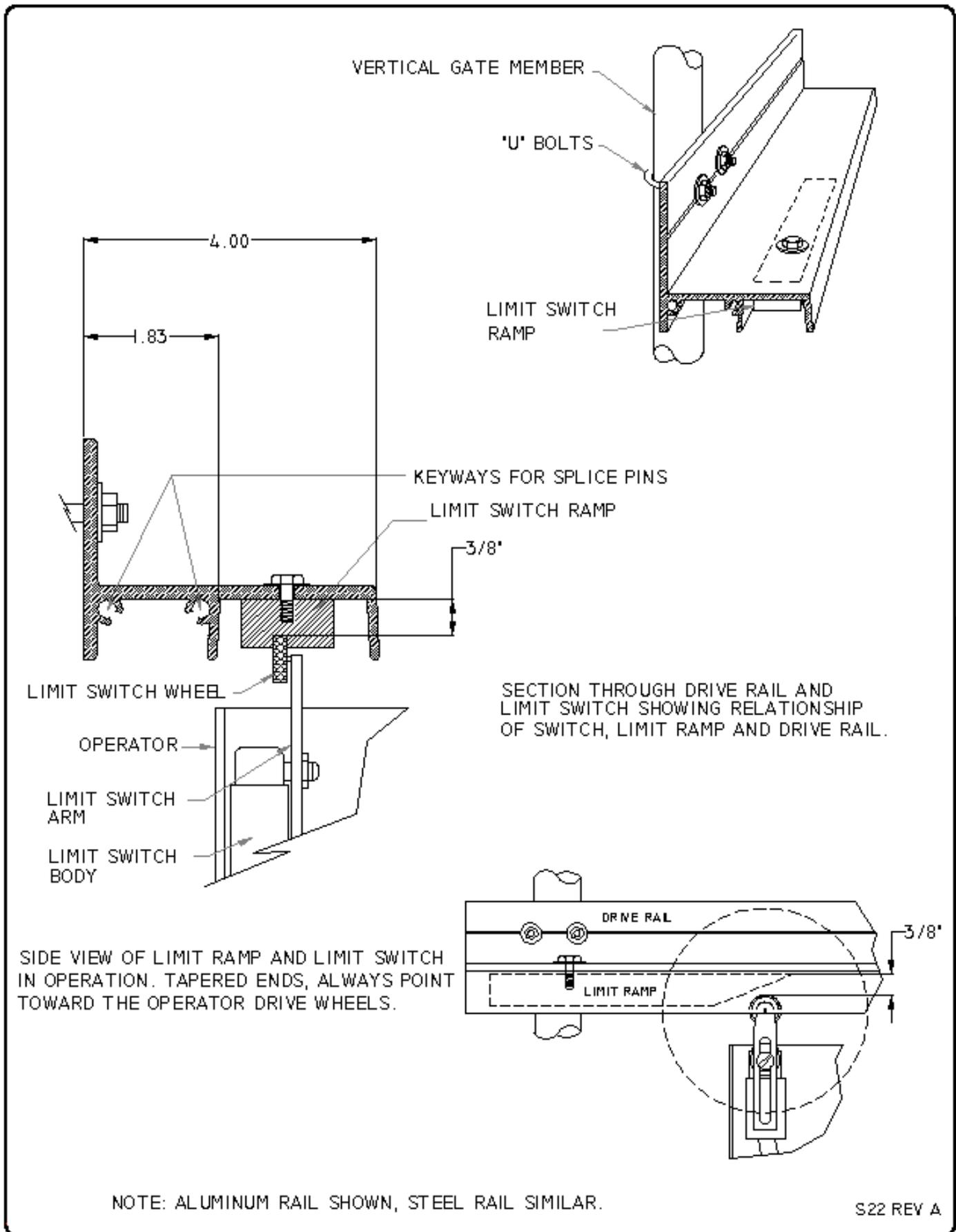
IT MAY BE NECESSARY TO SHIM DRIVE RAIL IF GATE PANEL IS "BOWED". RAIL MUST BE INSTALLED IN A STRAIGHT LINE.



TITLE  
Slide Gate Operator (typ) R.H. Cantilever Gate Panel

DRAWN KW	DATE 01/28/08	THIRD ANGLE PROJECTION	REV C
CHECKED SHOP	DATE MM/YY/DD	PART NUMBER N/A	
APPROVED ENGRNG	DATE MM/YY/DD	DRAWING NUMBER: S13A	SHT OF 1 1





## Smart Touch Basics

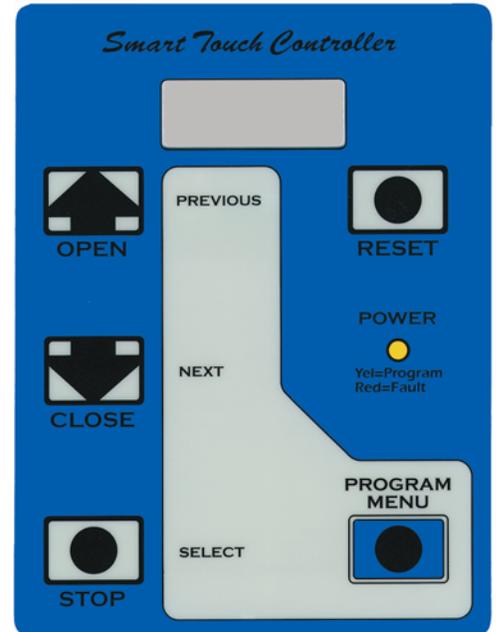
Read this page if you are unfamiliar with using the Smart Touch Controller.

You must learn to navigate and change menu settings with the Smart Touch Controller before an installation can be completed or any control settings or function changes can be made.

**Until a new operator has been configured, the controls are not functional and the display is locked in the menu mode until the User Class 1-4, and Left or Right hand use have been selected. See the next page for instructions on how make these settings.**

1. There are five buttons on the membrane switch pad that provide total operator control. The Open, Close and Stop buttons serve as a three-button control station, but in Menu Mode, they become Previous, Next and Select buttons. The Program Menu button is used to both enter and exit Menu Mode. The Reset button clears all Errors and Faults and returns the operator to its normal functioning state.
2. When in a Menu Mode, changes to be made to a Menu setting are accomplished by pressing the Previous, Next and Select buttons in the following sequence:
  - a. Press the Next button to move forward through the list of available menu items, as shown on pages 22 and 23, or press the Previous button to move back an item.
  - b. Press the Select button to select a menu item to change. The menu item will flash to indicate that its setting is ready to be changed.
  - c. Press Next to move forward or Previous to go back through available settings.
  - d. When you have located the new setting that you want to use, press the Select button and the program accepts the change and stops blinking.
  - e. The Program Menu button does not allow an Exit to Run while a selection is still blinking. Press the Select button to confirm the new setting and stop the blinking. Then exit to Run Mode.
  - f. Pressing the Next or Previous buttons when the menu item is not blinking moves to the next or previous menu item.
  - g. When done, press Program Menu to exit to Run Mode.
3. Once configured, the operator is in the Run Mode. To gain access to the User Menu or the Installer Menu from the Run mode, follow these steps:
  - a. Press the Program Menu button and watch the LCD scroll the system data, or press the Program Menu key a 2<sup>nd</sup> time to skip the scroll. The scrolled data displays the information in the table on page 22.

**Note:** The Program Menu button will not function unless the gate is at rest, open and close inputs are not active, and the operator is not displaying a Fault, Alert or Error. Verify system status by viewing lighted (active) inputs. Active inputs are lighted on this and all “New Generation” (post September 2006) Smart Touch operators (other than DC operators without AC power). Verify active inputs on “New Generation” DC operators (running without AC power) and “Classic” pre-September 2006 operators, by pressing the tact button located in the lower,



left area of the Smart Touch Controller (see page 20). If necessary, clear Alerts, Faults or Errors by pressing the Reset button on the Smart Touch Controller membrane switch.

- b. The LCD display scroll will stop at the menu item for the automatic close timer setting [Ct \_\_\_\_]. This is the first item in the User Menu.
  - c. To access the more detailed Installer Menu, first go to the User Menu. Then press and hold the Reset button and while holding, press the Open button. The LCD will change to display the UL usage class menu item [uC \_\_\_\_] This is the first item in the Installer Menu.
4. Pressing the Program Menu button when the User or Installer Menu is not blinking will return the system to the Run Mode.

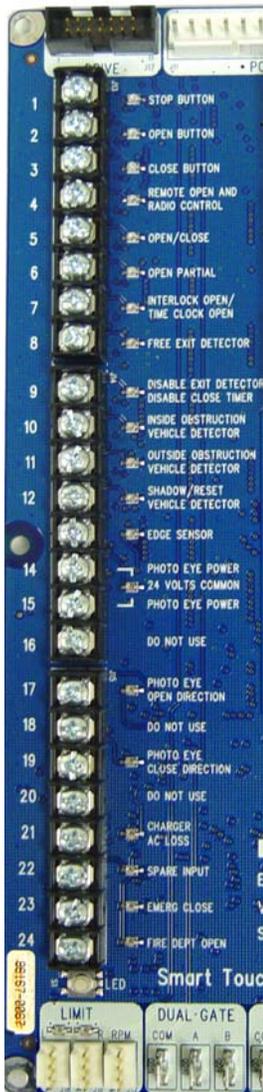
## Installation Configuration for Smart Touch Controller

### Setting Operator Handing and Usage Class

1. Connect the hydraulic hoses to the quick couplers on the pump in order to configure left or right hand opening function (as viewed from the secured side of the gate). There is a label near the connection point describing this procedure. Also see the illustration on page 12. If the hoses are connected incorrectly, the gate will run backwards (close when open button is activated) and this may trigger an error [Err 1] on the LCD display. If an error occurs, reverse the hoses to the correct position and press the Reset button to clear the error.
2. Turn on the power switch and observe that the LCD will first show the software version, and then stop at a steady display within two seconds. If the display reads [uC 0] go to step 3. If the operator has previously been configured, the Installer Menu must be accessed in order to reach the system configuration menu items: See step #3d at the top of this page.
3. When turning on the power for a new machine, the LCD display directly enters the Installer Menu at the [uC \_\_\_\_] menu item, which is for selecting the user class as defined by UL. Select [uC 1] - [uC 2] - [uC 3] or [uC 4] depending upon the use application. See page 31 for UL usage class definitions.
4. To set the operator handing, use the "Next" button and move one click down the menu to item [Sh \_\_\_\_] Enter r for right hand or L for a gate that opens to the left. Never alter the limit switch mounting or change the order of their connection to the controller board. At this point you should exit the Installer Menu, by pressing the Program Menu button. The LCD display jumps to the close timer [Ct\_\_\_\_] setting in the User menu, which may now be set. Either press the Program Menu button again to exit to normal run mode or set the close timer by the same programming sequence described at the previous page.
5. **Note that the Installer menu cannot be exited by any means until the selection for UL usage class [uC \_\_\_\_] and the selection for gate handing [Sh \_\_\_\_] have been entered.**
6. Test for normal function of the gate operator, with the wheels unclamped, by running it both open and closed from the pushbuttons on the membrane switch pad. Neither limit switch should be triggered at the start of this test or an alert [ALE6] may trigger because the control did not sense gate motion. If this occurs a new input will restart the motor.

## Wiring Control Inputs

1. Test open and close before wiring the external control inputs. This makes it easier to troubleshoot if an unexpected functionality arises. “New Generation” Smart Touch Operator inputs (after Sept. 2006) use an LED to indicate when it is active. DC operators operating without AC require you to push and hold an LED button to disclose input status. This button is in bottom corner near the Fire Department Open input. [“Classic,” pre-Sept. 2006 operators LEDs are only lit when you push the Tact button. The Tact button is located on the top left corner, near the Stop Button input on the Classic Board.]
2. All the control device inputs listed below are shown as a single input. The 2nd wire is connected to the Common Terminal Buss on the Power Supply board. The Emergency Close and Fire Dept. Open inputs are an exception and require a +24 Volt input. The +24 is located on the spade terminals next to the Common Buss. See pictures on the next page.



### Smart Touch Controller Inputs

1.	<b>*Stop Push button</b> N.C. input, jumper to Common if unused
2.	<b>*Open Push Button</b> Not for radio or remote access controls
3.	<b>*Close Push button</b> Not for radio or remote access controls
4.	<b>Remote Open &amp; Radio Control</b> For radio / remote open device – Program to also Close using Smart Touch menu
5.	<b>Open/Close button</b> Pushbutton or radio controls
6.	<b>Partial Open</b> Installer adjustable from 7- 99 seconds
7.	<b>Open interlock input or Time clock Open</b> Menu configurable
8.	<b>Free Exit vehicle detector</b>
9.	<b>Disable Free Exit vehicle detector or Timer to Close</b> Free Exit is only disabled if Close Limit Switch is tripped. If the gate is partially opened, the Free Exit detector will trigger the gate to open fully.
10.	<b>Inside Obstruction vehicle detector</b> Inside reversing loop
11.	<b>Outside Obstruction vehicle detector</b> Outside reversing loop
12.	<b>Shadow/Reset vehicle detector</b> Shadow function used for Swing gates only - Reset function is for Arm gates
13.	<b>Edge Sensor</b> One input works for both travel directions
14-15.	<b>Photo eye Common Power</b> 24V common connection for open and close photo eyes
17.	<b>Photo eye Open direction</b>
19.	<b>Photo eye Close direction</b>
21.	<b>Charger AC power loss</b> Only used in DC, battery type operators
22.	<b>Spare Input</b> Software ≤ h3.24,- non functional, <b>Gate Lock Interlock Input</b> Software > h3.24, prevents start until external gate lock releases
23.	<b>**Emergency Close</b> Must menu enable and input +24 Volts to trigger. Requires constant hold or maintained input. This overrides photo eyes, gate edges & vehicle detectors.
24.	<b>**Fire Dept. Open</b> Must menu enable and input +24 Volts to trigger. Overrides photo eyes & gate edge.



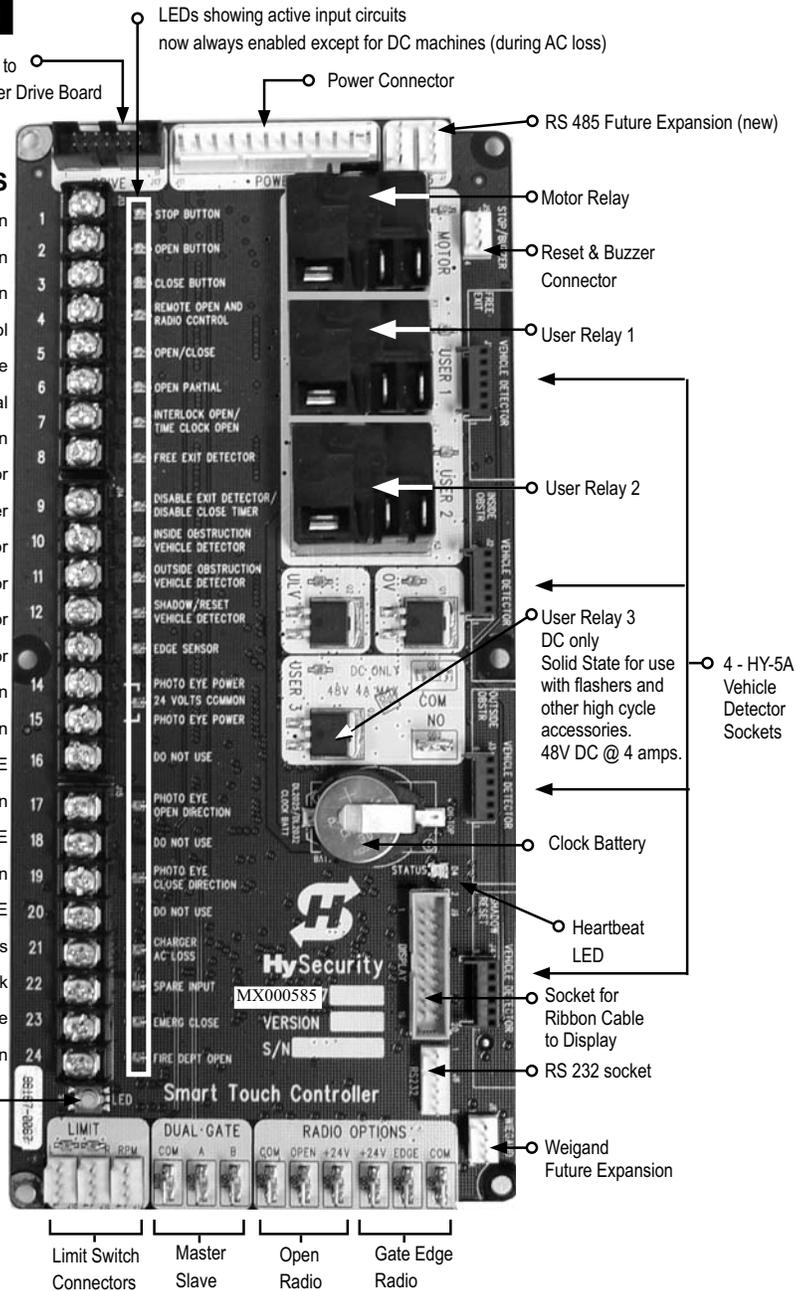
\*Do not connect an external control to terminals #1, 2 or 3, unless controls are located in clear view of the entire gate area. Out of sight controls: use input terminals #4, 5, 6 or 7.

\*\*The Emergency Close and Fire Dept. Open inputs are to be used only if access to these controls is guarded such that there is always supervision when activated.

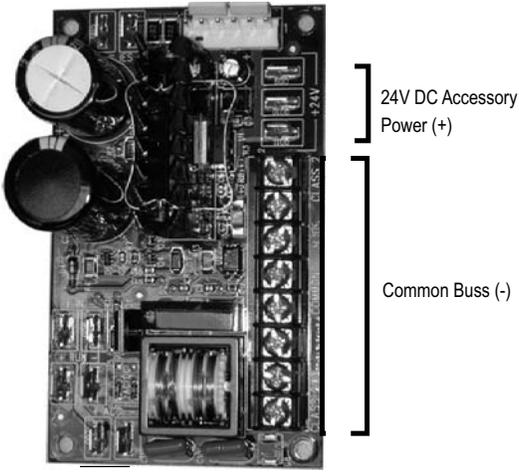
**“New Generation” Smart Touch Board**

Runs software 4.xx and higher

- INPUTS**
1. Stop Button
  2. Open Button
  3. Close Button
  4. Remote Open & Radio Control
  5. Open / Close
  6. Open Partial
  7. Interlock Open / Time Clock Open
  8. Free Exit Detector
  9. Disable Exit Detector / Disable Close Timer
  10. Inside Obstruction Vehicle Detector
  11. Outside Obstruction Vehicle Detector
  12. Shadow / Reset Vehicle Detector
  13. Edge Sensor
  14. Photo Eye Power (-) 24 Volts Common
  15. Photo Eye Power (-) 24 Volts Common
  16. DO NOT USE
  17. Photo Eye Open Direction
  18. DO NOT USE
  19. Photo Eye Close Direction
  20. DO NOT USE
  21. Charger AC Loss
  22. Gate Lock Interlock
  23. Emergency Close
  24. Fire Department Open
- Tact button. Push tact button to make active input LEDs light up when AC is off on DC operators.



**Power Supply Board**



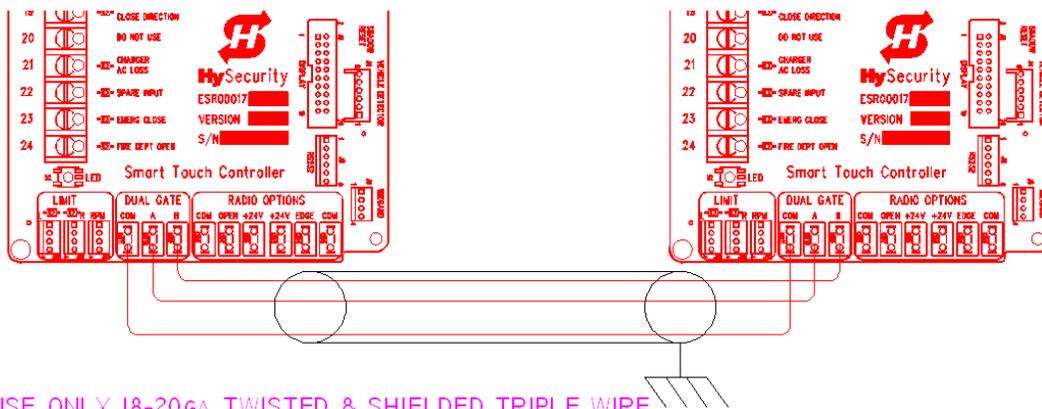
**HY-5A Vehicle Detector**



## Connecting a Master / Slave Pair

Configuring two operators to be a Master & Slave pair is easy with the Smart Touch Controller. There is no need to order a special model or any adapters. The area of the board marked Dual Gate employs a 3-wire RS485 serial port for communication between Master & Slave operators. **Note:** Master Slave operators must have the same version of software loaded on both machines.

1. An electrical conduit for the interconnecting wires must span between the two operators. This conduit must contain only low voltage  $\leq 24V$  control and signal wiring.
2. Complete the installation of both of the operators as separate machines and verify that their basic functions are correct as solo operators before interconnecting them.
3. The two gate operators should be supplied by home runs from separate 20 Ampere circuit breakers in the main panel, but if there is only one circuit, be absolutely certain that the breaker and wire size is sufficient for the load of two motors. See the Appendix.
4. External control inputs, vehicle detectors and entrapment protection sensors may be connected to either gate operator without regard to preference.
5. To interconnect the two operators, route a shielded twisted triple cable between the electric control boxes and connect to the RS485 Dual Gate terminals, in matching order on both machines: In the RS485 shaded area connect the terminals for Master Com to Slave Com, Master A to Slave A and the Master B to Slave B using the insulated trio of wires. Connect the shield to a solid ground at either the Master or the Slave unit (Do not ground both ends). Cut off the shield and insulate (tape up) the exposed strands at the other operator.
6. The Installer Menu in each machine must be set as a Master or a Slave under menu item [dg\_\_]. Set one operator as a Slave [dg\_1] and the other as a Master [dg\_2]. If the function of any external input is to be different than the factory default, configure for the desired function on the operator where that input is connected. Internal functions, such as the close timer or reversal distance, are controlled by the Master operator regardless of the settings in the Slave.
7. Once set as a Master or a Slave the operators will be in constant communication with each other. If that communication stops because the wires become severed or one operator is turned off, both machines will cease functioning and the LCD will display Err4, which is a Master/Slave communication error. This error cannot be reset until both machines are functional and communicating properly again.



NOTE: USE ONLY 18-20GA TWISTED & SHIELDED TRIPLE WIRE.

## Smart Touch User Menu Functions

**Initial Power Up** – When power is turned on, the display will disclose the software revision:

h4.23	2s delay	Displays software version Number
-------	----------	----------------------------------

*Software version 4.23 provides the options, adjustments, display code and functionality described in the remainder of this manual. Older versions may differ slightly. Free Software Upgrades using HySecurity's START software are available online at [www.hysecurity.com](http://www.hysecurity.com).*

### System Data and accessing the User Menu Settings:

If the gate is stopped in the Run Mode, pressing of the **Menu button** accesses the User Menu. After the menu button is pressed, the LCD will scroll the system data in the table below. The scrolling display stops at the close timer setting, which is the beginning of the User Menu. To exit the Menu Mode, the display must not be blinking, then simply pressing the Menu button will return the display to the Run Mode and re-enable the controls. The menu mode will also automatically return to the Run Mode if there is no activity for two minutes.

	Data Displayed in Scroll	Time	Description
S1	[SLAu] or [LEAd]	2s	SLAVE Operator or LEAd Operator (master)
S2	[ot 1] Gate type (1-5)	2s	Operator type: 1 =HSG, 2 =HRG, 3 HVG, 4 =HTG
S3	[ rh ] or [ Lh ] Hand setting	2s	Displays hand configuration [ rh ] or [ Lh ]
S4	[uC ] UL usage class (1-4)	2s	Installer setting of usage class: type 1-4
S5	[d ] 24VDC Buss Voltage	2s	Actual VDC buss voltage
S6	[CC ] Life cycle counter	2s	High digits of 6 digit life cycle counter
S7	[ ] Life cycle counter	2s	Last 4 digits of 6 digit life cycle counter

Read through the options available in the User Menu and the Installer Menu on the next page and you can see that the functions of this gate operator can be configured to suit most any specific need. Once you have learned to navigate the menus, as described in #3 on page 17-18, and how to change a setting, as described in #3 & #4 on page 18, the full range of features and choices of the Smart Touch Controller are available to use. The User Menu contains the basic configuration items and the Installer Menu contains the more advanced menu items.

	User Menu Options	Default	Description
U1	[Ct 0] Close timer setting	0	0 = Close timer off or 1 – 99 seconds
U2	[hC 0] Momentary Close	0	0 = momentary, 1 = Constant hold Close PB required
U3	[ho 0] Momentary Open	0	0 = momentary, 1 = Constant hold Open PB required
U4	[AP 0] Power loss function	0	0 – 3 (0=Type A, 1 = B, 2 = C, 3 = D) See page 56
U5	[ro 0] Radio control option	0	0 = Open only, 1 = Adds close ability when full open
U6	[bF 2] Warn before operate	2	0 =off, 1 = Buzzer alerts 3 seconds before + in motion, 2 = Buzzer alerts 3 secs before + 2 seconds in motion
U7	[FA 0] Forced open Alert and automatic gate reposition	0	0 = disabled, 1 = sound buzzer (2 pulses/sec) if forced open for more than four seconds, time out in 30 Sec
U8	[dA 0] Drift Closed Alert and automatic gate reposition	0	0 = disabled, 1 = sound buzzer (2 pulses/sec) if drift closed and cannot reopen within four seconds.
U9	[PE 0] Photo Eye Align Mode	0	0= off, 1 = on (auto off when close limit triggered)
U10	[CL 0] Clock set (24 hour type)	0	0= display, 1= set mins, 2= set hours, 3= day, 4= month
U11	[Ld 5] LCD Contrast set	5	1 - 9 = Adjusts contrast of the display
U12	[dS 0] Data Log (New Gen only)	0	0 = Std. 1 = Extended (reset to 0 in 24 hr) (V4.xx software)

### These Notes Refer to the Menu Above:

- S1 Appears only if the operator is configured as a master or a slave unit
- U1 Close timer setting does not appear when set for constant contact close function
- U4 Power loss function only appears if factory has provided DC battery type operator
- U6 We strongly advise never disabling the Warn Before Operate buzzer.

## Smart Touch Installer Menu Functions

The Installer Menu can be accessed only by entering the User Menu first, and then by **pressing the Reset button and the Open button** simultaneously (some older software requires the Reset button be pressed first and held while the Open button is pressed).

**To restore the factory default settings, go to menu item [Fd\_0] and change the setting to 1, then press the Program Menu button. The entire menu will reset to the factory defaults.**

	Installer Menu Options	Default	Description
I1	[uC 0] Set UL Usage Class	0	0 = gate disabled, Set Class 1 through 4 use
I2	[Sh 0] Set Handing of gate	0	0 = gate disabled, r = Right Hand, L = Left Hand
I3	[Fd 0] Load Factory Defaults	0	0 = User settings, 1 = Load defaults (resets full menu)
I3a	[bu 0] Choose Buzzer	0	0 = Buzzer not set, 1 = Freq 1, 2 = Freq. 2
I4	[dg 0] Set Master/Slave type	0	0 = solo operator, 1 = Slave unit, 2 = Master unit
I5	[Ch 0] Set AC Charger or Solar	0	0 = DC + AC charger 1 = DC + Solar charger
I6	[Fo 0] Enable Fire Dept. Open	0	0 = disabled, 1 = enabled
I7	[oC 0] Enable Emergency close	0	0 = disabled, 1 = enabled
I8	[SE 3] Inherent Sensor sens.	3	1 = maximum sensitivity, 9 = Lowest sensitivity
I9	[SS 0] Inherent Sensor function	0	1 = stop only (note, functions in usage class 4 only)
I10	[LC 0] Leaf delay Close	0	0 = none (1-7) ½ second steps (Master/Slave only)
I11	[Lo 0] Leaf delay Open	0	0 = none (1-7) ½ second steps (Master/Slave only)
I12	[rt 0] Maximum run timer	0	0 = 60 Seconds max run, 1 = 300 Seconds max run
I13	[Po 0] Partial Open distance	0	0 = none, or 7 – 99 seconds
I14	[EC 0] PEC reverse to open	0	0 = Close eye stops only, 1 = 2 sec reverse to open
I15	[EO 0] PEO reverse to close	0	0 = Open eye stops only, 1 = 2 sec reverse to close
I16	[gr 0] Edge reverse to open	0	0 = Edge reverses fully open, 1 = 2 sec reversal only
I17	[Sr 1] IES reverse to open	1	0 = IES reverses fully open, 1 = 2 sec reversal only
I18	[PC 0] Set PEO/ PEC – NO/NC	0	0 = Normally Open PE output, 1 = N.C. (supervised)
I19	[gC 0] Set Edge input – NO/NC	0	0 = Normally Open Edge output, 1 = Normally Closed
I20	[tC 1] Time clock/ Interlock input	1	0 = select Time Clock, 1 = select Open Interlock
I20a	[dt 0] Disable Free Exit/Close Tmr	0	0 = disable Free Exit, 1 = disable Close Timer
I21	[or 1] OOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I22	[ir 1] IOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I23	[dL 1] Vehicle detector logic	1	1 = std, 2 & 3 = quick close, 4 = full anti-tailgate*
I24	[r1 0] User relay 1 option	1	0 = disabled, 1 – 24 = see output options page 28 - 29
I25	[r2 0] User relay 2 option	6	0 = disabled, 1 – 24 = see output options page 28 - 29
I26	[r3 0] User relay 3 option	1	0 = disabled, 1 – 24 = see output options page 28 - 29
I27	[tL 0] Gate Open alert	2	0 = 0 sec, 1=15s, 2=45s, 3=75s, 4=105s, 5=135s
I28	[Lt 0] Loitering alert	3	0 = 0 sec, 1=15s, 2=45s, 3=75s, 4=105s, 5=135s
I28a	[SA 0] System Address	0	0 = no network, 1-99 = network “drop” address
I29	[ELd0] Test factory ELD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I30	[iLd0] Test factory IOLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I31	[oLd0] Test factory OOLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I33	[SLd0] Test factory SLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7

\*See page 42 for description of vehicle detector & Loop Fault diagnostics

### These Notes Refer to the Menu Above:

*I1, I2, I3a These settings must be configured or the gate cannot function and menu will not exit.*

*I3a The Option bu=0 only appears if the Controller has been reset to factory default settings,*

*I5 These settings appear only if the factory has provided a DC powered gate operator*

*I9 IES stop only setting [SS \_\_] does not appear unless set as a class 4 operator*

*I10, I11 These settings appear only if the Installer Menu is set for Master / Slave function*

*I27, I28 These settings appear only if the Installer Menu has set relays r1-r3 for these alerts*

## User Menu Functions

**User 1 [Ct \_] Close timer setting:** This menu item is the automatic close timer for the gate. The factory setting is zero, which is off. It may be configured up to 99 seconds.

**User 2 [hC 0] Momentary Close:** This menu item is to configure the system for constant hold push button Close function. The factory setting is zero, which is momentary contact input.

**User 3 [ho 0] Momentary Open:** This menu item is to configure the system for constant hold push button Open function. The factory setting is zero, which is momentary contact input.

**User 4 [AP 0] Power loss function:** This menu item only appears if the operator is a DC battery powered version. This item is to configure what gate function will occur when the AC power fails. See page 56 for more detailed information on DC operators.

**User 5 [ro 0] Radio control option:** This menu item is to configure whether a radio input can open only (default) or if set to 1, also have the ability to close the gate when it is fully open.

**User 6 [bF 2] Warn before operate:** This menu item controls the warn before operate buzzer and can be configured three ways. Setting the menu item to zero turns the buzzer off, but we strongly advise leaving this valuable warning feature active to alert prior to gate motion. **Never cut the wires to the buzzer or unplug it.** Set to 1 and the buzzer will sound three seconds before motion and the entire time during gate motion. Set to 2 (default) and the buzzer will sound three seconds before motion and for the first two seconds of motion.

**User 7 [FA 0] Forced open Alert and automatic gate reposition:** This function is intended for highly secure facilities. If it is enabled, by setting the selection to 1, it will reinitiate a closure if a gate is somehow forced to open far enough that the close limit switch releases. The Alert buzzer will sound immediately, even if it had been turned off, and the motor will restart to secure the gate fully closed. If the gate is not fully closed within four seconds the motor turns off and the alert buzzer sounds an intruder alert for thirty seconds. The LCD display reads ALE1.

**User 8 [dA 0] Drift Closed Alert and automatic gate reposition:** If it is enabled, by setting the selection to 1, it will restore a gate to back its fully open position if it drifts closed for any reason. The buzzer will sound a warn before operate alert, even if it had been turned off, and the motor will restart to reopen the gate. The motor will run for a maximum of four seconds and if the gate is not fully open in this period, the buzzer sounds for ten seconds and the LCD display reads ALE2.

**User 9 [PE 0] PE Alignment Mode:** This feature may be activated as an aide to photo-eye emitter / receiver alignment. The buzzer chirps once as the photo eye is triggered or twice when the photo eye is released. The Alignment Mode is cancelled with any close limit input or reset input.

**User 10 [CL 0] Clock and date set:** The Smart Touch Controller is equipped with a 24 hour 365 day clock, so that events of significance can be logged and stamped with the time and date. This feature is useful to record historical operation data, which can be accessed via the RS232 port. To set or adjust the hour, minute, day or month, see page 29.

**User 11 [Ld 5] LCD Contrast set:** Under some extreme high or low temperature conditions, it may be necessary to adjust the contrast of the LCD display. The display is adjustable from 0-9 with a factory default setting of 5.

**User 12 [dD 0] Extended Data Log:** When set to 1, the ST Controller logs nearly all Smart Touch Controller events, in addition to the normal alert, fault and error logs. This parameter automatically resets to 0 after 24 hours – (Requires New Generation Smart Touch board and version 4.xx software)

## Installer Menu Functions

- Installer 1** [uC 0] **Set UL Usage Class:** This menu item is used to set the UL usage class, which must be set by the installer before the operator will function. See page 18, step 3.
- Installer 2** [Sh 0] **Set Handing of gate:** This menu item is used to set the gate handing, which must be set by the installer before the operator will function. See page 18, step 4.
- Installer 3** [Fd 0] **Load Factory Defaults:** This menu item is used to globally restore all menu settings back to new machine status. To activate, change the setting from 0 to 1 and push the Menu button. The UL usage class, the hand configuration and the buzzer type will need to be set again.
- Installer 3a** [bu 0] **Select Buzzer Type:** This menu item selects the type of audible buzzer installed on the machine. To set, push SELECT on the keypad, the display will flash 0, push OPEN and note the buzzer volume. Push OPEN again and note the buzzer volume. If this tone is louder, push SELECT, if the first tone was louder, push CLOSE for the louder tone, then push SELECT to lock in the louder tone.
- Installer 4** [dg 0] **Set Solo, Master or Slave type:** This menu item is used to configure an operator as a Master or a Slave operator in Master/Slave paired gate installations.
- Installer 5** [Ch 0] **Set AC Charger or Solar:** This menu item appears on 24 VDC battery machines only and is set to solar only when there is no AC battery charger.
- Installer 6** [Fo 0] **Enable Fire Dept. Open:** This menu item is used to enable the Fire Department Open input. When set to [Fo\_1] this input will override vehicle detectors, photo eyes and gate edges to open a gate. A reset (or two open commands) is required before the gate can be closed.
- Installer 7** [oC 0] **Enable Emergency Close:** This menu item is used to enable the Emergency Close input. When set to [oC\_1] this input will override vehicle detectors, photo eyes and gate edges to close a gate. A reset is required before the gate can be opened.
- Installer 8** [SE 3] **Inherent Sensor sensitivity:** This menu item is to adjust the sensitivity of the internal inherent sensor. Available settings are 1-9, with 9 being the least sensitive.
- Installer 9** [SS 0] **Inherent Sensor function:** This menu item is only available in UL class 4 operators and allows an option whereby the inherent sensor will only stop the gate.
- Installer 10** [LC 0] **Leaf delay Close:** This menu item only appears if the operator is set up as a Master or a Slave. Available settings are 1-7. Each increment adds ½ second, to a maximum of 3 ½ seconds time delay, before the operator activates when commanded to close.
- Installer 11** [Lo 0] **Leaf delay Open:** This menu item only appears if the operator is set up as a Master or a Slave. Available settings are 1-7. Each increment adds ½ second, to a maximum of 3 ½ seconds time delay, before the operator activates when commanded to open.
- Installer 12** [rt 0] **Maximum run timer:** The maximum run timer has a default setting of 60 seconds. This menu item allows an optional setting of 300 seconds, if changed to [rt\_1].
- Installer 13** [Po 0] **Partial Open distance:** This menu item both activates the partial open input and allows an adjustable distance by setting the open duration. The available time settings are 7-99 seconds. The default setting of [Po\_0] leaves this input inactive.
- Installer 14** [EC 0] **PEC (photo eye close) reverse to open:** The default for this menu item is for non-reversal if the close photo eye is triggered. The optional setting of [EC\_1] will cause the gate to reverse to open for two seconds if triggered while closing.

## Installer Menu Functions continued

**Installer 15** [EO 0] **PEO (photo eye open) reverse to close:** The default for this menu item is for non-reversal if the open photo eye is triggered. The optional setting of [EO\_1] will cause the gate to reverse to close for two seconds if triggered while opening.

**Installer 16** [gr 0] **Edge reverse to open:** Default for this menu item is a 2 second reversal if the gate edge is triggered. The optional setting of [gr\_1] causes the gate to reopen fully if triggered while closing.

**Installer 17** [Sr 1] **IES (inherent sensor) reverse to open:** The default for this menu item is for a 2 second reversal if the inherent sensor is triggered. The optional setting of [Sr 0] will cause the gate to reopen fully if triggered while closing.

**Installer 18** [PC 0] **Set PEO/ PEC – NO/NC:** The default for this menu item is for photo eyes with Normally Open outputs. The optional setting of [PC\_1] will require a Normally Closed output. If set for NC the connection is also supervised and any open or short circuit fault will generate a FAL2 alert, which requires a Stop button reset to re-enable any function if triggered.

**Installer 19** [gC 0] **Set Edge input – NO/NC:** The default for this menu item is for edge sensor with Normally Open outputs. The optional setting of [gC\_1] will require a N.C. output.

**Installer 20** [tC 1] **Time clock / Interlock input:** This menu item configures the input at terminal #7 to be either for the gate interlock function, as described on page 27, or for an external time clock to open input, as described on page 44. The default setting is [tC\_1] for the interlock function.

**Installer 20a** [dt 0] **Disable Free Exit / Close timer:** This input configures the input at terminal #9 to disable either the Free Exit Detector on terminal #8, or the Timer To Close function. Default setting is [dt 0] allowing disabling of the free exit detector. NOTE: The free exit is disabled using this menu item when the operator is sitting on its closed limit. If the closed limit is not tripped, the free exit continues to work.

**Installer 21** [or 1] **OOLD (Outside Obstruction Loop Detector) function:** The default for this menu item is for full reversal when the OOLD is triggered. The optional setting [or\_0] causes the gate to only pause when triggered. Closure begins as soon as the loop is clear again.

**Installer 22** [ir 1] **IOLD (Inside Obstruction Loop Detector) function:** The default for this menu item is for full reversal when the IOLD is triggered. The optional setting [ir\_0] causes the gate to only pause when triggered. Closure begins as soon as the loop is clear again.

**Installer 23** [dL 1] **Vehicle detector logic:** This menu item is used to configure quick close and anti-tailgate logic. There are four modes. See the full description on page 43.

**Installer 24, 25, 26** [r1 0], [r2 0], [r3 0] **User output relay 1 - 3 options:** These three menu items are used to configure the function of the three user output relays. There are 21 optional choices, which are described in detail on page 28 - 29.

**Installer 27** [t L 0] **Gate Open alert:** This menu item is to adjust the time delay before activating the user relay function #8, described on page 28. Time settings up to 135 seconds.

**Installer 28** [Lt 0] **Loitering alert:** This menu item is to adjust the time delay before activating the user relay function #13, described on page 28. Time settings up to 135 seconds.

**Installer 28a** [SA 0] **System Address:** Set the system address for network communication. 0 = no network communication, 1-99 set individual polling addresses. Requires v4.24 software or higher.

**Installer 29** [ELd0] **Factory ELD:** Controls the HY-5A Free Exit detector, see page 42.

**Installer 30** [iLd0] **Factory IOLD:** Controls the HY-5A IOLD detector, see page 42.

**Installer 31** [oLd0] **Factory OOLD:** Controls the HY-5A OOLD detector, see page 42.

**Installer 32** [SLd]. **Factory SLD:** Controls the HY-5A Shadow detector, see page 42.

## Correctional Facility – User Optional Wiring

A special terminal strip has been pre-wired to the three user relay outputs in Correctional Facility (CF) models for easy field wiring of the common interconnect options. If alternate output functions are required, see page 28, Options for User Programmable Output Relays 1-3. NOTE: User 3 Relay on New Generation Smart Touch boards (after Sept. 2006) is rated for DC only up to 48V and does not have an N.C. (normally closed) connection.

### Connecting an Interlocked Pair:

An interlocked pair of operators is not a Master/Slave system. It is two gate operators interlocked such that the one cannot open unless the other is fully closed. This connection is used frequently at correctional facilities for Sally Port gates. The Smart Touch Controller provides both the required interlock input (#7) and the interlock output contact.

1. User relay 3 on the Smart Touch Board has been set by the factory to provide the necessary interlock function. Connect a total of four wires between operator #1 and operator #2 as follows: One wire to the Common buss of each operator to the User 3 relay COM terminal of the other operator. Then, connect wires from the User 3 relay NO terminal to the Interlock input (#7) of the other operator.
2. If User relay 3 has already been used for a different function, then one of the other relays User 1 or User 2 must be wired as described above and set to output function 1. The user relays are configured in the Installer Menu as item [r1\_\_], [r2\_\_] or [r3\_\_] according to the definitions described on page 28-29.
3. The interlock input, terminal #7, is convertible to alternately be a time clock input, so it is possible that it may need to be switched back for the interlock function. If this alteration is needed, go to the Installer Menu, and set item [tC\_] to be [tC\_1].

### Connecting to an External Lock Mechanism:

The Smart Touch Controller can command an external solenoid lock or maglock to unlock just before gate motion begins.

1. User relay 2 has been set by the factory to provide the necessary output for a solenoid lock. Connect the voltage matching the lock solenoid to User 2 COM and connect a solenoid coil to User 2 NO (connect a maglock coil to User 2 NC). The un-switched solenoid or maglock wire connects directly to its supply voltage common conductor.
2. If User relay 2 has already been used for a different function, then one of the other relays User 1 or User 3 must be wired as described above and set to output function 6. The user relays are configured in the Installer Menu as item [r1\_\_], [r2\_\_] or [r3\_\_] according to the definitions described on page 28-29.

### Connecting the Gate Secure Position Indicator Output:

The Smart Touch controller can signal an external device that the gate is secure.

1. User relay 1 has been set by the factory to provide the necessary output for position indication. Connect the voltage matching the indicator light to User 1 COM and connect the gate secure light to User 1 NC. The other indicator light wire connects directly to the voltage common conductor. If an unsecured light is required, connect it to User 1 NO.
2. If User relay 1 has already been used for a different function, then one of the other relays, User 2 or User 3, must be wired as described above and set to output function 1. The user relays are configured in the Installer Menu as item [r1\_\_], [r2\_\_] or [r3\_\_] according to the definitions described on page 28-29.

## Options for User Programmable Output Relays 1-3

The Smart Touch Controller can be set to interface to many types of external devices through the use of its programmable output relays. All of the output functions listed below are accessible in the Installer Menu under the selection [r1 \_\_\_], [r2 \_\_\_] and [r3 \_\_\_]. Select which relay you wish to use and enter the appropriate function by the numbers as listed below. **Note:** The User Relays will operate normally to less than 18VDC.

1. **Close limit output:** This output can be used to create an interlock signal to another operator's interlock input, or simply to indicate that the gate is secure. The relay is **released** when the fully closed limit switch is tripped. The relay is **energized** when the fully closed limit is released. NOTE: In previous software versions, <h3.26 and <h4.24, any **Open** command, will energize the relay even if the fully closed limit is tripped.
2. **Close limit pulse output:** This output may be used in a sequenced system to command a 2<sup>nd</sup> machine to close. Generates a brief pulsed output that occurs when the close limit is triggered.
3. **Open limit output:** This output is used to indicate a full open position indication. This output becomes active when open limit is triggered and releases when the open limit is released.
4. **Open limit pulse output:** This output may be used to trip a sequenced barrier arm gate operator to open. Generates a brief pulsed output when the open limit is triggered. An additional pulse is also generated with any new open command even when the gate is already fully open.
5. **Warn before/during operate output:** This output may be used to control an external warning device. This output will operate at the same time as the internal warn before operate buzzer.
6. **Gate Lock output:** This output may be used to control external solenoid locks or magnetic locks. In both directions of travel, this output will be activated about 7/10<sup>th</sup> of a second before the operator starts moving the gate, and remains active while moving and for a few seconds after stopping.
7. **Gate forced open output:** Activated if the gate is forced off the closed limit switch, and operator is not able to restore the gate to full closed within four seconds. This alarm resets itself in 30 seconds.
8. **Gate open too long output:** Activates when the gate has been open longer than a user-selected period of time. Adjustable from 0 delay, then 15 seconds delay to 135 seconds delay in 15-second time increments.
9. **Safety Mode Alert output:** Activated when system is in the Safety Mode or the Entrapment Mode. Safety Mode occurs upon an impact with an obstruction. Entrapment Mode means the gate is stopped and occurs if the internal inherent sensor triggers while the system is in the Safety Mode.
10. **Entrapment Mode Alert output:** Activated only when system is in the Entrapment Mode.
11. **Unauthorized Vehicle Entry output:** Activated when a 2<sup>nd</sup> vehicle enters from the outside, without a valid input from an access control device. This output releases when an access control input signals open or the gate reaches the close limit position.
12. **Outside Obstruction Vehicle Detector output:** This output may be used to interlock to an entry device to prevent pedestrian use. This output is active whenever the OOLD is tripped.
13. **Special output from "OOLD" only when gate is closed:** Used to annunciate a vehicle or to indicate loitering. Adjustable from 0 delay, then 15 to 135 seconds delay in 15-second time intervals.
14. **Gate nearing full travel output:** For operators with RPM sensors only. This output is activated when the gate is three feet from full travel in both the open and close directions. This output can be used to reduce the sensitivity of a proximity sensor near the ends of gate travel.
15. **Gate Failure output:** This output is activated to report that a problem has occurred. Indicates that system in an Error Mode, Fault Mode or Entrapment Mode. If active, the gate is disabled.
16. **Motor Running output:** This output is active when the motor is running and the gate is in motion.
17. **AC Power Failure output:** This relay is normally energized, but drops with loss of AC power. This output is also active on DC machines when the battery charger is off.
18. **DC Power Failure output:** This output is activated when the battery power is very low, but the output ceases when the battery is dead. The relay is triggered when the battery is less than 20 Volts.
19. **Flasher Relay:** This output is intended to control flashing lights that pulse once per second. This relay is flashing all the time, except when the open limit switch is triggered.

20. **Free Exit Loop Vehicle Detector output (available with h3.23 and higher software):** This output is active whenever the ELD is tripped.
21. **Inside Obstruction Vehicle Detector output:** This relay output is activated anytime the Inside Obstruction Vehicle Detector (IOLD) is tripped.
22. **Reset/Shadow Loop Detector output:** This relay output is activated anytime the Reset or Shadow loop detector (RLD/SLD) is tripped. Since this input is not used for a sliding gate, User Relay 22 can be used in combination with a detector to perform the function of an arming loop detector or annunciation loop detector because there is no associated gate control logic.
23. **External Latching Gate Lock Output (available in h3.25 and higher software):** Activates when the Lock Interlock Input (Term 22) is active at the start of an Open cycle and remains on until the Lock Interlock releases or 10 seconds, whichever is sooner. Also activates at the start of a Close cycle and releases 1 second after reaching the Close limit.
24. **Gate at Partial Open Position (available in h3.25 and higher software):** This output is active when the partial open position is reached or exceeded.

## Clock Functions

### Setting the Time and Date

The Smart Touch Controller is equipped with a 24 hour (military time), 365 day clock, so that significant events can be logged and stamped with the time and date. This troubleshooting feature is useful to record key historical operational data and a log of Alerts, Faults and Errors. The log can be accessed via the RS232 port. Optional software and a serial communication cable are required in order to read this log. Contact your HySecurity distributor or HySecurity to purchase software and download cable\*.

1. To set or adjust the time, go to the User menu item [CL\_0] and push the **Select button**, so that [CL\_0] blinks. Using the **Previous** and/or **Next** buttons, change the setting from [CL\_0] to 1, 2, 3 or 4 depending upon which setting is to be changed. 1 = minutes / 2 = hours / 3 = days / 4 = months.
2. Push the **Select button**. The display will change to a blinking (adjustable) value. Different displays will appear (see table below) based on which [CL] value is selected:

Setting	Value	Display
[CL 1]	minutes	[ni 0–59]
[CL 2]	hours	[hr 0–23]
[CL 3]	days	[dA 1–31]
[CL 4]	months	[no 1–12]
[CL 0]	Run Mode	None

3. Change the hour, minute, day or month to the desired value using the **Previous** and/or **Next buttons**, then press the **Select button** to enter the change. [CL 0] will appear.
4. To change another setting, Press the **Select button**, (display will blink), then move to that setting using the **Previous** and /or **Next** buttons and repeat steps 2 and 3 until the clock is fully set.
5. When finished, be sure [CL 0] is displayed, then push **MENU** to exit.
6. A lithium disk battery supports the clock so that the time is not lost when the main power is off. This battery should be replaced about every five years. Use a DL 2025 / DL 2032 or CR 2025 / 2032 battery.

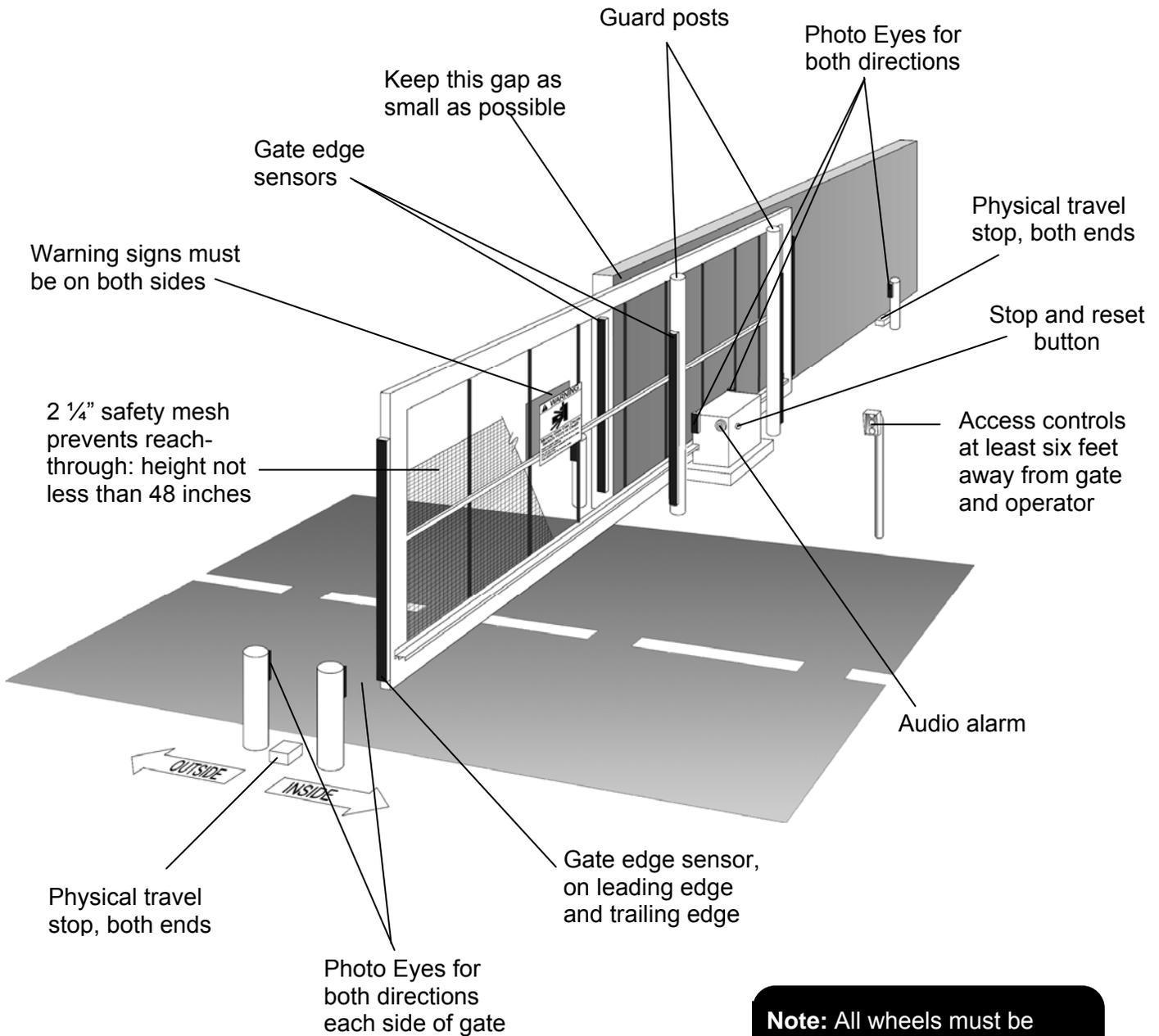
\* **START** Configuration and Diagnostic software is available at no charge at [www.hysecurity.com](http://www.hysecurity.com). Serial communication cable and Serial to USB adaptor kits are available through HySecurity Distributors (Part Number MX000667).

**Entrapment Protection Devices for Sliding Gates**



**Attention**

# Entrapment Protection Device Schematic for Sliding Gates



**Note:** All wheels must be covered. (Wheels and covers not shown for clarity)

This schematic view is not meant to recommend the only way to set up your configuration, but to point out the various elements of a proper automatic vehicular gate installation. The gate operator itself is only one component in the total system. **Always install a separate pedestrian gate.**

## UL 325 Standard requirements for Entrapment Protection Devices

### Gate Operator Category

Usage class	Horizontal Slide, Vertical Lift, Vertical Pivot		Swing and Vertical Barrier (arm)	
	Primary type <sup>a</sup>	Secondary type <sup>a</sup>	Primary type <sup>a</sup>	Secondary type <sup>a</sup>
Vehicular I and II	A	B1, B2, or D	A, or C	A, B1, B2, C, or D
Vehicular III	A, B1, or B2	A, B1, B2, D, or E	A, B1, or C	A, B1, B2, C, D, or E
Vehicular IV	A, B1, B2, or D	A, B1, B2, D, or E	A, B1, C, or D	A, B1, B2, C, D, or E

Note—The same type of device shall not be utilized for both the primary and the secondary 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 the primary or secondary entrapment protection means.

### <sup>a</sup>Entrapment protection sensor types:

Type A - Inherent entrapment sensing systems.

Type B1 - A non-contact sensor (photoelectric sensor or the equivalent).

Type B2 - A contact sensor (edge sensor device or the equivalent).

Type C - Inherent adjustable clutch or pressure relief device.

Type D - An actuating device requiring continuous pressure to maintain opening or closing motion of the gate.

Type E - An inherent audio alarm, which warns a minimum of 3 seconds before operation.

### UL Usage Class Information:

The automatic vehicular operator must also be labeled as appropriate for both the type and usage class of the gate. Installers must verify that the gate operator is labeled for the intended application. Note: Sliding gate operators installed in Class I & II applications must not move the gate faster than 12 inches per second.

**Class I:** Intended for use in a location with one to four single family dwellings, or a parking area associated therewith.

**Class II:** Intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units) hotel, garages, retail store or other building servicing the general public.

**Class III:** Intended for use in an industrial location or building such as a factory or loading dock or other locations not intended to service the general public.

**Class IV:** 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 access is monitored by security personnel or via closed circuitry.

## Placement and Use of Secondary Pedestrian Entrapment Sensors

**WARNING: To reduce the risk of serious injury or death, read and follow all instructions in the gate operator handbook and on the warning labels.**

Automatic gate operators are intended only for vehicular use and pedestrians must be routed to a separate pedestrian gate, however sensors are still required in order to provide a degree of protection should anyone happen to stray into the area of an automatic gate. Generally there are two types of external sensors that may be used: Contact type sensors, such as an edge sensor, and non-contact sensors, such as photoelectric eyes. Current industry standards require the use of either type, or both, of these sensors as a secondary device. In Class I and Class II automatic sliding gate installations because the general public is likely to be present. Although there are alternatives for Class III and IV installations, we highly recommend the use of external sensors for all automatic gate applications.

The specifier or installer may choose either photoelectric eyes or edge sensors, or use these devices in combination, but both the open and closing directions of gate travel must be guarded. The UL 325 standard for automatic sliding gates specifically requires the following:

- One or more non-contact sensors (photoelectric eyes) shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate.
- One or more contact sensors (edge sensors) shall be located at the leading edge, trailing edge and post mounted both inside and outside of a sliding gate.
- A hardwired contact sensor shall be located and it's wiring arranged so that the communication between the sensor and the gate is not subjected to mechanical damage.
- A contact sensor that transmits its signal to the gate operator shall be located such that the signal is not impeded by building structures or other obstructions and shall function under its intended end-use conditions.
- The contact and non-contact sensors must be tested and labeled as "Recognized Components" under the UL 325 standard in order to be deemed acceptable for use in this application.

**Study the entrapment protection schematic and consider your specific installation to determine where the greatest risks of entrapment exist. Locate edge sensors and/or the photoelectric sensors accordingly. Be certain that a sufficient number of sensors are used so that both directions of gate travel are properly guarded.**

## Installing Gate Edge (Contact Type) Reversing Sensor

1. Follow the guidelines in the Entrapment Protection Schematic to plan the most appropriate mounting positions for the edge sensors to be installed. For sliding gates, one or more sensors shall be located at the leading edge, trailing edge and post mounted both inside and outside of a sliding gate. A requirement of the UL 325 standard is that an edge sensor be laboratory tested and “recognized” under UL 325.
2. Drill holes through the edge’s mounting channel and through the surface that each gate edge is to be mounted. Securely fasten every edge sensor. The edge sensors should all be placed not higher than 6” above the ground.
3. Edge sensors that are not attached to the moving gate, such as post mounted sensors are wired in parallel and directly connected to the gate operator:
  - a. Mount a gate edge to the wall, pilaster or end post of the fence that aligns with the gate when it is in the open position.
  - b. Always route the leads of the edge sensors to the gate operator so that they are protected from physical damage.
  - c. Connect one edge sensor lead to our Common Buss on the power supply board and the other to terminal #13, which is labeled **Edge Sensor** input.
4. Edge sensors mounted to the leading edge or trailing edge of the gate panel should be used with an edge transmitter and a receiver in order to transmit to the gate operator. We do not recommend the use of retractable cord reels or curl cords because of durability problems with these devices in outdoor environments.
  - a. Mount gate edge sensors to the leading edge and trailing edge of the gate so that entrapment protection is provided in both directions of travel.
  - b. Mount one or two edge transmitters (Linear Model #3022 or equivalent) onto the gate panel near the upper corner of the leading edge of the gate. Both gate edges will function correctly if only one transmitter is used, but wiring both edges to a single transmitter may be impractical or displeasing visually.
  - c. Connect the edge(s) to the terminals in the edge transmitter and set the “DIP” switches of the transmitter to match the setting in the receiver to be used.
5. Mount a commercial style radio receiver\* (external antenna type) on the inside of the operator, below the electrical box. Knock out the smallest hole in the lower right corner of the electrical box and route the wires to the area marked Radio Options. Only three wire connections are needed because the 24-Volt supply and the radio output share a wire. Being certain to observe polarity, crimp the black radio power wire together with one of the radio output wires into a .25” spade connector and connect to the COM terminal. Connect the red wire to the +24V terminal and connect the other radio output contact wire to the spade marked EDGE. Note that this terminal is the same as the #13 input terminal labeled Edge Sensor on the main control board.
  - a. Mount an external antenna onto the top of a fixed post of the fence near the operator.
  - b. Connect the antenna into the socket on the radio receiver.
  - c. Set the “DIP” switches in the receiver to match the same code used in the transmitter.
6. Test the operation of the reversing edge to make sure that it is functions correctly. Advise the user of the gate to be certain to retest this vital function weekly.

\* If there is also to be a radio receiver for a hand held transmitter to operate the gate, be certain to use a two channel commercial receiver. The edge and hand held transmitters must have their codes set the same or they will not function.

## Installing Photoelectric (Non-contact) Sensors

### General Information:

Follow the guidelines in the Entrapment Protection Schematic to plan the most appropriate mounting positions for the photo-eye sensors to be installed. If there are no other secondary external entrapment protection sensors (typically an edge sensor), at least two photoelectric sensors are required to serve to reverse the gate in each direction of travel. The Smart Touch Controller has two photoelectric sensor inputs (Photo eye open and Photo eye close).

There are two common types of photoelectric sensors, thru beam and retro-reflective, each has some advantages. A thru beam sensor is generally more powerful and able to function reliably with dirty optics and in poor weather. A retro-reflective sensor has the convenience of not requiring the installation and electrical wiring of the remote emitter required in a thru beam system, but is generally more problematic in poor weather. Avoid use of a retro-reflective device to span a distance greater than 24 feet in an outdoor environment because performance will probably be unsatisfactory.

### Compatibility:

A requirement of the UL 325 standard is that a photoelectric sensor be laboratory tested and “recognized” under UL 325. In order to be compatible with a HySecurity operator, a photo eye must be rated to function from 24 Volts DC source power.

### Installation:

Mount the photo eyes approximately 15” to 30” above the ground and as close to the gate as possible. Unless there are also gate edges for entrapment protection, a minimum of two photo eyes will be required to function for both the open and closing directions of travel. Mount the receivers on the left and right sides of the gate operator and the emitters just beyond the travel of the gate in both the full open and full closed positions of travel. In some situations, an additional photo eye should be installed on the public side of the gate. **The installation locations described above are intended for pedestrian detection.** If photo eyes are also to be used for vehicular detection, consider, in addition to the low elevation photo eye for cars, installing another photo eye at a height of about 55” to detect semi-trucks.

### Configuration:

If the photo eye has an internal switch for setting Light Operate vs. Dark Operate, select Light Operate. If the photo eye has a relay output and has both NO and NC terminals, some experimentation may be required to determine the proper connection. This is because, in the Light Operate mode, the output relay is normally energized and releases when the beam is blocked. Some manufacturers label an output as NO, when it is actually an NC contact. If the photo eye has a solid-state output you must choose a sinking type connection.

### Connection:

Three wires to the receiver and two wires to the emitter are all that is required.

- The +24 Volt source power is obtained at one of the three spade terminals on the power supply board.
- The -24 Volt source power is obtained from spade terminals on our terminals #14 or #15, labeled (Photo Eye Power) on the Smart Touch Controller board. (See NOTE)  
Note: The -24 Volt Photo Eye Power also supplies the photo eye output Common.
- The photo eye NO or NC output connects to the Smart Touch Controller board at terminal #19 if the photo eye spans the road, or at terminal #17 if the photo eye spans the gate’s open storage area. (See NOTE)

NOTE: If photo eyes are to be used for vehicle detection and logically function the same as a vehicle detector, wire -24 Volt to one of the Common terminals of the power supply board and wire the NO output contact to the appropriate vehicle detector input: Free exit (terminal #8), inside obstruction (terminal #10), outside obstruction (terminal #11) and shadow/reset (terminal #12).

## Installing Photoelectric Sensors continued

### Supervised Connection:

If the photo eye being installed has a true NC output (one that is NC when the photo eye is powered, aligned and set for Light Operate), then a supervised connection is recommended. A supervised connection will signal a system Fault and prevent gate operation if either the open or close photo eye connection ever becomes an open circuit or a short circuit. The Installer Menu item [PC\_0] must be changed to [PC\_1] to enable this feature. See Installer 18 on page 26.

### Photo Eye Function:

**A tripped photo eye will prevent the gate from starting in either direction if the gate is stationary.** If tripped while in motion, the standard function is to pause the gate motion and then automatically restart again if the photo eye is clear within five seconds. An optional setting in the Installer Menu will cause a 2 second reversal of travel. See Installer 14 & 15 on pages 25 & 26.

### Alignment:

Most photo eyes require careful optical alignment in order to aim the emitter beam to the center of the receiver or reflector. In order to avoid false triggering, it is important to carefully align the system, especially with retro-reflective photo eyes. The best way to assure true centering of the beam is with some trial testing where the emitter is shifted to move the beam left and right and up and down until the range of the invisible cone of the infrared beam is known. Photo eyes usually provide alignment aid LED's for this setup, but they can be hard to see. HySecurity has provided a unique feature that turns power on to the photo eyes and causes our buzzer to chirp when the photo eye enters and exits alignment. See User Menu item 9 on page 24 to enable this feature. Set the menu item [PE\_0] to [PE\_1] and the buzzer will chirp twice when the beam is broken and once when remade. (The parameter will automatically reset the next time the Close Limit Switch is triggered.)

### Notes about retro-reflective systems:

Correct installation and alignment of a retro-reflective photo eye and its reflector is important for a trouble free installation. Any system operating at a range greater than 16 feet is more prone to false triggering due to dirty optics, condensation or poor weather. If care is taken in the initial mounting and alignment of the 3-inch reflector, the chance of problems is greatly reduced.

Taking steps to protect the photo eye and the reflector from being exposed to fog and being absolutely certain the photo eye is perfectly aligned will greatly reduce any false triggering of the system. The ideal mounting of a retro-reflective photo eye is inside an enclosure.

The ideal mounting for the reflector is for it to be suspended inside a twelve inch long piece of 3-inch PVC conduit. Cut the opening of the PVC conduit at a 45-degree angle to act as a drip shield. Hold the reflector against the backside of the PVC conduit by attaching a 3-inch male connector. Do not cement the connector. This would prevent the reflector from being reached for future cleaning. To create a mounting base, attach a 3-inch aluminum flange (electric meter hub) to the connector. This whole package can be mounted to any flat surface.

Locate the reflector in the center of the invisible beam of infrared light to achieve the most sensitive alignment. The beam center is determined by the following test: while holding the reflector in your hand, slowly raise it until the beam is no longer returned, and the photo eye trips. Mark this maximum height. Now lower your hand and determine the lower limit of the infrared beam by watching for the trip point. Mark this position as well. Repeat the same procedure for left and right at the center elevation of the beam, as determined by the previous test. Once the four limits have been determined, either mount the reflector in the center of the area outlined or realign the eye for the position of the reflector. If the photo eye is realigned, be sure to perform the centering test again to verify that the reflector is truly in the center.

## Detector Loop Installation

### Detector Basics

The vehicle detector passes a small current flow through the “loop” which then becomes an inductive coil. When a vehicle passes over a loop the detector senses the resultant drop in the inductance, and actuates the detector output.

### Loop Configurations

Configurations differ depending on the application. In parking applications with our HTG 320 operator, a loop may be as small as 4' x 6'. In traffic applications employing one of our sliding gate operators, or swing gate operators, the smallest loop should not be less than six feet square.

### Rules to Follow for Security Gate Applications

1. The side of the loop closest to the gate shall be located at least four (4) feet distant from it's line of travel.
2. The shortest side of the loop shall be between six (6) and eight (8) feet in length. The longest side of the loop shall be between six (6) and twenty (20) feet in length. For applications that need to span a wide area, use several smaller loops. Do not exceed a maximum of 200 square feet of loop area to only one detector.
3. In applications with multiple loops, keep each loop at least six feet apart. This avoids “cross talk”. It is possible to have loops closer together by selecting different frequencies. An advantage of using HySecurity model HY-5A detectors is that problematic “cross talk” is not possible.
4. For greater sensitivity and less chance of false calls caused by the motion of the gate, it is better to use multiple smaller loops, connected in a series circuit, to one detector instead of one large, single loop.
5. To avoid interference, keep loops at least two (2) inches above any reinforcing steel. Do not route loop wires with, or in close proximity to, any other conductors, including other loop leads, unless shielded lead-in cable is used. Never route high voltage circuits in PVC conduit near a loop.
6. Loop and lead-in wire should be one continuous piece. Avoid splices, if possible. If a splice is necessary for any reason, “pot” the splice in epoxy or use heat shrink to ensure that the quality of the splice covering is the same as the original wire jacket.
7. Use only number 14, 16, or 18 gauge stranded wire with a direct burial jacket. Cross linked polyethylene insulation types, such as, XLPE or XHHW, will last much longer and are less prone to damage during installation than conventional insulation types. Preformed loops can be used before road surfacing or under pavers.
8. Twist loose tails of lead-in wires tightly, approximately ten times per foot.

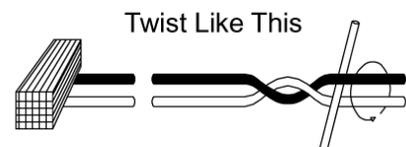
Twist lead-in at least 10 turns per foot



Like This



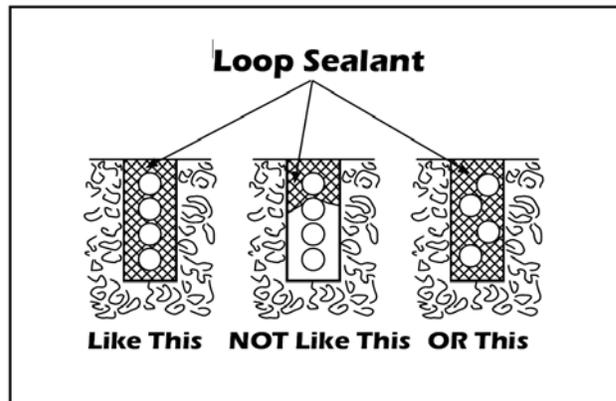
Not Like This



E31a

## Detector Loop Installation continued

9. Follow this guide for the correct number of turns in the loop;  
**12 to 20 sq. ft = 5 turns 20 to 60 sq. ft. = 4 turns 60 to 240 sq. ft. = 3 turns**
10. This guide is written from a design perspective, but installation workmanship practices are equally important to insure proper operation and long loop life. The best way to insure a quality installation is to employ a professional installer experienced with detector loops. A few important practices are:
- The slot in the surface should be cut  $\frac{1}{4}$ " wide x  $1\frac{1}{2}$ " deep.
  - The corners of the cut must be at an angle or core drilled to relieve stress on the wires.
  - After the wire is installed, the slot must be completely backfilled with a non-hardening sealer. Note that if the loop wires are able to move in the slot after the sealer has set, the detector may give false calls.



### Detector Logic

HySecurity recommends that vehicle detectors be used for free open and obstruction sensing logic only. The exception is in parking applications with our HTG320 operator where detectors may be also used to close the gate. In applications employing our swing, vertical lift, or sliding gate operators, closing logic cannot be used. Because of their slower speeds, closing logic is a poor choice for security gate systems. Since there are several ways that the gate may be left standing open and because there is a loss of safety, our circuit has not been designed to accommodate "detect to close" logic.

### Loop Diagnostics

The following tests cannot guarantee a functioning loop, but failure of either test means that the loop is definitely suspect, even though it may still be functioning at the time.

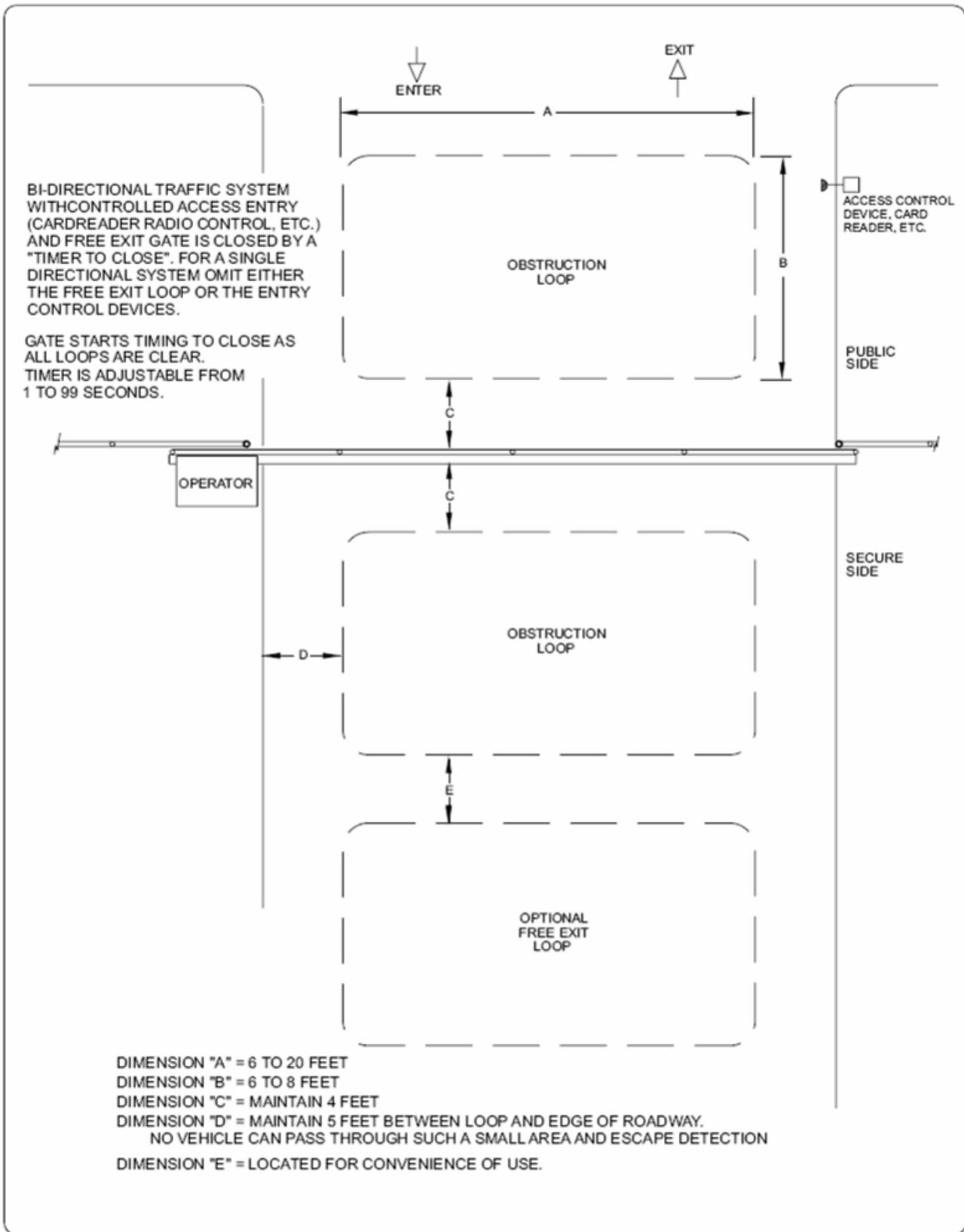
#### Test #1:

Resistance of the loop and lead-in wire should not exceed 4.0 Ohms.

#### Test #2:

The resistance to earth, as measured with a 500V "Megger", should be 100 Megohms or more. Loops may function at 10 Megohms or less but will not be reliable (e.g. when the ground is wet from rainfall). Low resistance indicates broken or moisture saturated insulation. This is common if inappropriate wire insulation has been used.

See also Detector and Loop Fault Diagnostics on page 42 for additional tests that may be performed with HySecurity HY-5A detector modules.

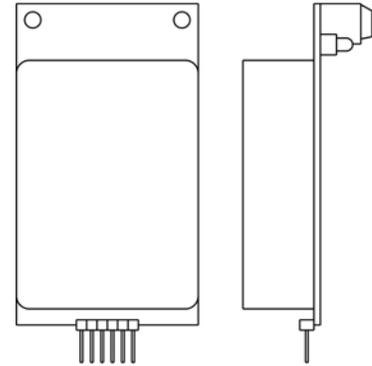


	TITLE  <b>SLIDE GATE LOOP LAYOUT</b>	DRAWN	DATE	THIRD ANGLE PROJECTION		REV
		DB	05/15/00			
		CHECKED	DATE	ERN NUMBER	DATE	SHIT OF 1 1
		APPROVED	DATE	DRAWING NUMBER		
				E96		

## Vehicle Detector Installation Options

The Smart Touch Controller provides a feature rich interface to four different vehicle detector inputs. Standard box type 11 pin (24 Volt DC or 24 Volt AC) vehicle detectors may be connected in the traditional manner, see page 41. HySecurity also offers a custom mini detector module that plugs directly into the Smart Touch control board. Not only is the field installation much faster, but there is a large performance benefit. The HySecurity HY-5A detector is controlled by the Smart Touch microprocessor to achieve many benefits over common box type detectors:

- Loop frequency is automatically set and monitored by the Smart Touch Controller
- Cross talk between multiple loops is impossible
- The best operating frequency for each loop is automatically chosen
- Smart Touch can report the both loop frequency and call strength on its LCD display
- Smart Touch will report loop malfunctions and store this data in its memory.
- Most detector or loop faults that could occur are reported and displayed on the LCD display

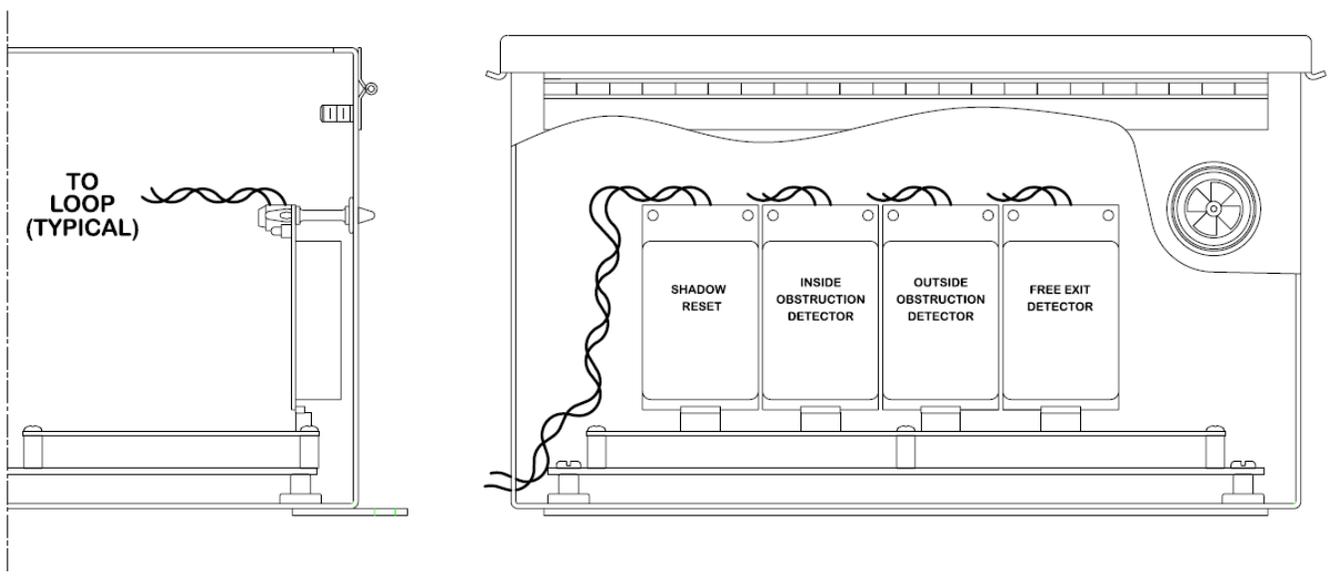


There are four vehicle detector inputs available both on the main terminal strip and as direct plug in modules. The vehicle detector inputs are for the following functions:

- Free Exit Loop Detector – “**ELD**” for short
- Outside Obstruction Loop Detector – “**OOLD**” for short (this is the outside reversing loop)
- Inside Obstruction Loop Detector – “**IOLD**” for short (this is the inside reversing loop)
- Shadow Loop Detector – “**SLD**” for short (this is for swing gates only). In slide gate system, can be used for an Arming Loop to enable or activate an access control Device only when a vehicle is present.

A combination of HY-5A detectors and box detectors is acceptable

**It is not mandatory to use two separate detectors for inner and outer obstruction detection**, however the benefits of using this additional detector are great. Several new features are possible, such as 2<sup>nd</sup> vehicle tailgating detection, loitering alert, several anti-tailgating options and selectable non-reversing. Multiple obstruction detectors may be mandatory because not more than 200 sq-ft of loop area may be connected to any one detector or the sensitivity becomes inadequate.



## HySecurity HY-5A Vehicle Detector Installation

1. Insert the locking end of each of two white plastic standoffs into the mounting holes on the detector.
2. Plug the detector into the appropriate socket along the right edge of the Smart Touch Controller board for the detector function that is desired. Be careful to align the six detector pins into the socket correctly, and then snap the standoffs into the holes on the right side of our control enclosure.
3. Route the loop wires through the wire guide provided and connect the loop leads to the two terminals directly on the detector. Tighten the terminal screws securely.
4. When the power is turned on, the detectors will immediately tune themselves.
5. Once enabled, if the detector module is unplugged, a communications alert [AL10] will be triggered, then if the fault continues, [ERR3] “detector failed” is displayed. The operator will also run as if the detector is triggered. The [ERR3] can only be cleared by pressing the Reset button, which electronically uninstalls the detector. See Detector & Loop Fault Diagnostics on page 42.
6. The Smart Touch Controller automatically governs frequency selection of all HY-5A detector modules. This simplifies installation and guarantees that there is no cross talk between multiple loops. The frequency can also be manually selected if needed, see the installer menu options.
7. Sensitivity is the only adjustment on the detector itself. Generally, sensitivity does not need to be increased unless the loop is large loop or there are multiple loops connected to one detector. Do not exceed more than 200 sq/ft of loop area to one detector.

The rotary switch for sensitivity has eight settings, which are as follows:

0 = Low, 1 = Normal, 2 = Medium, 3 = High (4-7 add the boost feature\*)  
 4 = Low, 5 = Normal, 6 = Medium, 7 = High

\*Boost increases the sensitivity during a call and is useful for maintaining continuous detection when the signal may become weak, such as semi-trucks.

8. Vehicle detector functions are configurable in the Installer Menu as shown below.

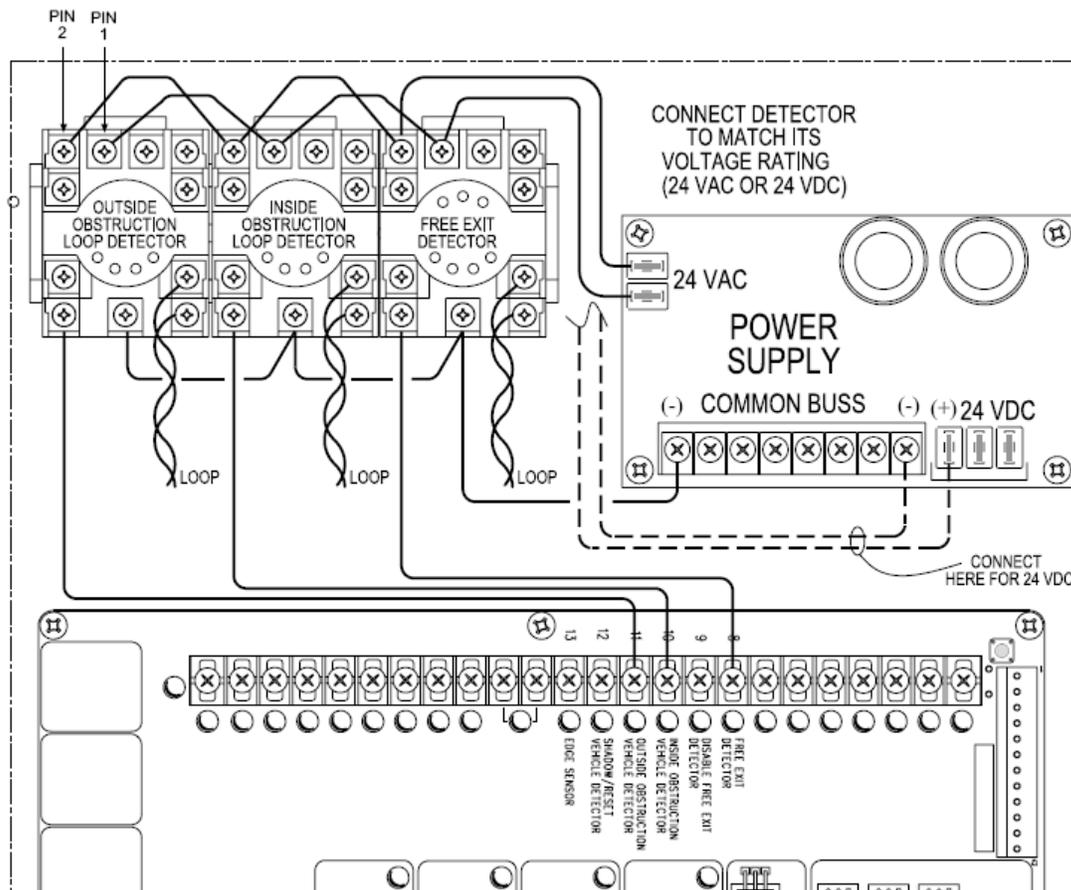
I21	[or 1] OOLD detector function	1	0 = pause only, 1 = enable reversing to open
I22	[ir 1] IOLD detector function	1	0 = pause only, 1 = enable reversing to open
I23	[dL 1] Vehicle detector logic	1	1 – 4, 1 = std, 2&3 = quick close, 4 = full anti-tailgate*

The outside and inside Obstruction Loop Detectors “OOLD” or “IOLD” are factory configured to fully re-open the gate as a default setting. In the Installer menu, each detector can individually be set so that when the gate is closing there is only a pause if triggered. To change the IOLD setting, go to the menu item [ir\_\_] and set to 0. For the OOLD, go to the menu item [or\_\_] and set to 0.

\* See page 43 for optional Vehicle Detector logic modes and anti-tailgate option.

## Standard 11 Pin Box Type Vehicle Detector Installation

1. If standard 11 pin vehicle detectors are to be used, install the sockets into the control box (if there is room) or in a separate external housing. The diagram below is for connection reference only. Other items may already be installed in the physical area where the sockets are shown.
2. Both 24 Volts AC or DC are available, so either detector voltage may be used (24 VAC is not available if the operator is a battery type). 24 VAC is available at the spade terminals on the lower left corner of our power supply (marked ACC). 24 VDC is available from the Common Buss and the +24 V spade terminals next to the Common Buss.
3. Connect 24 Volt power to the detector. Polarity does not matter if the detector is a 24 AC model. If a DC detector is used, pin #1 is (+) on a DC detector and pin #2 is (-).
4. Connect the output pin #6 to the Common Buss on the power supply and the output pin #5 to one of the four detector inputs (depending upon the detector function required) on the Smart Touch Controller terminal strip.
5. If multiple detectors are used, run the power wires and common wire from socket to socket rather than running each to the same location separately. The only wires that are separate are the output wire to the Smart Touch Controller and the loop input wires.
6. Always keep the loop wires well twisted at all places beyond the area of the loop. The lead in portion sealed in a saw cut does not need to be twisted so long as the wires are encapsulated in loop sealant and cannot move.



## Detector & Loop Fault Diagnostics

If HySecurity HY-5A mini detector modules are used, the Smart Touch Controller has ability to store and report detector and loop fault information for performance diagnostics. If The Smart Touch Controller senses a loop or detector problem, the LCD display will flash the abbreviation for the affected detector (ELd – ioLd – ooLd – SLd) then it will flash the appropriate Alert Code (ALE\_) to disclose the nature of the problem and the buzzer will chirp.

Loop detector freq change alert	ALE7	2 chirps/sec every 15 seconds
Loop shorted or open alert	ALE8	2 chirps/sec every 15 seconds
Loop detector failed alert	ALE9	2 chirps/sec every 15 seconds
Loop detector active >5 minutes	AL12	2 chirps/sec every 15 seconds
Loop detector comm. alert	AL10	2 chirps/sec every 15 seconds
Loop detector function alert	AL11	2 chirps/sec every 15 seconds
Loop detector failed	Err3	3 chirps/sec once per minute

Even if the loop problem self heals, historical data about detector/loop performance and a log of Alerts, Faults and Errors can be retrieved from the Smart Touch Controller by downloading from the RS232 communications port. Optional HySecurity “START” software, a PC computer, and a special download cable are required to retrieve and read this data (see bottom of page 29).

### Frequency:

Knowing the exact frequency of a loop can be useful as a diagnostic tool, and verifying that the loop frequency is stable is also very valuable information. To view the actual loop frequency of a specific vehicle detector, go to the setting for that detector, then switch the selection to 1 and press the menu button. The display will flash between [F\_xx] which are the high digits, then the low digits of the loop frequency counter. For example: [F\_05] + [3413] would represent a frequency of 53,413 Hertz. The highest digit will probably be only a single digit because loop frequency is usually a five-digit number, between 20,000 to 80,000 Hertz.

### Changing the Loop Frequency:

HY-5A detectors can never crosstalk. If for any reason, you want to manually change the loop frequency, change the menu selection to a flashing 4 and then press the Select button. Each detector has a choice of four frequencies. To exit, press the Menu button and the controller will perform a reset and tune to the new frequency setting.

### Call Strength Level:

Knowing the strength level of a detector call is valuable because it provides information about how well the loop is actually “seeing” a specific vehicle. For example, it may be useful to check to see if the loop is easily detecting the middle of a high bed semi-truck. The strength of a detector call can be displayed in real time, on a scale of 1-7. As indicated in the table below, when a detector’s menu setting is set to 2, and the menu button is pressed, the LCD display will read [LE\_x]. If the call strength is level 4 or less, consider increasing the sensitivity level, by adjusting the rotary switch on the HY-5A detector.

Installer Menu Options		Default	Description
I30	[ELd0] Test factory ELD	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I31	[iLd0] Test factory IOLD	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I32	[oLd0] Test factory OOLD	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I33	[SLd0] Test factory SLD	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7

**Acronyms:** Free Exit Loop=**ELd**, Outside Obstruction Loop=**ooLd**, Inside Obstruction Loop=**IoLd**, Shadow Loop Detector=**SLd**

**To return to the Installer Menu, press “Program Menu”. Set the selection back to 0 by pressing “Next”, then press “Program Menu” twice to return to Run Mode.**

## Vehicle Detector Configuration & Anti-Tailgate Modes

**Standard and Anti-tailgate modes are selectable under item [dL\_\_] in the Installer Menu**

(See installer menu #23 described on pages 23 and 26)

The detector function modes that result in Anti-Tailgating logic (modes 3 & 4 below) require the use of a separate inner and outer obstruction detectors.

In order to use any vehicle detector logic mode other than mode 1, all the loops must be placed with the geometry and spacing as shown in the loop layout drawings in Appendix

**Mode 1: (Default)** An input from either the Free Exit, OOLD, IOLD or the Shadow detector will hold the gate open, reset the close timer, and block all close inputs.

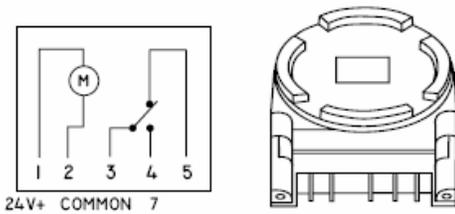
**Mode 2:** Same function as mode 1, except the close timer may time out, even with the Free Exit, OOLD, IOLD or Shadow detector inputs active. If the close timer has counted to zero, the gate will close when all detector inputs are clear.

**Mode 3:** Same functions of mode 1, however the close timer is forced to zero when both the OOLD & IOLD are tripped simultaneously. Additionally, all other close inputs are memorized and the gate closes immediately when all open commands and vehicle detector inputs are clear.

**Mode 4:** Full Anti-tailgate logic. Mode 3 functions, plus the gate will stop during the opening cycle when both the OOLD & IOLD are tripped simultaneously. When the OOLD & IOLD loops are cleared, the gate closes immediately. The OOLD and IOLD can be individually set so that, if tripped while closing, the gate may pause only or reverse to reopen. The free exit detector input is blocked while the gate is closing.

## 24 hr 7 day Timer Connection to Smart Touch Controller

This option generates an open command, which will hold the gate open until released.



- Connect Timer Power Pin 1 to 24v (+)
- Connect Timer Power Pin 2 to common
- Connect Timer Com Pin 3 to common
- Connect Timer NO Pin 4 to #7, Time Clock Open

### Selecting AM/PM or Military Time

After pressing reset, the display may show AM. The numbered day symbols will be flashing on and off. If the display does not show AM, it is in military time mode. To change to AM/PM mode, press and hold the **h** key and press the **±1h** key once. AM will appear in display. If display is in AM mode and military mode is desired, press and hold the **h** key, press the **±1h** key once.

### Setting the Time

Press and hold the **⌚** key during the following:  
(If Daylight Savings Time is in effect, press **±1h** first)

1. Press **h** to advanced to the current hour, while holding down the **⌚** key.
2. Press **m** to advance to the current minute, while holding down the **⌚** key.
3. Press **Day** repeatedly to advance to current day, while holding the down the **⌚** key.

NOTE: If the days are flashing, it indicates the day of the week was not set when setting the time. The timer cannot be programmed unless the day of the week is entered. Each year, in the spring, press **±1h** to advance the time an hour. In the fall, press **±1h** to set back an hour.

### Programming 24 hour or 7 day Schedules

*It is helpful to write out the program schedules before beginning.*

#### EXAMPLE

**Program 1:** ON at 7:00AM Monday thru Saturday

**Program 3:** Off at 7:00PM Saturday

**Program 2:** OFF at 5:00PM Monday thru Friday

### Programming 24 hour or 7 day Schedules Continued...

#### These Programs need to be entered:

- |   |                             |
|---|-----------------------------|
| Program 1: Press the <b>⌚</b> key once  | ON symbol <b>⊙</b> appears  |
| Press <b>h</b> key                      | to 07AM                     |
| Press <b>m</b> key once                 | to 00                       |
| Press <b>Day</b> key once               | 123456 is displayed         |
| Press <b>Prog.</b> key to enter         |                             |
| Program 2: Press the <b>⌚</b> key twice | off symbol <b>○</b> appears |
| Press <b>h</b> key                      | to 05PM                     |
| Press <b>m</b> key once                 | to 00                       |
| Press <b>Day</b> key twice              | 12345 is displayed          |
| Press <b>Prog.</b> key to enter         |                             |
| Program 3: Press the <b>⌚</b> key twice | off symbol <b>○</b> appears |
| Press <b>h</b> key                      | to 07PM                     |
| Press <b>m</b> key once                 | to 00                       |
| Press <b>Day</b> key twice              | until only 6 is displayed   |
| Press <b>Prog.</b> key to enter         |                             |
| Press <b>⌚</b> key to enter Run Mode    |                             |

**IMPORTANT:** If an "ON" time was programmed that is earlier than the current time, press **⌚** once to turn the timer "ON". (It does not "look back" to determine if it should be on or off after programming.)  
*Up to 20 Programs are able to be entered at one time.*

### Reviewing Programs

To review the programs at any time, press **Prog.** key. Programs will appear in the order they were entered with repeat presses of the **Prog.** key. After all programs have been reviewed, the blank display will appear to allow entering another program.

### Manual Override

TEMPORARY: While in the run mode, pressing, the **⌚** key once will reverse the output; ON to OFF or OFF to ON. The **⌚** symbol appears in the display to indicate a temporary override. At the next scheduled switching time, automatic control resumes eliminating the override. Continuous: While in the run mode...

\* Pressing the **⌚** key twice will turn the output to ON permanently. **⊙** symbol appears in display.

\* Pressing the **⌚** key three times will turn the output to OFF permanently. **○** symbol appears in display.

\* To terminate a continuous override, press the **⌚** key until **⌚** appears in the display.

10/27/00 24/7timer

## Connecting a Radio Receiver for Remote Open

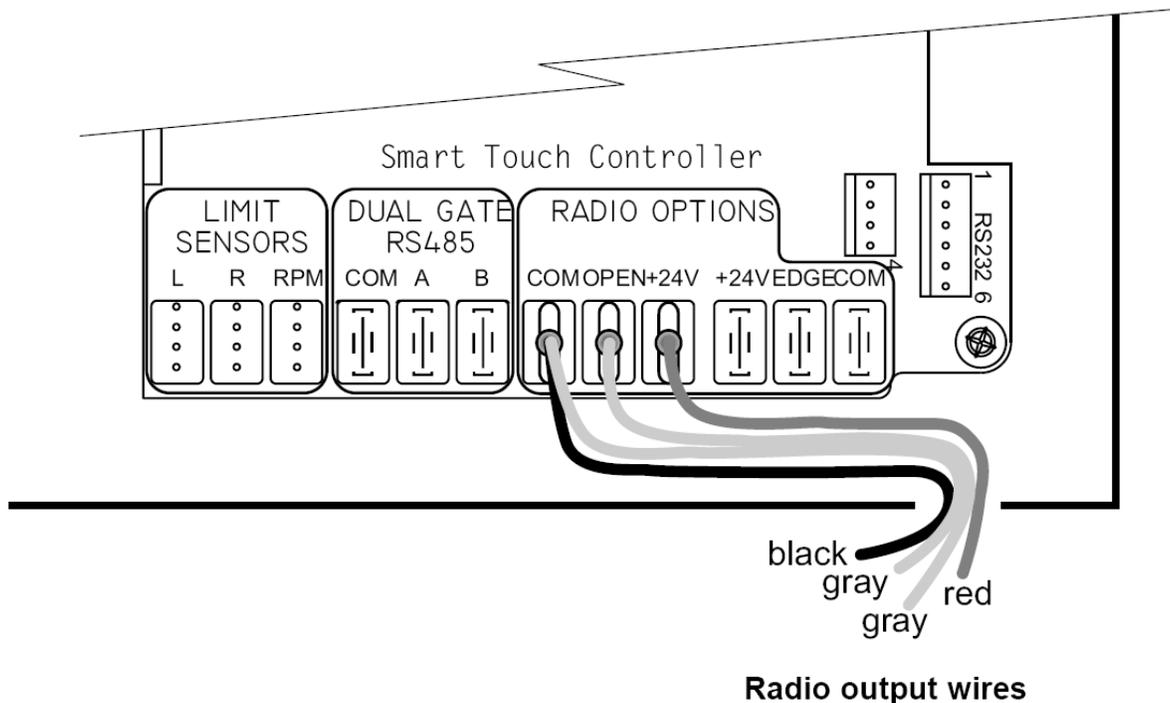
Mount a commercial style 24VDC radio receiver (external antenna type) on the inside of the operator, below the electrical box. Knock out the smallest hole in the lower right corner of the electrical box and route the wires to the area marked Radio Options. Only three wire connections are needed because the 24-Volt supply and the radio output share a wire. Being certain to observe polarity, crimp the black radio power wire together with one of the radio output wires into a .25" spade connector and connect to the COM terminal. Connect the red wire to the +24V terminal and connect the other radio output contact wire to the spade marked OPEN. Note that this terminal is the same as the #4 input terminal labeled REMOTE OPEN AND RADIO CONTROL on the main control board.

Mount an external antenna onto the top of a fixed post of the fence near the operator.

Connect the antenna into the socket on the radio receiver.

Set the "DIP" switches in the receiver to match the same code used in the transmitter.

If there is also to be an edge sensor transmitter to reverse the gate, be certain to use a two channel commercial receiver. Remember that each transmitter and receiver must have their codes set the same or they will not function.



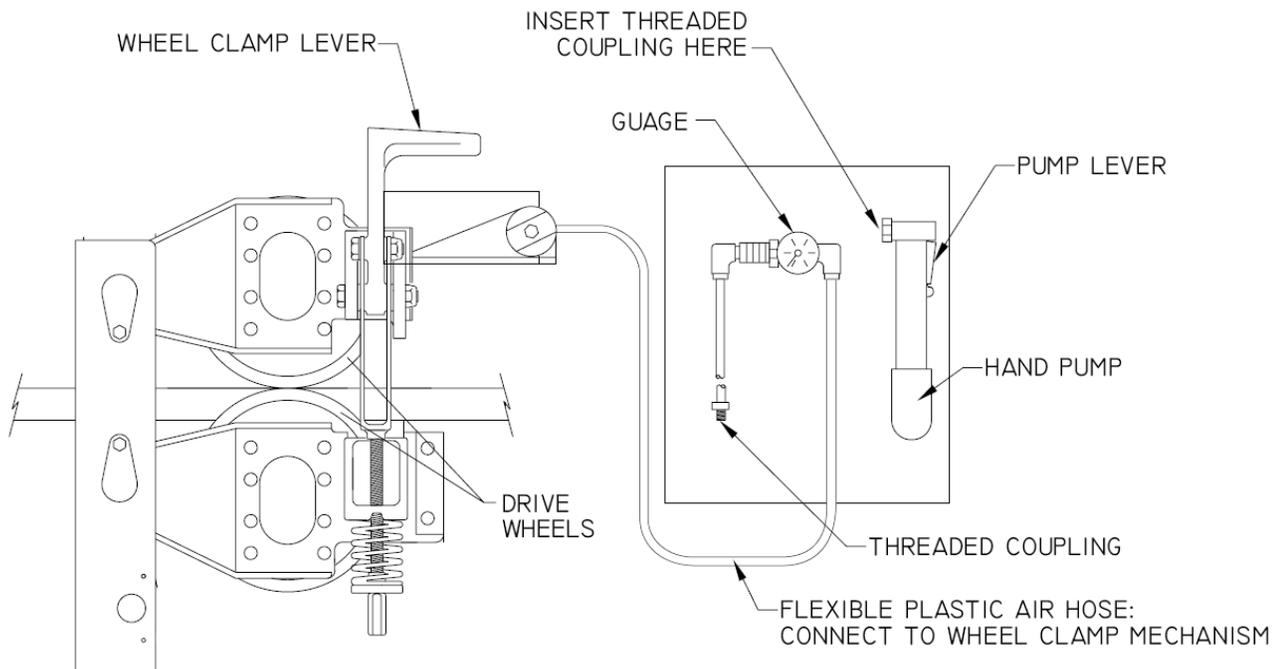
## Remote Release Mechanism

(Model #A MILR 001 R or A MILR 001 RCF)

### Instructions for Releasing Drive Wheel Clamp Mechanism for Manual Operation

This remote release device consists of an air cylinder inside the operator, which pushes the wheel clamping device open, a length of flexible air tubing, and a remote box containing a hand pump. The hand pump is similar to the type used to inflate sports equipment or bicycle tires.

1. Remove hand pump from box. (Pull straight out to remove from mounting clips.)
2. Push threaded coupling, attached to end of tubing, into hand pump. Do not screw or twist.
3. Lock coupling in place by toggling the locking lever away from pump.
4. Pump until gauge pressure indicates 50 PSI. The clamp on the wheel should now be released and the gate can be manually operated. Do not release pressure until all manual operations are complete.
5. When ready for automatic operation, release fitting from pump by lowering lever and pulling tubing straight out. This will release the pressure on the wheel clamp mechanism.
6. Put pump and tubing back into enclosure.
7. Re-engage the release mechanism inside the gate operator housing.



## Solenoid Lock Instructions – Internal Type

### Internal Solenoid Lock Description:

HySecurity offers an optional internal solenoid deadbolt lock that employs a 3/4" stainless steel lock pin that fits into a notch cut into the drive rail. The lock solenoid is voltage specific for 120V, 208V, 230V or 480V, therefore be certain that if the operator voltage is modified that the solenoid is also changed. An internal indicator switch is also provided which may be required in some installations in order to verify whether the deadbolt is in the locked or unlocked position.

### Activation of a Solenoid Deadbolt Lock:

A solenoid lock must be activated prior to any gate motion or the gate will bind the lock mechanism. HySecurity's internal lock must also remain engaged until the soft stop time cycle is complete at the end of travel. To provide the solenoid lock logic requirement, one of the three user relays (typically user relay 2) must be set to function #6 and wired to supply power to the lock solenoid. The same relay function can easily be used to drive an external solenoid lock device as well.

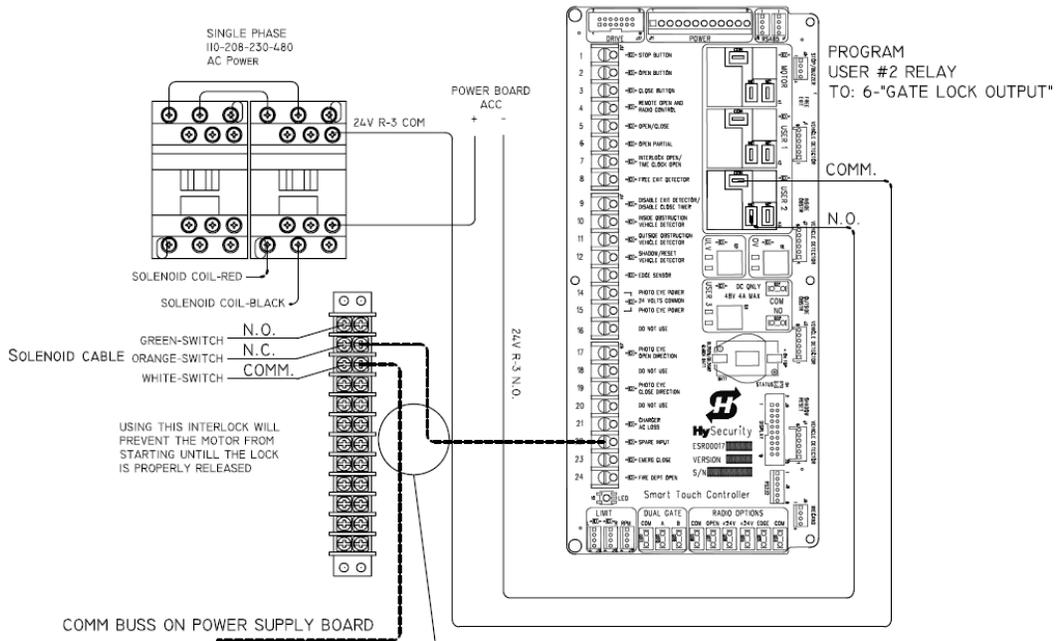
### Adjustment of the Factory Solenoid Lock:

Operators equipped with our factory solenoid lock require a notch to be cut into the outer vertical face of the drive rail. The notch location is determined in the field after the gate operator is functioning properly. Run the gate to its full closed position and note the location where the deadbolt pin strikes the drive rail. Mark for a 3" wide slot in the rail with the lock pin in the center. Make two cuts with a hacksaw and break out the notched section. Operate the gate a few times to verify that the deadbolt always enters the notched area.

The lock enclosure itself may need to be adjusted so that the lock pin strikes in the center of the vertical edge of the drive rail. The face of the lock enclosure is slotted to accommodate this adjustment. With a 1/2" open end wrench, loosen the two bolts retained the lock enclosure and move the enclosure up or down to achieve the correct adjustment.

### Electrical:

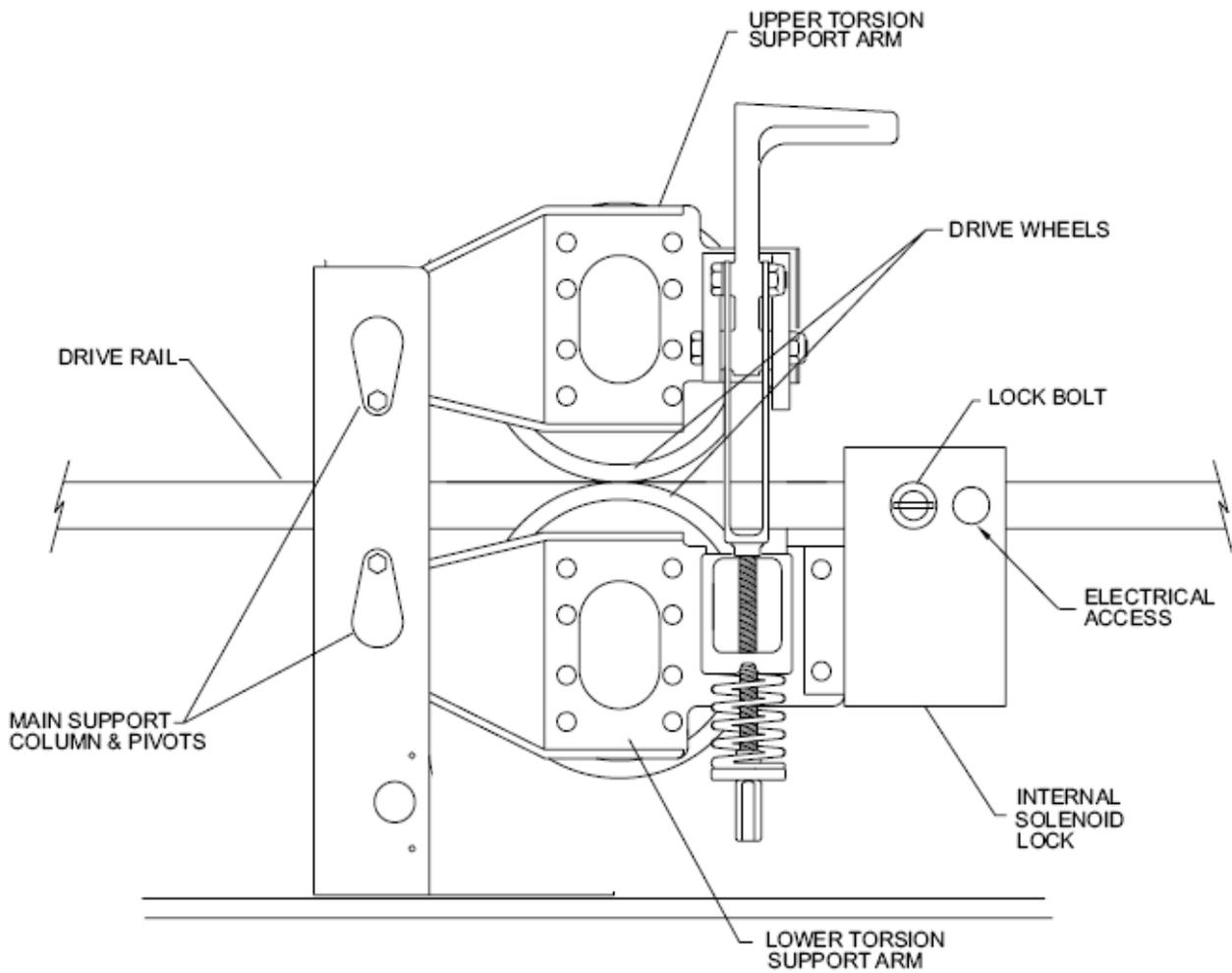
When the factory pre-installs the internal solenoid deadbolt lock, a terminal strip and an auxiliary contactor are added. The two (2) high voltage wires to the solenoid attach directly to the auxiliary contactor as shown. Indicator lights or interlocks can be connected to the contacts brought back to the Terminal strip.



INSTALL THESE WIRES TO USE THE "LOCK INTERLOCK" FUNCTION WHICH WILL PREVENT GATE OPERATION UNTILL THE SOLENOID LOCK IS FULLY DISENGAGED.

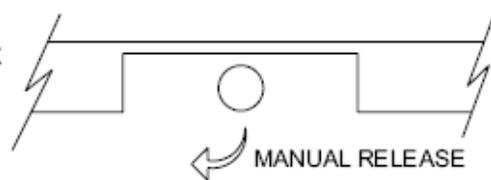
**HySecurity**  
 HySecurity Inc. 6623 South 228th St. Kent Wa. 98032-1876  
 PHONE: 206-835-1111 FAX: 206-835-1112  
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DESCRIPTION SOLENOID LOCK



ELEVATION

ADJUST HEIGHT OF SOLENOID LOCK TO ACHIEVE THIS RELATIONSHIP BETWEEN THE NOTCH IN THE DRIVE RAIL AND THE LOCK BOLT.



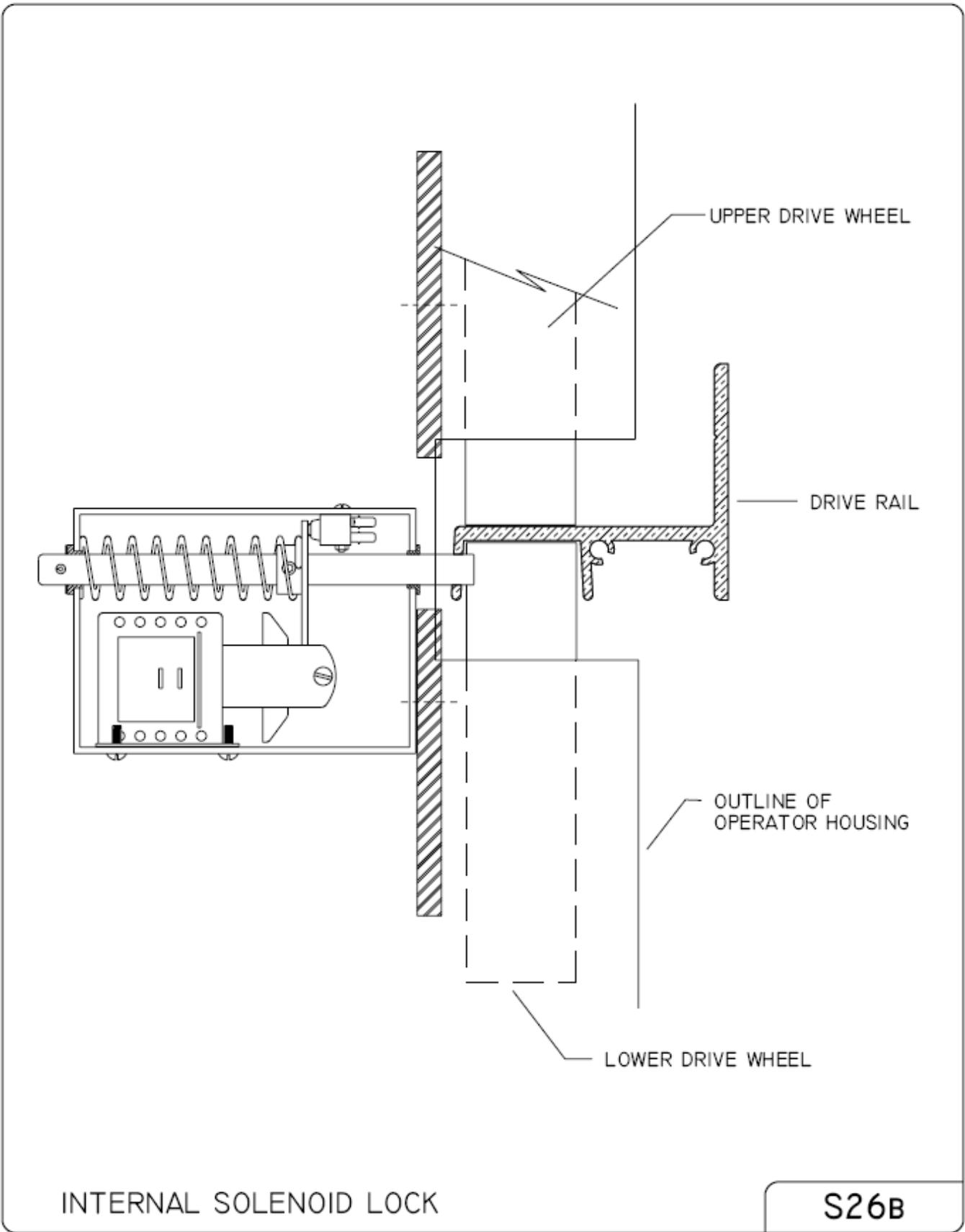
FOR RELIABLE LOCKING, NOTCH OUT A 3" WIDTH OF THE DRIVE RAIL.

**NOTE:**

ENTIRE INTERNAL SOLENOID LOCK ASSEMBLY, INCLUDING LOCK PIN, PIVOTS DOWN AWAY FROM NOTCH WHEN DRIVE WHEEL TOGGLE ASSEMBLY IS DISENGAGED ALLOWING FOR MANUAL OPERATION IN CASE OF POWER FAILURE.

INTERNAL SOLENOID LOCK - ELEVATION

SI8B



INTERNAL SOLENOID LOCK

S26B

## Troubleshooting

### Also review Page 13, Mechanical and Hydraulic Adjustments

#### Trouble with Gate Movement in General:

1. Disengage the operator from the gate and move the gate manually. If the gate does not roll well or is warped, fix the gate before working on the gate operator.
2. For adequate grip, the red spring that clamps the drive wheels must be compressed to 2" in height. Adjust by unclamping and turning the nut at the bottom of the threaded rod.
3. Look inside the operator under the wheels for metal shavings. Shavings indicate that the gate panel or the operator is out of alignment. Realign the operator as necessary. The operator must always be square to the gate and the drive rail must be shimmed if necessary to maintain an in/out tolerance of 1/4" throughout full gate travel.

#### Electrical Problems in General:

The Smart Touch Controller reports system malfunctions on its LCD display and the buzzer will emit a series of chirps at defined intervals. Review the matrix of Alerts, Faults and Errors listed on the next page. To disclose the status of all inputs on the terminal strip, the LED tact button must be pushed. This button is in the lower left corner below the terminal strip.

#### Specific Types of Problems:

*"I pushed the open and close buttons, but nothing runs."*

1. Verify that the line voltage is present and matches the operator voltage  $\pm 10\%$ .
2. Verify that control voltage is present at the power supply Common and 24VDC terminals. It may be necessary to reset the circuit breaker (black button) on the transformer.
3. Verify a jumper wire joins Common to Stop, if an external stop button is not used.
4. Verify there are no Faults or Errors reported on the LCD display. See table on next page.
5. If the motor contactor chatters, voltage drop due to undersized wires is the likely cause. See page 62 for maximum allowable length of wiring runs vs. wire size.

*"The pump is running but the wheels are slow or not turning at all."*

*(Hydraulic pressure is between 0 - 700 PSI on the gauge)*

1. If the power is three-phase, verify counterclockwise motor rotation. To reverse, switch any two AC lines.
2. Check the level of the hydraulic oil by removing the plug in the reservoir. If necessary, add oil at this location to within one inch of the filler hole.
3. Unplug the hoses and run the pump. If the pressure is low, adjust the relief valve.
4. If pressure gauge does not respond to relief valve adjustment, remove relief valve entirely and depress the plunger at the nose end with a blunt tool (Allen wrench) and blow it to remove any debris.
5. If cleaning the relief valve does not help, repeat this procedure with the quick stop valve.

*"Hydraulic pressure is above 700 PSI"*

1. Unclamp and spread the drive wheels, then retest. If the wheels turn, verify that the gate will move by manually pushing it. Fix the gate hardware if necessary.
2. Verify that the hose end quick disconnects are fully seated when connected.
3. If equipped with brake valves (E or EX type), loosen them a little by turning clockwise.

*"The wheels turn backwards, or only in one direction."*

1. Check hose connections for correct handing.
2. Press the Open button and verify that the directional Valve coil develops a strong pull. (This can be tested by removing the nut retaining the coil and grasping the coil)

*"The gate only opens or only closes."*

1. Verify that no external device is commanding the gate open or closed by watching the LED's next to each input.
2. If the gate only opens, the directional valve is probably stuck and needs replaced.
3. If the gate only closes, the valve coil is not being energized, or is defective.

## Troubleshooting

The Smart Touch Controller system includes many self diagnostics. The LCD displays specific messages and the Audio Alert buzzer sounds distinctive chirps. Any Alerts, Faults or Errors are also logged into memory and date/time stamped. For diagnostic purposes these messages can be retrieved with optional START software available from HySecurity (see bottom of page 29). The following chart lists problem codes detected by the Smart Touch Controller.

Error, Fault, or Alert Status	LCD Display	Reads	Buzzer Chirp Sequence
Cannot respond due to tripped IES sensor or operator is in entrapment mode	Entr	Entr	2 chirps/sec every 2 seconds while control input is active
Safety Mode Alert	SAFE	SAFE	2 chirps once when in Safety Mode
Low 24V Control Voltage Alert (AC or DC)	Lo24	Lo24	N/A (display flashes 1 sec every 5 seconds)
Critical Low Power (AC or DC )	bAdP	bAdP	1 chirp every 3 secs. – controls disabled
Dead 24V Battery Alert – DC only	bat - dEAd	bat - dEAd	3 chirps upon any operating command
Gate Forced Open Alert	AL E 1	ALE1	2 pulses/sec for 30 seconds
Gate drift closed Alert	AL E 2	ALE2	2 pulses/sec for 10 seconds
Motor thermal overload Alert	AL E 4	ALE4	2 chirps/sec once every 15 seconds
Both Limits Tripped Alert	AL E 5	ALE5	2 chirps/sec every 15 seconds
Limits not released in 10 seconds	AL E 6	ALE6	2 chirps/sec every 15 seconds
Loop detector freq change alert	AL E 7	ALE7	2 chirps/sec every 15 seconds
Loop shorted to ground alert	AL E 8	ALE8	2 chirps/sec every 15 seconds
Loop open (disconnected) alert	AL E 9	ALE9	2 chirps/sec every 15 seconds
Loop detector comm. alert	AL 10	AL10	2 chirps/sec every 15 seconds
Loop detector failed alert	AL 11	AL11	2 chirps/sec every 15 seconds
Loop detector active >5 minutes	AL 12	AL12	2 chirps/sec every 15 seconds
General I2C Comm. Buss failure	AL 16	AL16	2 chirps/sec every 15 seconds
Bad 3V coin battery	AL 17	AL17	2 chirps/sec every 15 seconds
Lock Intrlk (Input #22) Blocks Open	AL 20	AL20	2 chirps/sec every 15 seconds
Maximum Run Fault	FAL 1	FAL1	1 chirp once every 15 seconds
Photo eye Fault (supervised)	FAL 2	FAL2	2 chirps/sec once per minute
Critical AC sag – bad supply wire	FAL 3	FAL3	2 chirps/sec once per minute
Directional Motion Error	Err 1	Err1	3 chirps/sec once per minute
Disconnected IES Error	Err 2	Err2	3 chirps/sec once per minute
Serial comm. internal Error	Err 3	Err3	3 chirps/sec once per minute or 3 on Cmd.
Serial comm. mast/slave Error	Err 4	Err4	3 chirps/sec once per minute
EEPROM Data Error (factory)	Err 7	Err7	3 chirps/sec once per minute
EEPROM Data Error (installer)	Err 8	Err8	3 chirps/sec once per minute
EEPROM Data Error (user menu)	Err 9	Err9	3 chirps/sec once per minute
Memory Checksum Error	FA iL	Fail	3 chirps/sec once per minute

**The green LED (near #24 on Classic Smart Touch boards and near the “coin” battery on New Generation controllers (after Sept. 2006)) is the “heartbeat” of the processor. This LED always blinks at a steady pace, to indicate normal operation.**

**Gate Speed:** The speed at which a hydraulic operator moves a gate is determined by the size of the pump and the size of the actuator components. Just like a gear box, this speed is not adjustable. Attempting to slow a gate by changing a valve setting will cause inefficiency and heat. If the speed of a gate must be changed, contact your HySecurity distributor. Extremely cold weather is unlikely to seriously affect the speed of the gate, because HySecurity employs a special grade of hydraulic oil that we call *Uniflow*, which maintains a linear viscosity over a broad range of temperatures. Because of this high quality oil and other design considerations, we rate our operators for service in ambient temperatures of -40F to 167F (-40C to 75C) degrees. If the speed of your operator has been affected by cold weather, verify that the gate hardware is not impaired by ice and verify that the reservoir is filled with *Uniflow* fluid. Consider adding a heater in extreme weather.

## General Maintenance

### Hydraulic System

**Fluid Level:** Under normal conditions, hydraulic systems do not consume oil. Before adding any oil, check the system thoroughly for leaks. Remove the bright metal plug in the tank, fill to plug level, then replace plug. We recommend our *Uniflow* hydraulic fluid; part # **MX000970**, which is sold in one-gallon containers by a HySecurity distributor. **Never use brake fluid. It will severely damage the entire hydraulic system. Use of any oil other than Uniflow fluid may void the operator warranty.**

**Look for leaks:** Occasionally there may be slight seeping at the fittings due to shifting in transit or after some usage. Tightening of the fittings will usually correct the problem. If the leaking persists, replace "O" rings, fittings or hoses, if required. No further leaks should occur.

**Oil Change:** A hydraulic system does not foul its oil, unlike a gas engine, so oil changes do not need to be frequent. Oil breakdown caused by heat is the main concern. If the unit is subjected to high use, especially in a warm climate, change the oil more frequently. In general, we recommend draining the reservoir and replacing the oil at five-year intervals.

To change the hydraulic oil, remove the reservoir from the pump unit, completely empty it, wipe the reservoir clean, and clean the derby screen before re-assembling. Refill with new *Uniflow* hydraulic fluid (available from your distributor). To avoid overfilling, fill only through removable plug near the top of the tank. Slowly pour the oil into the tank until the oil is within one inch of the filler port. Replace the plug and wipe up any spilled oil. If any oil is allowed to remain, it will dry to a very sticky and messy consistency.

#### Cold Weather:

1. Check that your reservoir is filled with our *Uniflow* high performance fluid.
2. Ice can partly or totally jam gate operation. Check function by operating the gate manually.

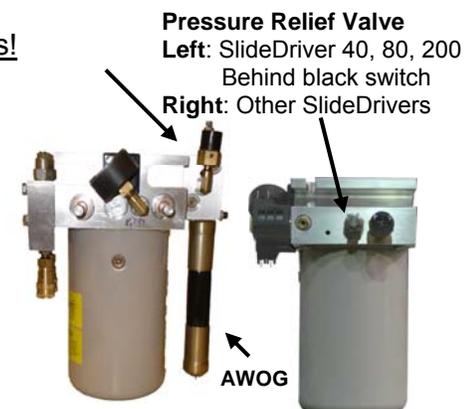
#### Electrical Controls - *Before servicing, turn off power disconnect switch*

No routine maintenance is needed for the electrical system or controls. If the environment is very sandy or dusty, or has many insects, be certain to seal all holes in the electrical enclosure. Blow the dust out of the electric panel with compressed air. A qualified technician may troubleshoot with the aid of the troubleshooting guide in this appendix. If it is necessary to call a distributor for assistance, be sure to have your model and serial number ready. Other helpful information would include the name of the job, approximate date of installation, and the service record of the operator, especially any work that has been done recently.

#### Pressure Relief Valve Adjustment: **WARNING!** - The gate will move!

Only experienced hydraulic gate technicians should perform these tasks!

1. Locate the Pressure Relief Valve on the pump assembly, (right).
2. Loosen the 9/16" locknut on the Relief Valve.
3. Put a wrench on the adjusting screw, (5/32" Hex or 1/2" flat head).
4. With the gate attached and the wheels clamped, run the operator with the OPEN, CLOSE and STOP keys on the operator keypad. As the motor/pump runs, turn the adjusting screw clockwise, raising the pressure. (Until the valve is properly set, the motor will run for 2-3 seconds, stop and generate a "SAFE" or "Entr" code.)
5. Reset by pressing the keypad RESET key, repeat step 4 until:
  - a. The gate starts and runs consistently w/o displaying "SAFE" or "Entr"; OR
  - b. Maximum pressure for the operator is reached. **Do not exceed maximum pressure ratings below**
6. If the gate system requires more than rated maximum pressure contact HySecurity 800-321-9947.
7. While holding the adjuster screw with the wrench, tighten the 9/16" locknut on the valve.



MODEL	MAXIMUM RELIEF SETTING
SlideDriver 10, 40	1000 PSI
SlideDriver 30F, 40F, 80	1300 PSI
SlideDriver 200	2000 PSI

*There is limited value in using the relief valve as an entrapment protection device. Photo Eyes or gate edges are the best methods to protect pedestrians and maintain reserve power to reliably drive the gate.*

## Maintenance Schedule

### SlideDriver Operator Maintenance Schedule

Name of part	What to do	Check at these recommended monthly intervals						
			1	3	6	12	60	
Gate and Hardware	Check for damage and wear	*1	X					
Drive wheels	Check for tightness and wear	*2		X				
Wheel clamp spring	Check for clamping tension	*3		X				
Limit Switches	Check for adjustment	*4		X				
Anchor bolts	Check for tightness				X			
Fluid level	Check for loss of fluid	*5				X		
Hydraulic fluid	Drain and replace fluid							X
Clock Battery	Replace	*6						X
Motor Brushes (DC Only)	Replace	*7						X

#### Special Notes:

\*1 Your gate and its hardware will require more maintenance than the HySecurity operator that is moving the gate. A damaged gate or worn hardware may cause operation to appear slow or erratic and will result in excess drive wheel wear. Lubricate the gate hardware more frequently and check for smooth operation by opening the toggle clamping mechanism and then pushing the gate manually. One person should easily be able to push all but the largest of gates. Damaged or warped gate panels should be straightened or replaced.

\*2 Normally, the drive wheels will last for many years because they are designed to not slip on the rail. The life of the wheels may be greatly shortened by any of these faults: clamping spring not correctly adjusted, operator misaligned in relation to gate panel, badly warped gate panel, extremely stiff hardware, and/or loose wheel mounting bolts (tighten to 35 ft\*lb).

\*3 Verify that the red clamping spring is compressed tightly so that the drive wheels apply a strong grip on the power rail. The red spring should normally be compressed to 2" in height.

\*4 The limit switch rollers should ride ¼" to ½" below the drive rail, near the center of the channel. Misadjustment may result in false or early tripping or no limit function at the end of travel. Verify that the limit trip ramps are tightly bolted to the drive rail.

\*5 The oil level should remain approximately one inch below the filler hole. See maintenance instructions for oil filling. **Loss of fluid is not normal** and indicates a leak that must be located and repaired. Use *Uniflow* fluid, part MX000970, if additional fluid is required.

\*6 Replace the Smart Touch Controller battery with DL 2025 / DL 2032 or CR 2025 / CR 2032.

\*7 DC Operators use DC motors with 4 carbon brushes which wear in normal operation. Worn brushes can damage the DC motor. Under severe conditions HySecurity recommends that brushes be checked after **2 years or 250,000 cycles** and the replacement interval be adjusted as necessary.

## Use and Adjustment of the Manual Release Mechanism

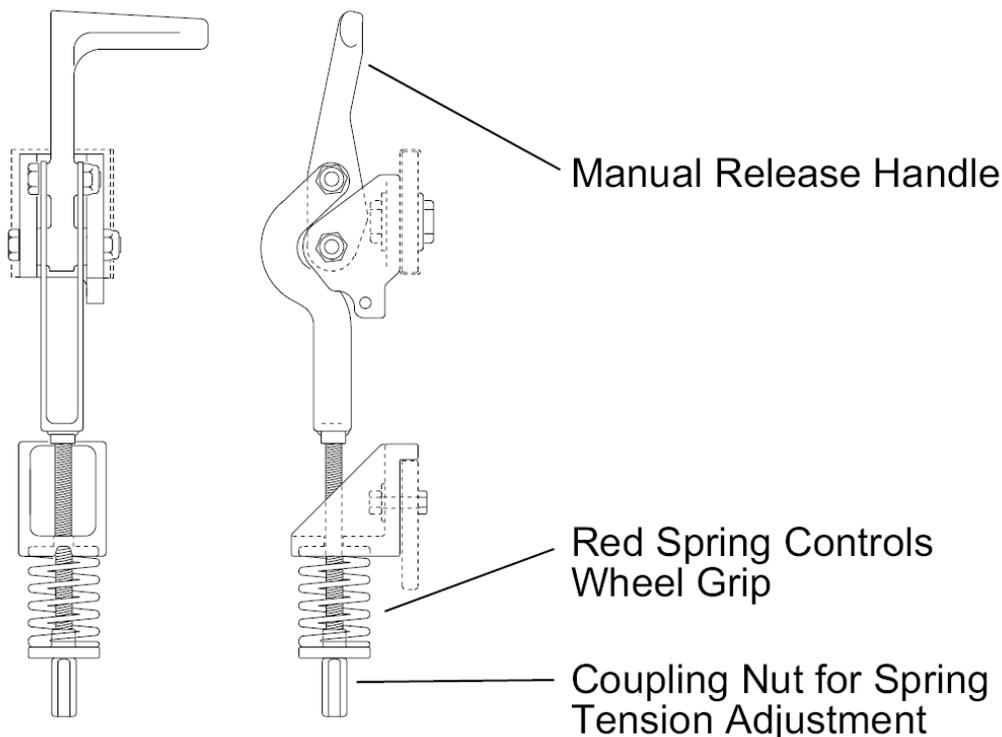
All SlideDriver operators come equipped with a toggle handle manual release mechanism to disengage the drive wheels from the drive rail. The manual release is located under the electric control panel and to the right of the hydraulic motors. To disengage the drive wheels, simply pull the aluminum handle down.

**USE CAUTION:** At first, the toggle handle will rapidly pop down as the loaded spring releases. This action will cause the lower drive wheel to drop and disengage from the drive rail. When the coupling nut on the threaded rod drops to its lowest position, it will push on the base of the operator which will cause the upper drive wheel to lift and disengage from the drive rail.

For shipment, a piece of wood was placed between the coupling nut and the chassis. If the wood is still in place, discard it.

If the drive rail has been installed at the correct height to the chassis, the manual toggle release mechanism will equally spread both wheels away from the drive rail. If the rail has been mounted higher than specified, it may be necessary to insert a 3/8" bolt into the bottom of the coupling nut which will create additional lift clearance for the upper drive wheel when manually released. If used, adjust the 3/8" bolt so the drive wheels spread equally when the manual toggle release is fully disengaged.

**The coupling nut must always be adjusted correctly so the wheels provide a strong clamping force on the drive rail. The red spring should measure 2" to 2-1/8" in height when under correct compression.**



## **IMPORTANT: DC Powered Gate Operators**

The on/off switch on the electric control panel of the drive unit does not disable all DC power to the operator, even if the AC power has been disabled at its source. The large rotary switch in the DC power supply enclosure must be switched “off” to disconnect all of the DC power to the unit.

The disconnect in the power supply must be “off” if the AC source power will be absent for more than one week. This avoids slowly discharging the batteries into the battery charger. Batteries will self-discharge and therefore the DC power supply must not be stored longer than 6 months without recharging the batteries.

Batteries contain sulfuric acid. If batteries are dripped or damaged, be cautious not to get acid in your eyes, on your skin or on your clothing.

Be certain to observe polarity when connecting the batteries or adding accessories. Reversed polarity may result in a non-functional operator or possibly damage a component. Red is (+) positive and black is (-) negative.

Since the electrical current under load is very high, be certain that the minimum conductor size, specified in the installation instructions, is used for the connection between the battery pack and the operator. If the battery pack is more than 20 feet from the operator, use a larger wire size according to the distance between the operator and the batteries.

If shorted, the batteries will generate a very high current. Observe special care when connecting the cables to the batteries that the polarity is correct. The batteries are connected in a series circuit: Join the positive (+) terminal from one battery to the negative (-) terminal of the next battery.

Since the operator is intended to run on batteries, control of the load is important. Easier moving gates will drain less energy from the battery, preserving capacity for more cycles during a power failure.

HySecurity use a permanently sealed type battery which needs no maintenance over its life span. A low voltage sensing circuit protects the batteries from damage which could be caused by over discharge. The charger automatically regulates its output to allow high output when the battery is partially discharged. The output will automatically reduce to zero as the batteries become fully charged.

Batteries have a finite life. As the batteries age, they will lose some of their capacity to store energy. If the total amount of back-up capacity is critical, plan to replace the batteries after 5 years of use. Properly dispose of, or recycle, used batteries.

Batteries are rated to perform to capacity at temperatures of 77 degrees Fahrenheit. Below 77 degrees, their “amp hour” capacity is temporarily reduced. For example, at freezing, the capacity is 75%, at 10 degrees Fahrenheit, the capacity is 50%. HySecurity insulates the battery pack to guard against this loss. Do not remove any insulation, or the performance of the system may be adversely affected.

Batteries can be damaged by excessive heat which may shorten their life span. Therefore, do not paint the battery enclosure a dark color that could cause it to absorb a lot of heat from sunlight.

DC Motors contain carbon brushes which wear over time and must be replaced. Failure to replace the brushes will result in damage to the DC motor. Brushes should be inspected every 2 years or 250,000 cycles and replaced every 5 years, or sooner in high use and/or severe duty installations.

## Wiring and Control Configuration for DC Operators

If this installation is a 24-Volt DC battery type gate operator, there are a few additional steps to complete before the system can be functional. Review the installation instructions, step #10 on page 12 and the connection diagram on page 58 (2-battery system).

**Be certain the DC power disconnect switch is turned off before making any connections.**

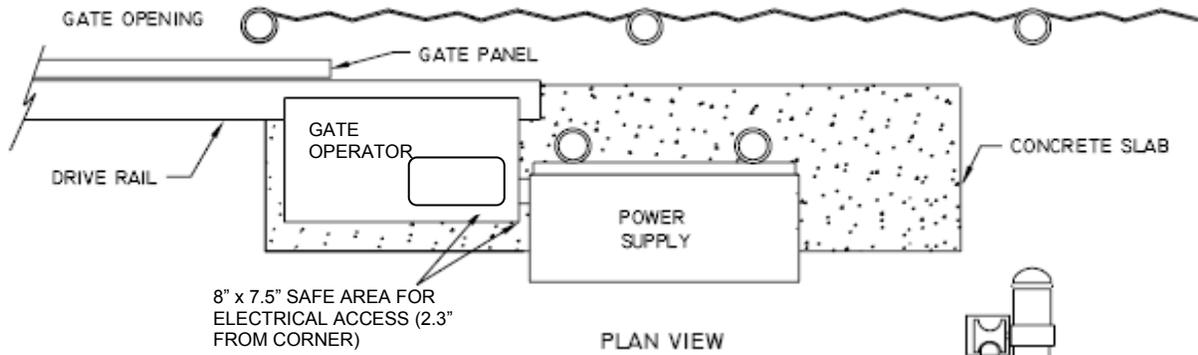
1. Connect the heavy gauge wires between the battery enclosure and the gate operator as follows: **Be certain to observe polarity carefully!**
  - From the battery enclosure the (+) lead connects to the lug on the large rotary power disconnect switch. The (-) lead connects to the lug on the circuit breaker. At the gate operator the (+) lead connects directly to the lug on the top of the DC electric motor. The (-) lead connects to the bottom lug on the contactor mounted alongside the DC motor. All lug connections must be tightened very securely since they pass high current to the gate operator.
2. Connect two separate 14-gauge circuits between the battery enclosure and the gate operator. One circuit provides the 24 VDC to the gate operator controls and the second circuit is required so that the Smart Touch Controller knows that the battery charger is operating normally on AC power. **Be certain to observe polarity carefully!**
  - a. Connect four wires to the terminal strip in the battery supply labeled: (+)24, (-)24, COM, #21. The 24 Volt (+) and (-) terminals connect to the red (+) and black (-) wires at the on/off power switch in the gate operator.
  - b. The COM and #21 terminals connect to the Common Buss and to terminal #21 (Charger AC power loss) on the Smart Touch Controller.
3. The Smart Touch Controller User Menu (U4) provides four optional system configurations for 24-Volt DC battery type gate operators. Since this is an uninterruptible power supply system, the installer must decide, depending upon customer preference, what happens upon AC line power failure. The User Relays will operate to less than 18VDC. There are four functional choices provided in the User Menu, item [AP\_].

Setting 0 (Type A): The operator functions normally until the batteries drop to 20 Volts, then auto open and lock until the battery voltage recovers to 23.5 Volts. The gate can still be manually closed only by a Close Pushbutton or an Emergency Close input and will then re-open by any open command until the battery voltage drops to 17 Volts at which time the gate is absolutely locked open, unless moved manually.

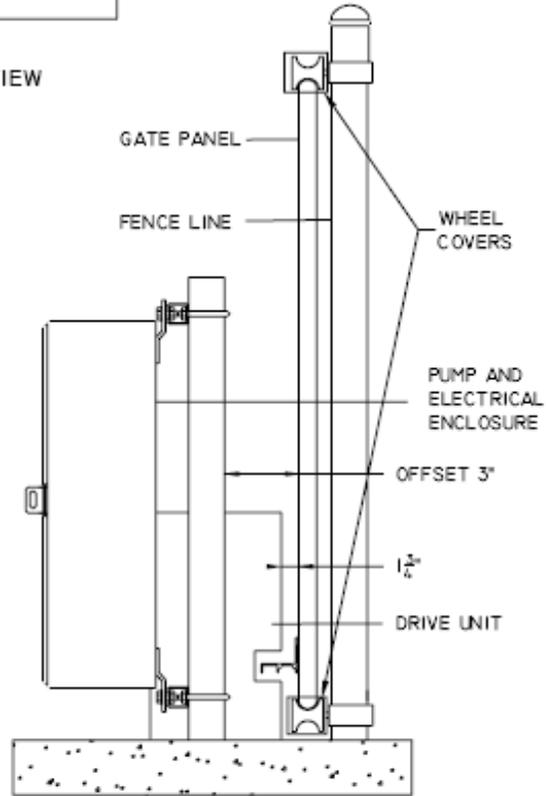
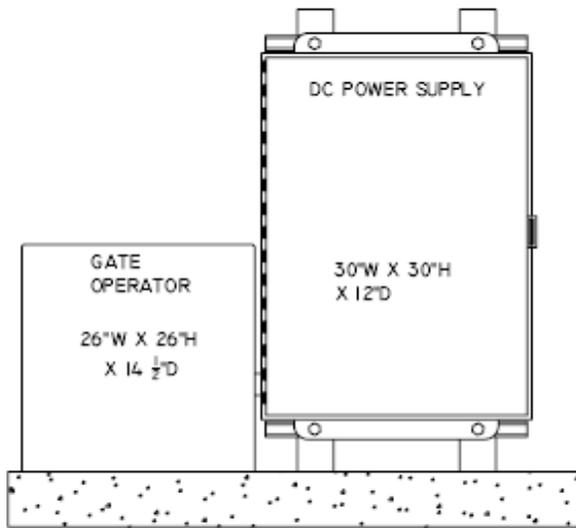
Setting 1 (Type B): The operator functions normally until the batteries drop to 20 Volts, then auto close and lock closed until battery voltage recovers to 23.5 Volts. The gate can only be opened by a special combination of a Stop Pushbutton input, then within 1 second, an Open Pushbutton input. The Fire Department open input can open the gate without the special PBS enabling pre-input. The gate can be re-closed only by Close Pushbutton and the Emergency Close inputs. When the battery voltage drops to 17 Volts, the gate completes its final cycle and stays in the full open or full closed position, depending upon which cycle was last.

Setting 2 (Type C): The operator automatically opens five seconds after loss of AC power and locks open, until AC power is restored. The gate can still be manually closed only by a Close Pushbutton or an Emergency Close input and will then re-open by any open command until the battery voltage drops to 17 Volts at which time the gate is absolutely locked open.

Setting 3 (Type D): Same as type C, except the operator initially does nothing after loss of AC power, but then locks open after the next open command of any type.



RIGHT HAND GATE SHOWN. REVERSE ENCLOSURE FOR LEFT HAND INSTALLATION.



**NOTES:**

CONCRETE FOOTINGS MUST BE A MINIMUM OF 16" DEEP OR TO THE FROST LINE. CHECK LOCAL CONDITIONS.

DRIVE UNIT AND POWER PACKAGE MUST BE CONNECTED BY A MINIMUM 2" ROUND CONDUIT FOR PASSAGE OF ELECTRICAL WIRES.

SUPPORT POSTS FOR ELECTRICAL ENCLOSURE ARE 4" MINIMUM. POSTS AND HARDWARE ARE BY OTHERS.

ONE SLAB TO SUPPORT OPERATOR AND ELECTRICAL ENCLOSURE WILL HELP ASSURE ALIGNMENT OF ALL COMPONENTS.

WHEN POSSIBLE, ELECTRICAL ENCLOSURE SHOULD BE LOCATED WITHIN 10 FEET OF OPERATOR. CONTACT FACTORY IF DISTANCE IS GREATER THAN 10 FEET.

D.C. POWER BATTERY PACKS  
2 BATTERY, 90AH: 30"W X 30"H X 12" D

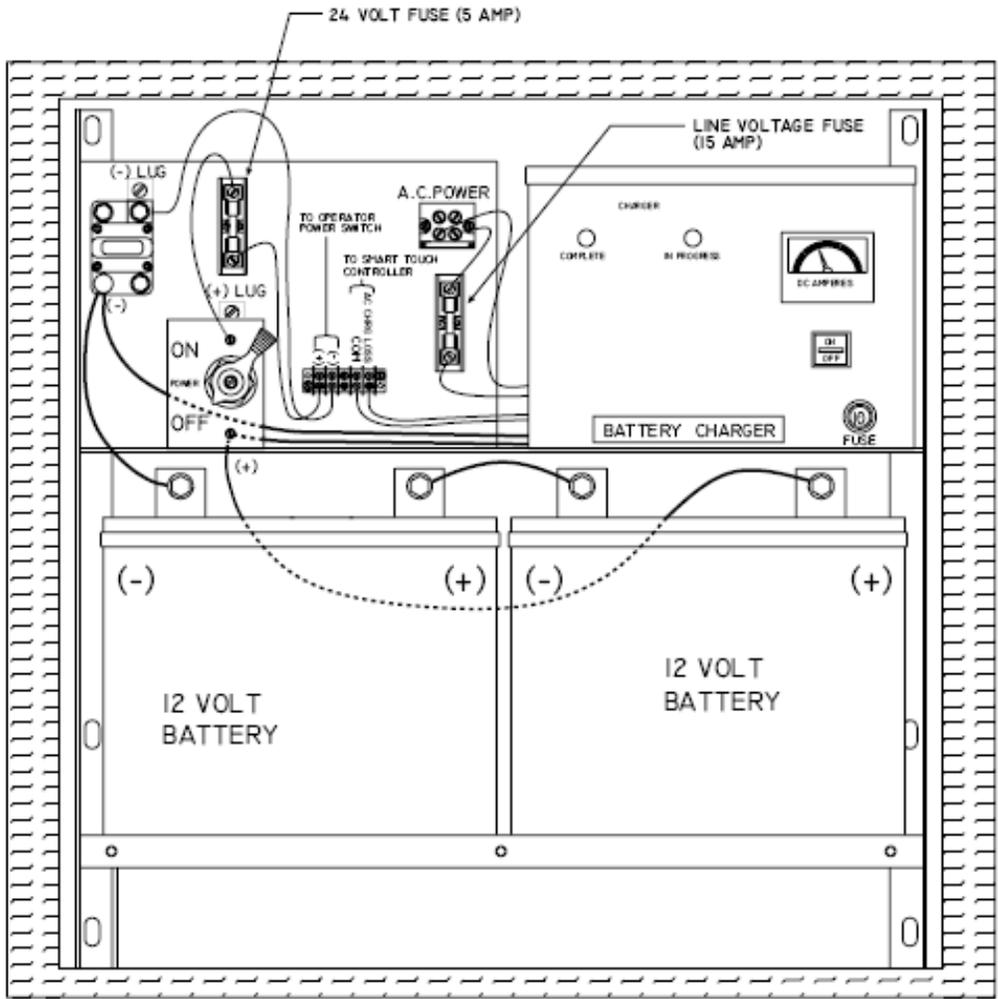
POWER SUPPLY WIRING TO DRIVE UNIT:  
4 CONDUCTORS REQUIRED  
4 EA. 14GA. MINIMUM FOR CONTROL PANEL  
2 EA. HEAVY GAUGE FOR MOTOR.  
6 GA. MINIMUM FOR 1 HP MODELS  
2 GA. MINIMUM FOR 2 HP MODELS  
ADD 2 14 GA. MINIMUM IF DRIVE UNIT HEATER IS SUPPLIED.



TITLE  
**DC REMOTE POWER PACKAGE**

DRAWN KERI	DATE 7/27/00	THIRD ANGLE PROJECTION		REV -
CHECKED -	DATE -	ERN NUMBER ERN000010	DATE 5/16/00	
APPROVED -	DATE -	DRAWING NUMBER SS20		SHT OF 1 1

# Battery Connection Diagram



CONNECT SIX WIRES TO GATE OPERATOR AS SHOWN.

FOUR 14 GA. WIRES TO CONTROL CIRCUIT  
 CONNECT FROM LUG  
 TERMINALS TO DC MOTOR:  
 TWO 6 GA. MINIMUM FOR 222 DS OR 222 DE  
 OR  
 TWO 2 GA. MINIMUM FOR 222 DX

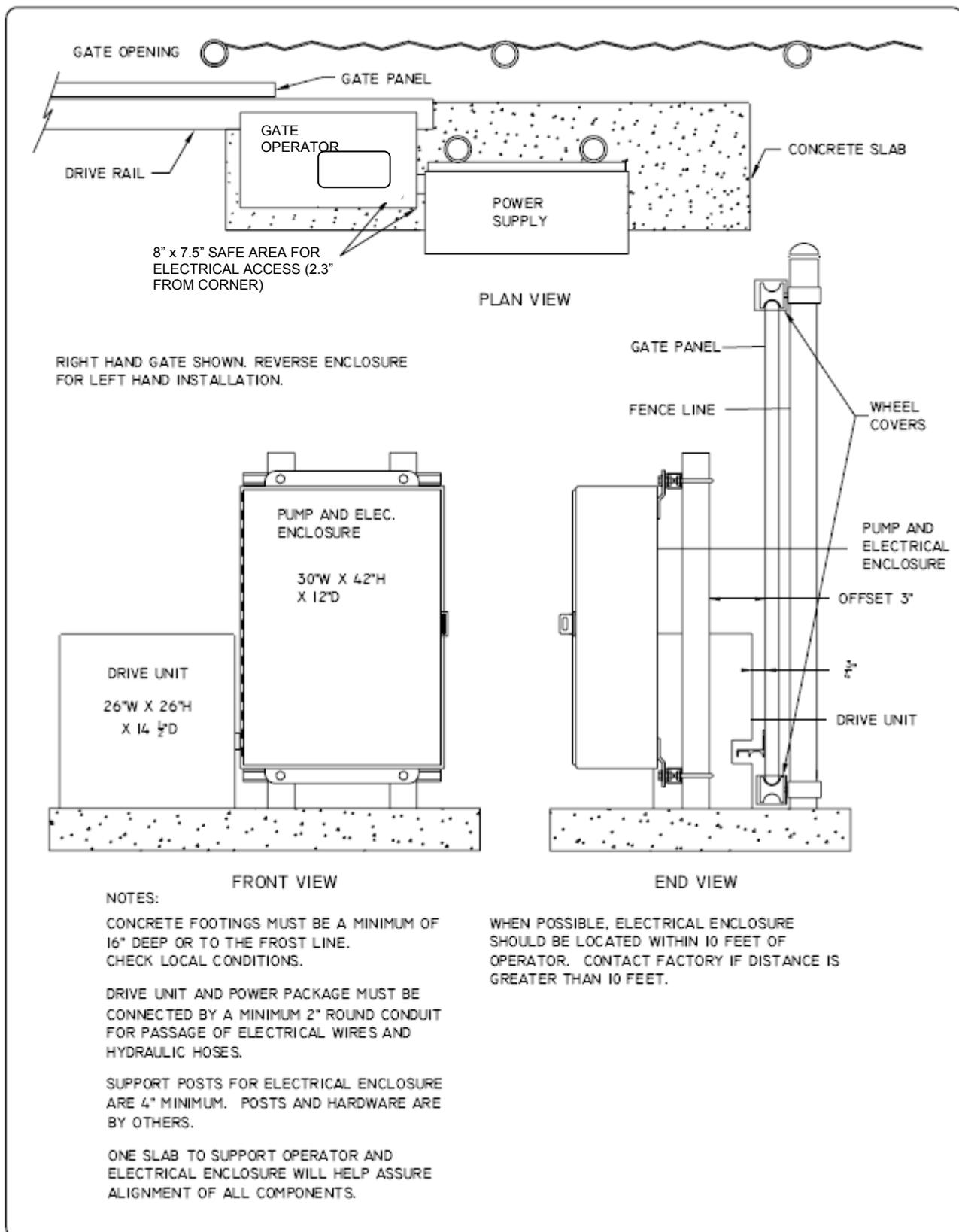
INSTALL BATTERIES AS SHOWN, OBSERVING POLARITY.

ALWAYS OBSERVE POLARITY CAREFULLY.  
 ALWAYS CONNECT RED WIRES TO (+) AND BLACK  
 WIRES TO (-) EXCEPT FOR WIRES CONNECTING THE  
 BATTERIES.

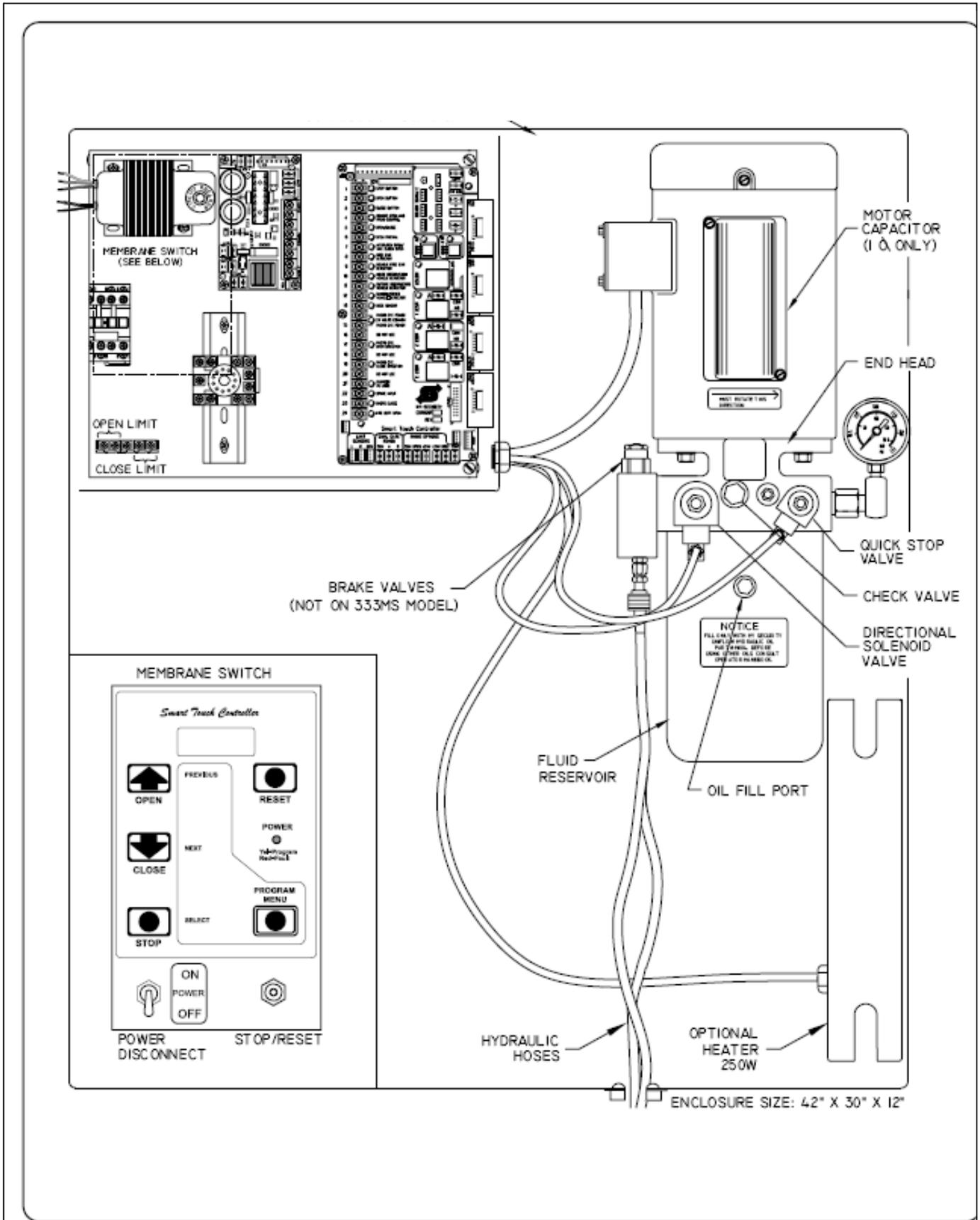


TITLE  
**24V 110A.H. BATTERY POWER  
 SUPPLY FOR DC OPERATORS**

DRAWN CMK	DATE 28JUN01	REFERENCE RELEASE NOTICE	REV <b>A</b>
CHECKED	DATE	PART NUMBER	N/A
APPROVED	DATE	DRAWING NUMBER: E125	SHT OF 1 1



	TITLE	DRAWN	DATE	THIRD ANGLE PROJECTION	REV
	333 MODULAR SLIDE GATE OPERATOR	KERI	7/27/0		-
		CHECKED	-	ERN NUMBER	DATE
		APPROVED	-	ERN000010	5/16/00
				DRAWING NUMBER	SHT OF
				MSI4	1 OF 1



	TITLE	DRAWN	DATE	THIRD ANGLE PROJECTION		REV
	333MS, 333E, 333EX TYPICAL PUMP AND ELECTRICAL PANEL	D. B.	05/08/00			A
		CHECKED		ERN NUMBER	DATE	
		APPROVED		DRAWING NUMBER		SHT. OF

## Wire Size Schedules

### For 1/2-hp through 5-hp motors

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

The tables on the following page are based on copper wire and allow for a 5% voltage drop. The ampere values shown are the service factor ampere rating (maximum full load at continuous duty) of the motor. At a minimum, a 20 amp circuit (protected with a 20 Amp Inverse Time Breaker) should be provided.

Always connect electrical power, a “safety ground”, and an NEC/NFPA “Earth Ground” to the operator in accordance with the National Electrical Code, article’s 430 and 250 plus other local codes that may apply.

Earth ground requires a solid ground rod,( normally copper), 10ft long, and 5/8” in diameter (diameter and length depend on location, check local codes) driven into the earth and bonded to the operator with a single piece of #6 wire, not more than 3 ft long.

The maximum distance shown is from the gate operator to the power source; assuming that source power is from a panel box with adequate capacity to support the addition of this motor load. The values are for one operator, with no other loads applied to the branch circuit. Avoid placing more than one gate operator to a circuit, but if you must, be certain to reduce the maximum allowed distance by half.

### Low Voltage Control Wiring:

The Smart Touch controller has very sensitive control inputs so the wire size of the control wiring is not a significant issue. The following is a chart of maximum distances for the controls:

Wire Size	Maximum Distance
18 ga	7.0 miles
20 ga	3.5 miles
22 ga	2.7 miles
24 ga	2.0 miles
26 ga	1.0 mile
28 ga	3700 feet (.7 miles)

**Wire Size for Voltage Drop Over Distance**

**Wire Sizes for Power Wiring, Single Phase** Distances are shown in the unshaded boxes

Amps Horse Power	115 V, SINGLE PHASE						208 V, SINGLE PHASE						230 V, SINGLE PHASE					
	10.0	11.06	14.4	27.2	NA	NA	5.5	6.1	7.6	14.2	16.2	NA	5.0	5.8	7.2	13.6	14.8	27.0
1/2hp	90	75	60	30			290	260	205	110	100		350	300	245	130	120	65
3/4hp	140	120	100	50			460	415	330	175	155		560	480	385	205	190	105
1hp	220	190	155	80			725	650	525	280	245		880	760	610	325	300	165
3hp	350	300	245	130			1,150	1,040	835	445	390		1,400	1,120	975	515	475	260
5hp	555	480	385	205			1,825	1,645	1,320	710	620		2,220	1,915	1,550	815	750	410
6ga	890	765	620	330			2,920	2,630	2,110	1,130	1,000		3,550	3,060	2,465	1,305	1,200	660

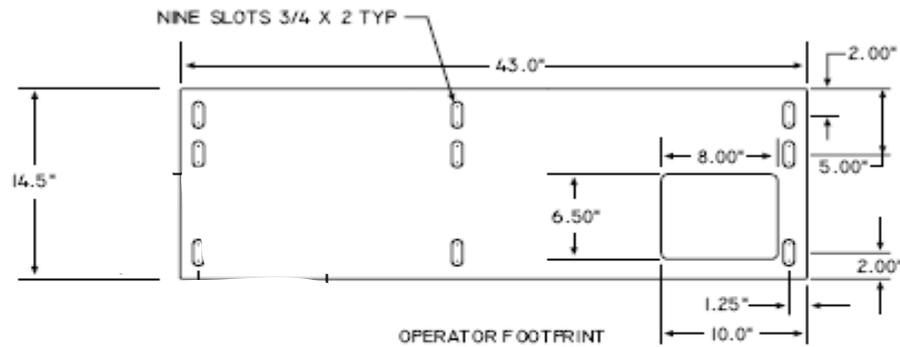
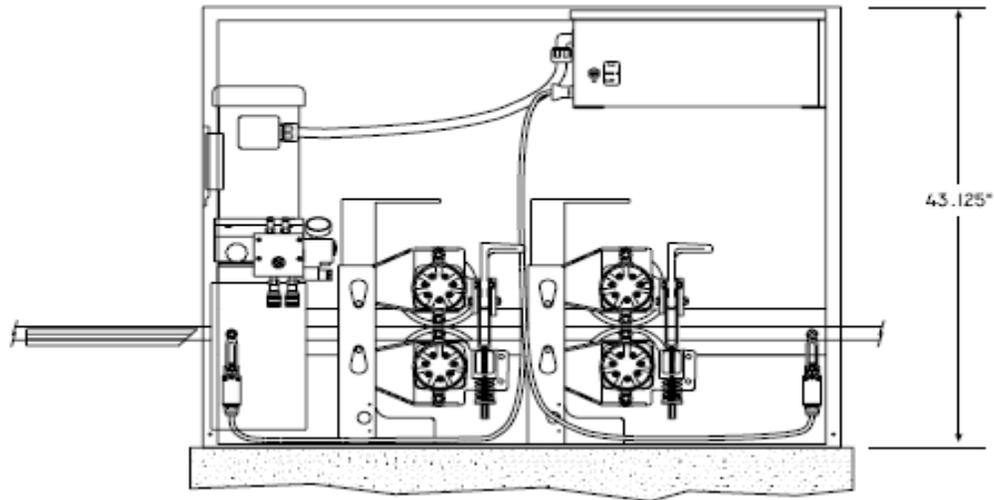
Wire Gauge

**Wire sizes for Power Wiring, Three Phase** Distances are shown in the unshaded boxes

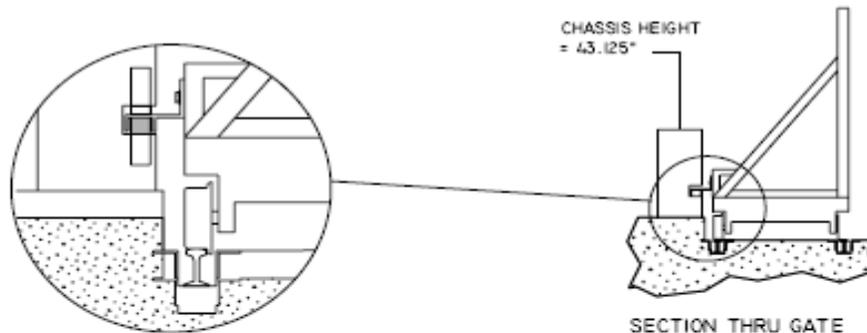
Amps Horse Power	208 V, THREE PHASE						230 V, THREE PHASE						460 V, THREE PHASE					
	2.7	3.1	4.2	6.5	6.7	16	2.4	3.0	3.8	6.2	6.4	15.4	1.2	1.5	1.9	3.1	3.2	7.7
1/2hp	590	510	375	245	235	100	730	585	460	280	270	115	2,915	2,350	1,850	1,130	1,100	455
3/4hp	930	810	600	390	375	160	1,160	930	730	450	435	180	4,640	3,710	2,930	1,800	1,740	725
1hp	1,475	1,285	950	615	595	250	1,835	1,470	1,160	710	690	285	7,340	5,870	4,650	2,840	2,750	1,150
3hp	2,350	2,045	1,510	975	945	400	2,925	2,340	1,845	1,130	1,095	455	11,700	9,350	7,400	4,550	4,400	1,800
5hp	3,720	3,240	2,390	1,545	1,500	630	4,625	3,700	2,920	1,790	1,735	720	18,500	14,800	11,700	7,200	7,000	2,900

Wire Gauge

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



SIX ANCHOR BOLTS 1/2" x 6" ARE REQUIRED TO PROPERLY ANCHOR THE CHASSIS BASE AS SHOWN ABOVE. CUTOUTS SHOWN ARE FOR ELECTRICAL FEED.



**NOTES:**

IF GATE PANEL IS BOWED, SHIM RAIL FOR EVEN TRAVEL THROUGH GATE OPERATOR.

DISTANCES FROM GATE OPERATOR TO GATE PANEL AND FROM TOP OF RAIL TO TOP OF SLAB ARE CRITICAL.

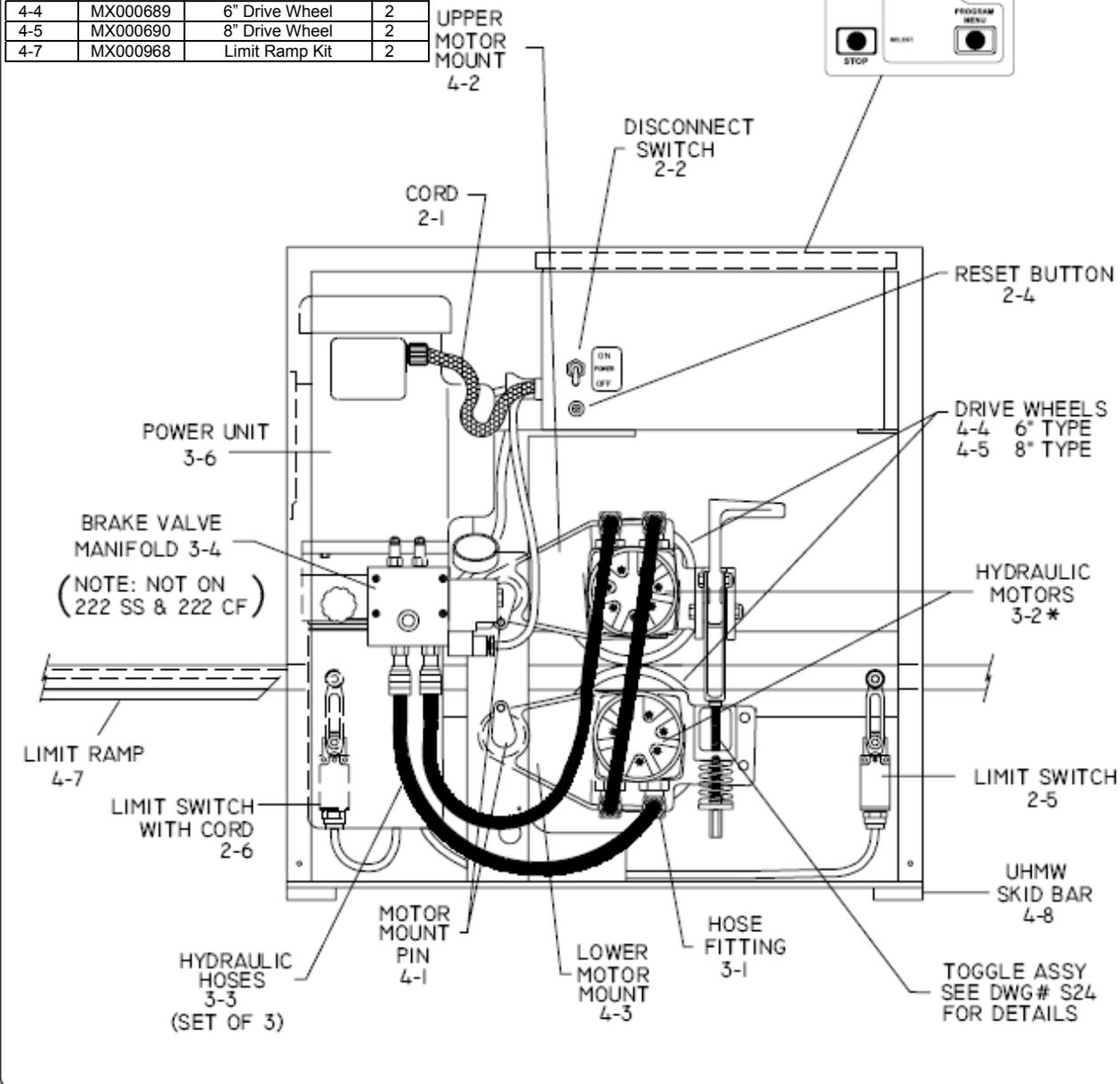
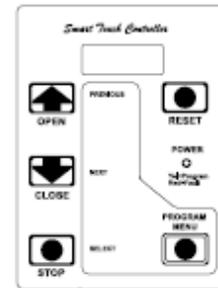
MINIMUM SLAB DIMENSIONS RECOMMENDED ARE 50" WIDE, 20" FROM FRONT TO BACK, AND 20" DEEP. CHECK ALL LOCAL FROST CONDITIONS AND SOIL CHARACTERISTICS FOR EXACT REQUIREMENTS.

444 OPERATOR COMPONENTS AND FOOTPRINT

XS48-9

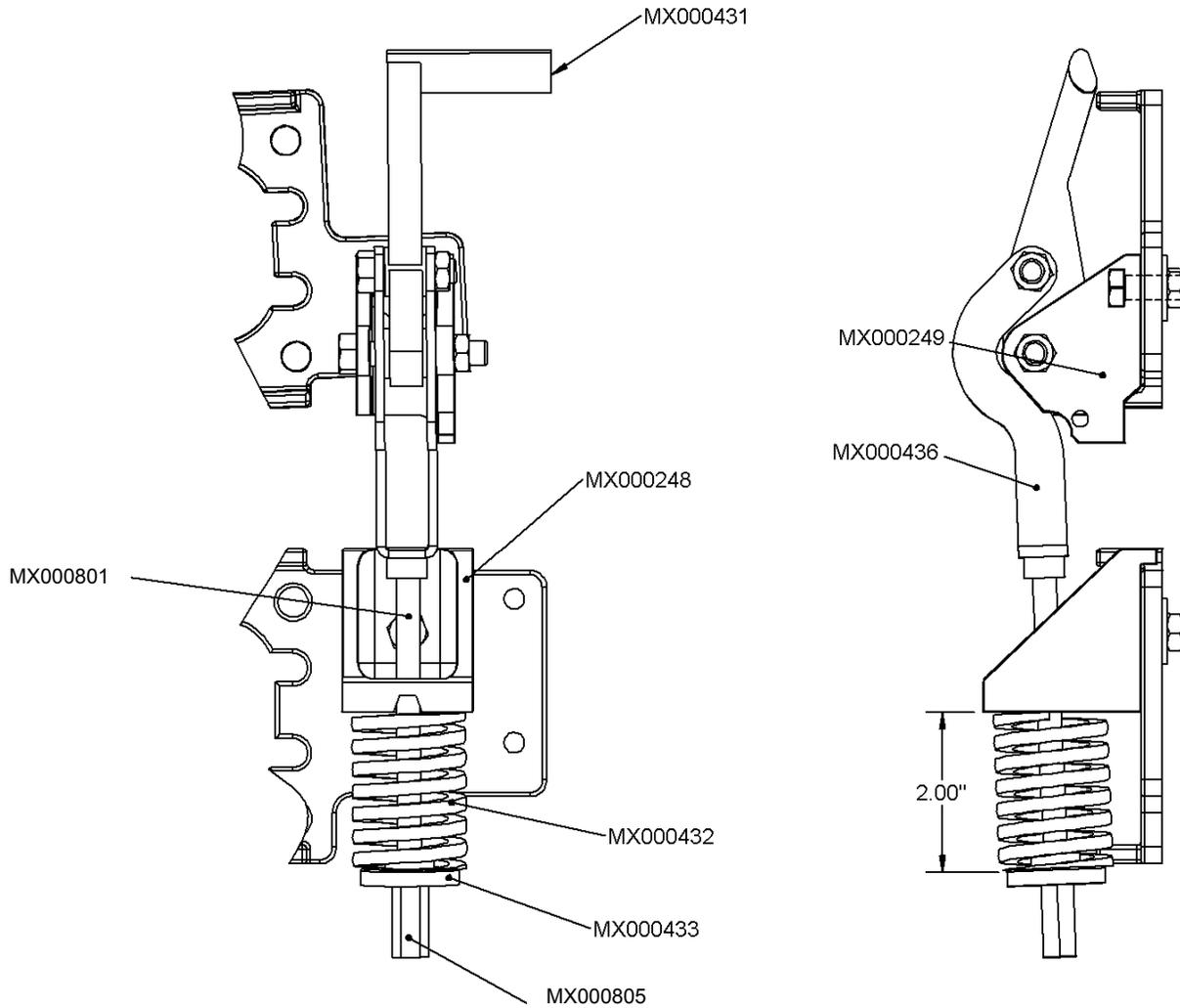
	P/N	DISC	Qty
2-2	MX000715	Disconnect Switch	1
2-3	MX000343	Membrane Switch	1
2-4	MX001088	Reset	1
2-5&6	MX000672	Limit Switch	2
3-1	MX000250	Hose Fitting	4
3-2	MX001149	10" Motor	2
3-2	MX001143	24" motor (444 & X1)	
3-3	MX001129	Hydraulic Hose Kit (3)	1
3-4	MX000137	Brake Manifold	1
4-1	MX001105	Pivot Pin Kit	2
4-2	MX000387	Upper Motor Mount	1
4-3	MX000386	Lower Motor Mount	1
4-4	MX000689	6" Drive Wheel	2
4-5	MX000690	8" Drive Wheel	2
4-7	MX000968	Limit Ramp Kit	2

MEMBRANE SWITCH  
2-3



<p>SGS TITLE, WASHINGTON</p>	TITLE	DRAWN	DATE	THIRD ANGLE PROJECTION		REV
	COMPONENTS ALL A.C. SLIDE OPERATORS, EXCEPT III LS	D.B.	6/26/0			
		CHECKED	DATE	ERN NUMBER	DATE	
		APPROVED	DATE	DRAWING NUMBER: SS34A		SHT OF 1

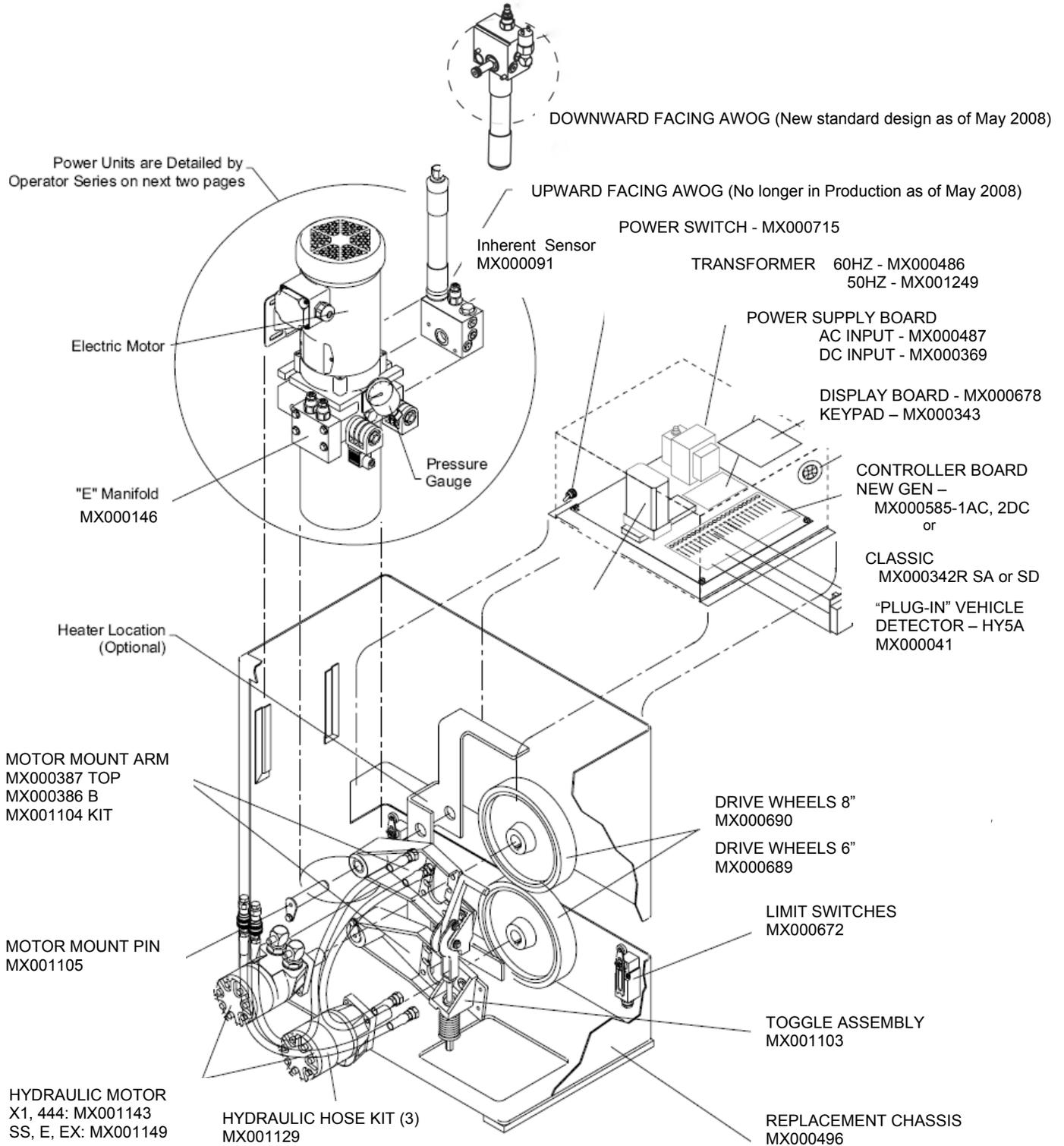
## Manual Release Toggle Assembly



MX001103 - TOGGLE HANDLE ASSEMBLY

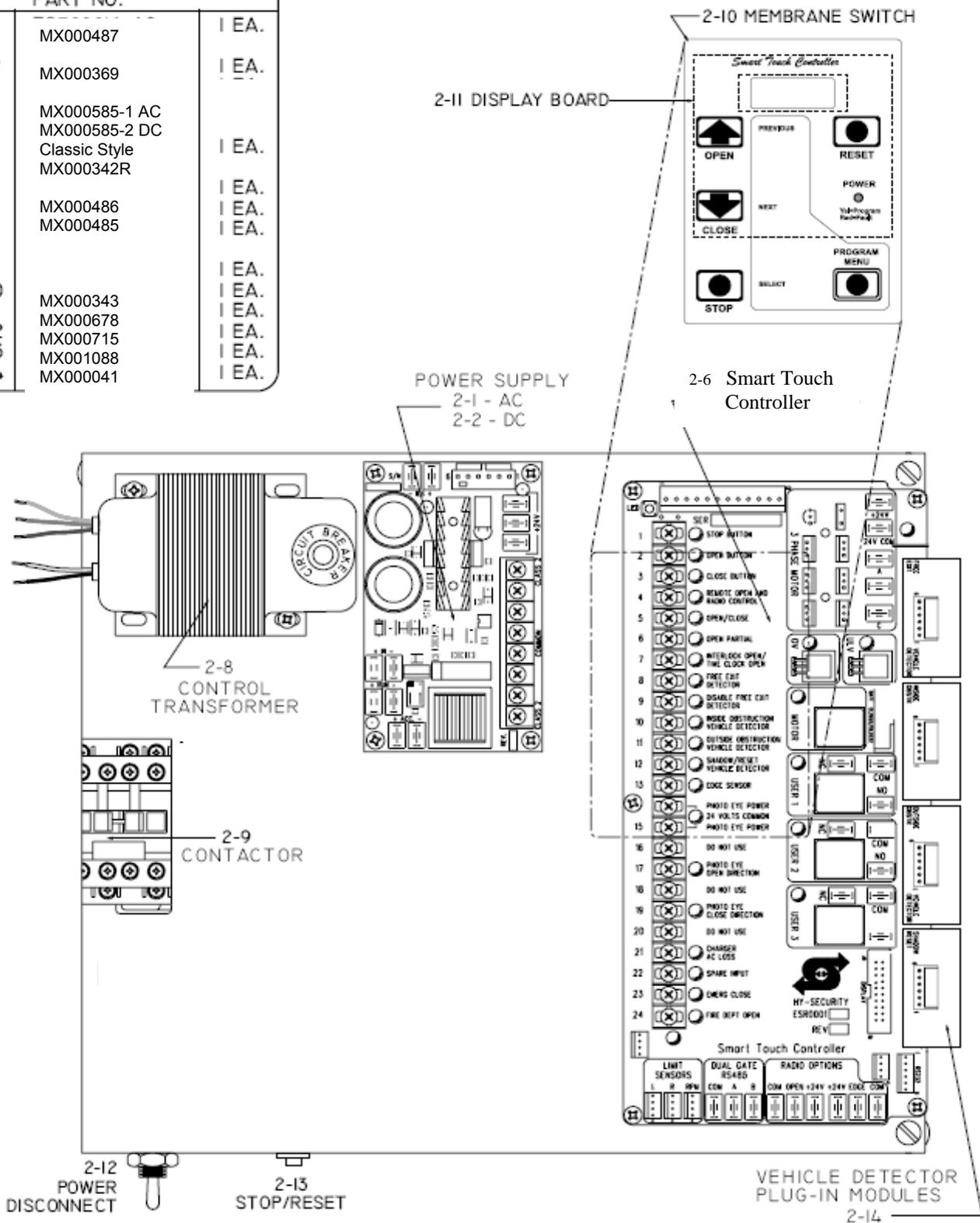
Part #	Part Description
MX000431	TOGGLE HANDLE
MX000248	TOGGLE SPRING MOUNT
MX000801	STUD
MX000432	SPRING, 1.5" HOLE X 2.5"L, RED
MX000433	TOGGLE SPRING SEAT
MX000805	COUPLING NUT
MX000249	TOGGLE HANDLE MOUNT
MX000436	TOGGLE YOKE
MX001103	COMPLETE ASSEMBLY

# Exploded Parts Breakout



**Parts Breakout – Control Box**

PART NO.		
2-1	MX000487	1 EA.
2-2	MX000369	1 EA.
2-6	MX000585-1 AC MX000585-2 DC Classic Style MX000342R	1 EA.
2-7		1 EA.
2-8	MX000486	1 EA.
2-9	MX000485	1 EA.
2-10		1 EA.
2-11		1 EA.
2-12	MX000678	1 EA.
2-13	MX000715	1 EA.
2-14	MX001088 MX000041	1 EA.



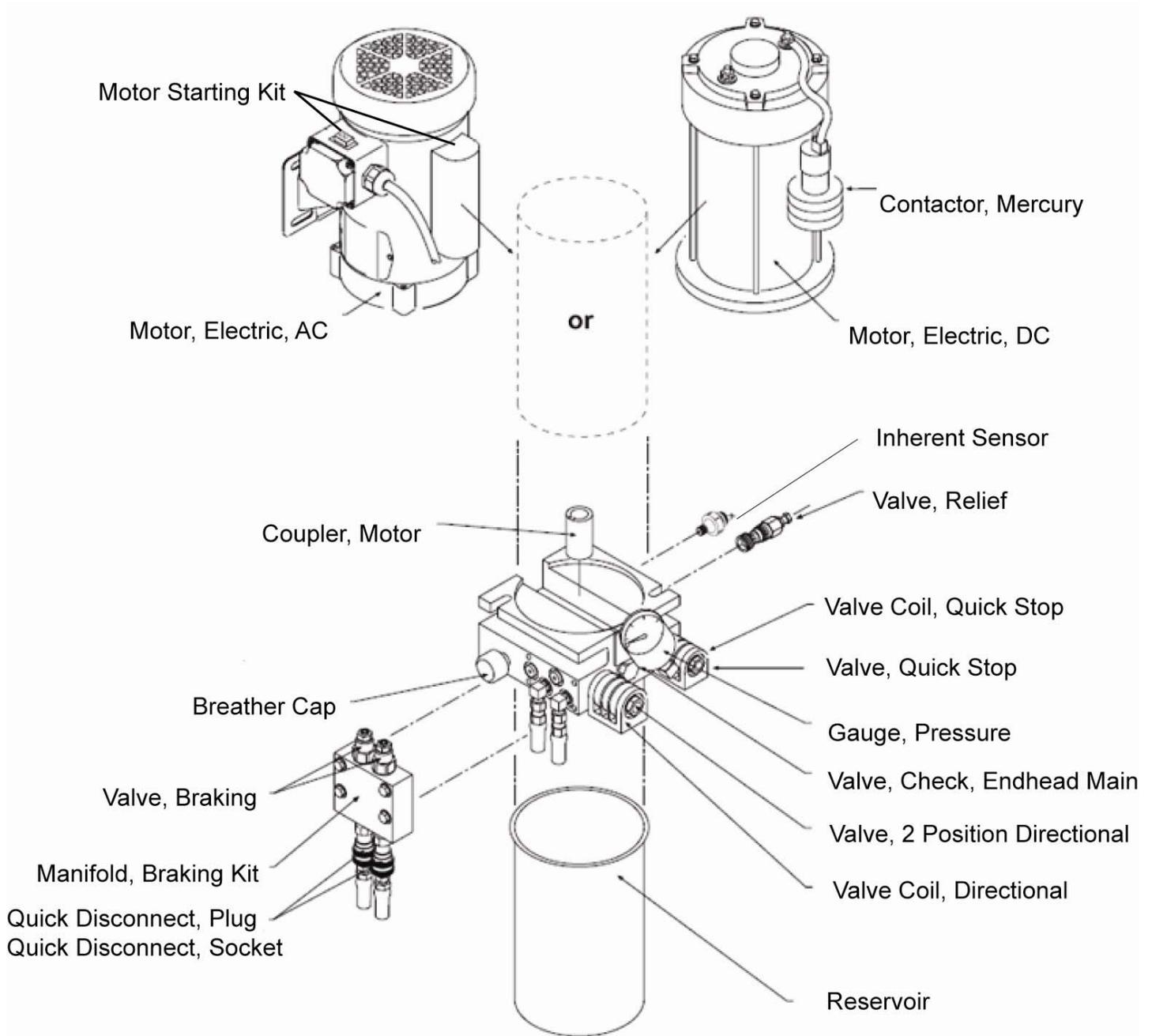
COMPONENT DIAGRAM - 222 CONTROL BOX

HS40

**Exploded Parts Breakout**

**Pump Pack: Diagram**

*SlideDriver 10, 40, 50VF2, 50VF3 (222 SS, E, X2, X3)*



## Pump Pack: Part Names and Part Numbers

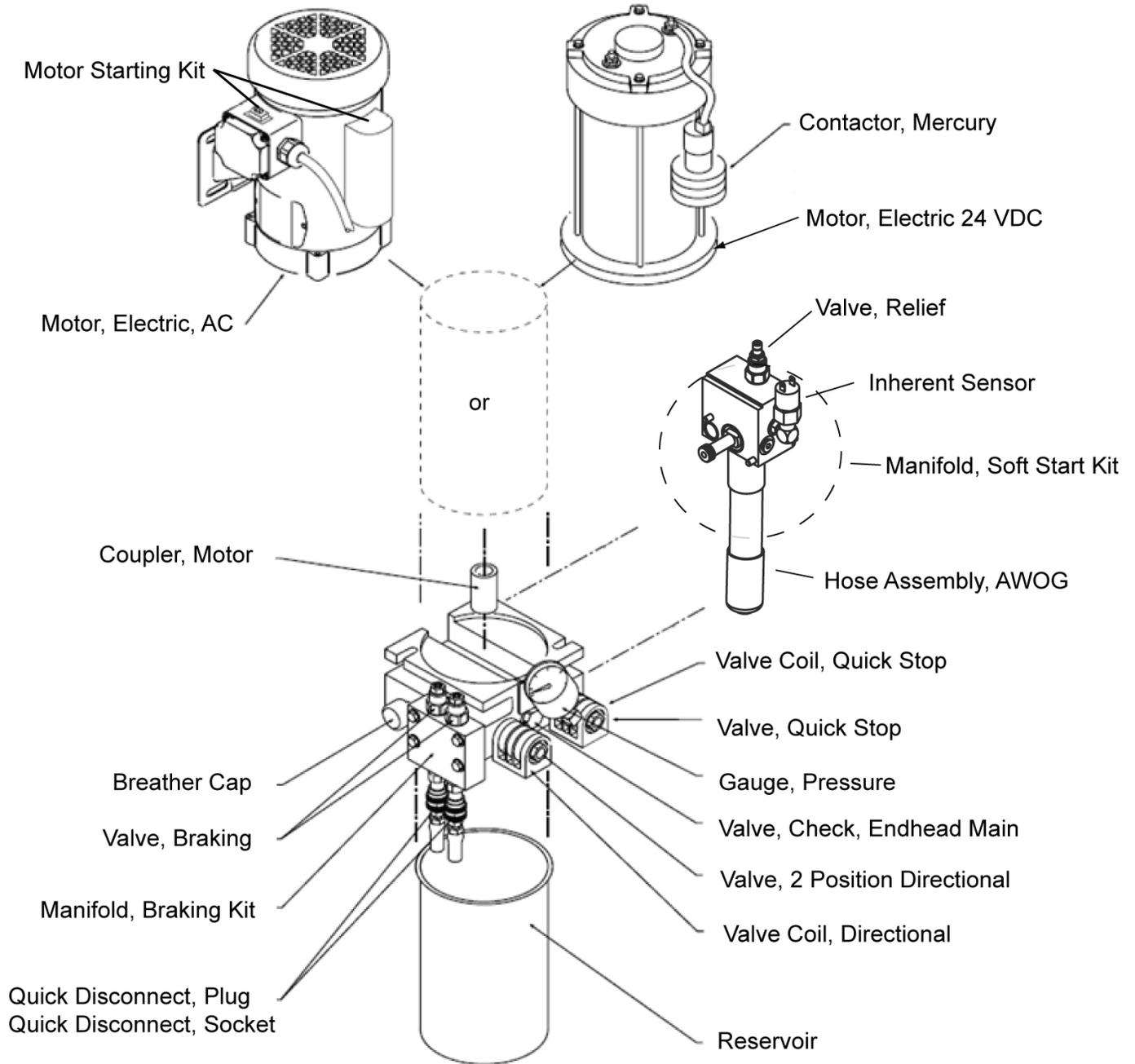
*SlideDriver 10, 40, 50VF2, 50VF3 (222 SS, E, X2, X3)*

Part Name	Part Number	SlideDriver Models (current)
Breather Cap	MX000686	all
Contact, Mercury	MX001098	all DC
Coupler, Motor, 5/8" Shaft	MX001650	all
Gauge, Pressure, 2000 PSI, Kit	MX001106	all
Inherent Sensor Kit	MX000091	all
Manifold, Braking Kit, SlideDriver	MX000137	all except 10 (SS, DS, CF)
Motor Starting Kit	MX001308	all AC 60Hz 1Ø
Motor, Electric, 24VDC, 2.0 HP	MX001647	10 UPS, 40 UPS, (DS, DE) 24VDC
Motor, Electric, 60Hz, 1.0 HP, 1Ø, 3450 RPM	MX001635	10, 40 (SS, E) 115/208/230VAC 60Hz 1Ø
Motor, Electric, 60Hz, 1.0 HP, 3Ø, 3450 RPM	MX001636	10, 40 (SS, E) 208/230/460VAC 60Hz 3Ø
Motor, Electric, 60Hz, 1.0 HP, 3Ø, 3450 RPM, 575VAC	MX001667	10, 40 (SS, E) 575VAC
Motor, Electric, 60Hz, 2.0 HP, 3Ø, 3450 RPM	MX001638	50VF (X2/X3)
Pump Pack, SlideDriver 10	MX000092	10, 10 UPS (SS, DS)
Pump Pack, SlideDriver 40	MX000093	40, 40 UPS (E, DE)
Pump Pack, SlideDriver VF2/VF3, 50/60Hz	MX000620	50VF (X2/X3)
Quick Disconnect, Plug, 1/8"	MX000170	all
Quick Disconnect, Socket, 1/8"	MX000169	all
Reservoir, 4 Qt	MX000161	all
Valve Coil, Directional, 24VDC	MX000184	all
Valve Coil, Quick Stop, 24VDC	MX000185	all except 50VF (X2/X3)
Valve, 2 Position Directional	MX000172	all
Valve, Braking	MX000657	all except 10 (SS, DS, CF)
Valve, Check, Endhead Main	MX000171	all
Valve, Quick Stop	MX000173	all
Valve, Relief, 1500 PSI	MX000658	all except 50VF (X2/X3)
Valve, Relief, 3000 PSI	MX000174	50VF (X2/X3)
Pump pack parts usage equivalent models: 10 applies to 10-C (222 CF), 10-M (333 MS), 10-CM (333 CF) 40 applies to 40-C (222 CE), 40-M (333 E), 40-CM (333 CE) 10 UPS applies to 10-C UPS (222 CDS), 10-M UPS (333 DS), 10-CM UPS (333 CDS) 40 UPS applies to 40-C UPS (222 DCE), 40-M UPS (333 DE), 40-CM UPS (333 DCE)		
Call for 50Hz motors, 575VAC 2.0 HP motor, and pump packs.		

**Exploded Parts Breakout**

**Pump Pack: Diagram**

*SlideDriver 30F, 40F, 80, 200 (222 EX 1.7, EX, X1, 444)*

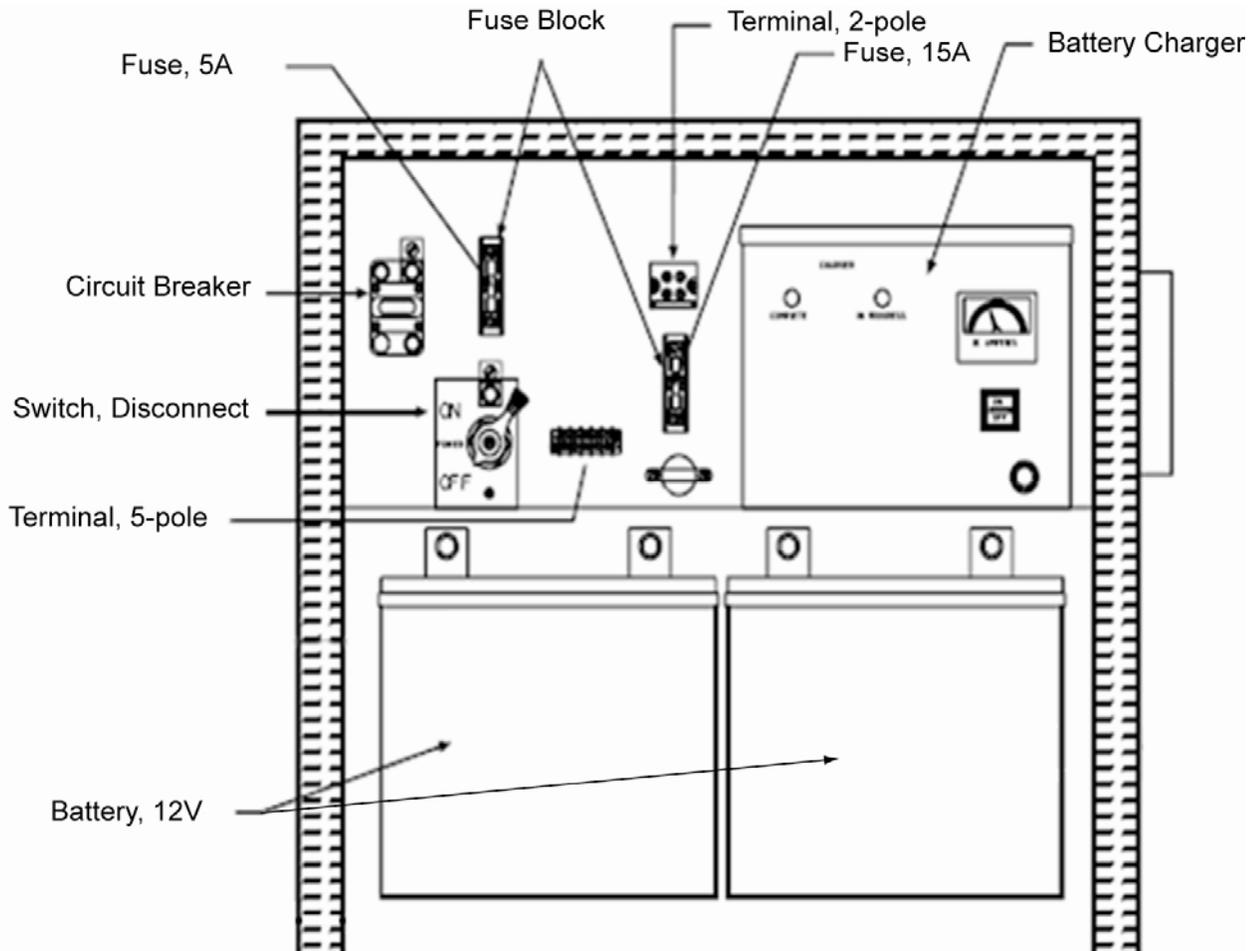


## Pump Pack: Part Names and Part Numbers

*SlideDriver 30F, 40F, 80, 200 (222 EX 1.7, EX, X1, 444)*

Part Name	Part Number	SlideDriver Models (current)
Breather Cap	MX000686	all
Contact, Mercury	MX001098	all DC
Coupler, Motor, 5/8" Shaft	MX001650	all
Gauge, Pressure, 2000 PSI, Kit	MX001106	all
Hose Assembly, Face Down AWOOG	MX000618	30F, 40F, 80, 200 (EX1.7, EX, X1, 444)
Inherent Sensor Kit	MX000091	all
Manifold, Braking Kit, SlideDriver	MX000137	all except Modular, 200 (333, 444)
Manifold, Soft Start Kit, SlideDriver, Face Down AWOOG	MX001276	30F, 40F, 80 (EX1.7, EX, X1)
Motor Starting Kit	MX001308	all AC 60Hz 1Ø
Motor, Electric, 24VDC, 2.0 HP	MX001647	30F UPS, 40F UPS, 80 UPS (DX1.7, DX, DX1) 24VDC
Motor, Electric, 24VDC, 4.0 HP	MX001648	200 UPS (444 DX) 24VDC
Motor, Electric, 60Hz, 2.0 HP, 1Ø, 3450 RPM	MX001637	30F, 40F, 80 (EX1.7, EX, X1) 208/230VAC 60Hz 1Ø
Motor, Electric, 60Hz, 2.0 HP, 3Ø, 3450 RPM	MX001638	30F, 40F, 80 (EX1.7, EX, X1) 208/230/460VAC 60Hz 3Ø
Motor, Electric, 60Hz, 5.0 HP, 1Ø, 3450 RPM	MX001725	200 (444XS) 230VAC 60Hz 1Ø
Motor, Electric, 60Hz, 5.0 HP, 3Ø, 3450 RPM	MX001639	200 (444XS) 230/460VAC 60Hz 3Ø
Pump Pack, SlideDriver 200	MX001617	200, 200 UPS (444 XS, 444 DX)
Pump Pack, SlideDriver 30F/40F/80	MX001615	30F, 40F, 80, 30F UPS, 40F UPS, 80 UPS (EX1.7, EX, X1, DX1.7, DX, DX1)
Quick Disconnect, Plug, 1/4"	MX000202	200 (444)
Quick Disconnect, Plug, 1/8"	MX000170	all except 200 (444)
Quick Disconnect, Socket, 1/4"	MX000201	200 (444)
Quick Disconnect, Socket, 1/8"	MX000169	all except 200 (444)
Reservoir, 4 Qt	MX000161	all
Valve Coil, Directional, 24VDC	MX000184	all
Valve Coil, Quick Stop, 24VDC	MX000185	all
Valve, 2 Position Directional	MX000172	all
Valve, Braking	MX000657	all
Valve, Check, Endhead Main	MX000171	all
Valve, Quick Stop	MX000173	all
Valve, Relief, Soft Start Operators	MX000659	all except 200 (444)
Valve, Relief, 3000 PSI	MX000480	200 (444)
<p>Pump pack parts usage equivalent models:            30F applies to 30F-C (222 CX1.7), 30F-M (333 EX1.7), 30F-CM (333 CX1.7)            40F applies to 40F-C (222 CX), 40F-M (333 EX), and 40F-CM (333 CX)            80 applies to 80-C (222 CX1), 80-M (333 X1), and 80-CM (333 CX1)            30F UPS applies to 30F-C UPS (222 DCX1.7), 30F-M UPS (333 DX1.7), 30F-CM (333 DCX1.7)            40F UPS applies to 40F-C (222 DCX), 40F-M (333 DX), and 40F-CM (333 DCX)            80 UPS applies to 80-C UPS (222 DCX1), 80-M UPS (333 DX1), and 80-CM UPS (333 DCX1)</p>		
Call for 50Hz motors and pump packs.		

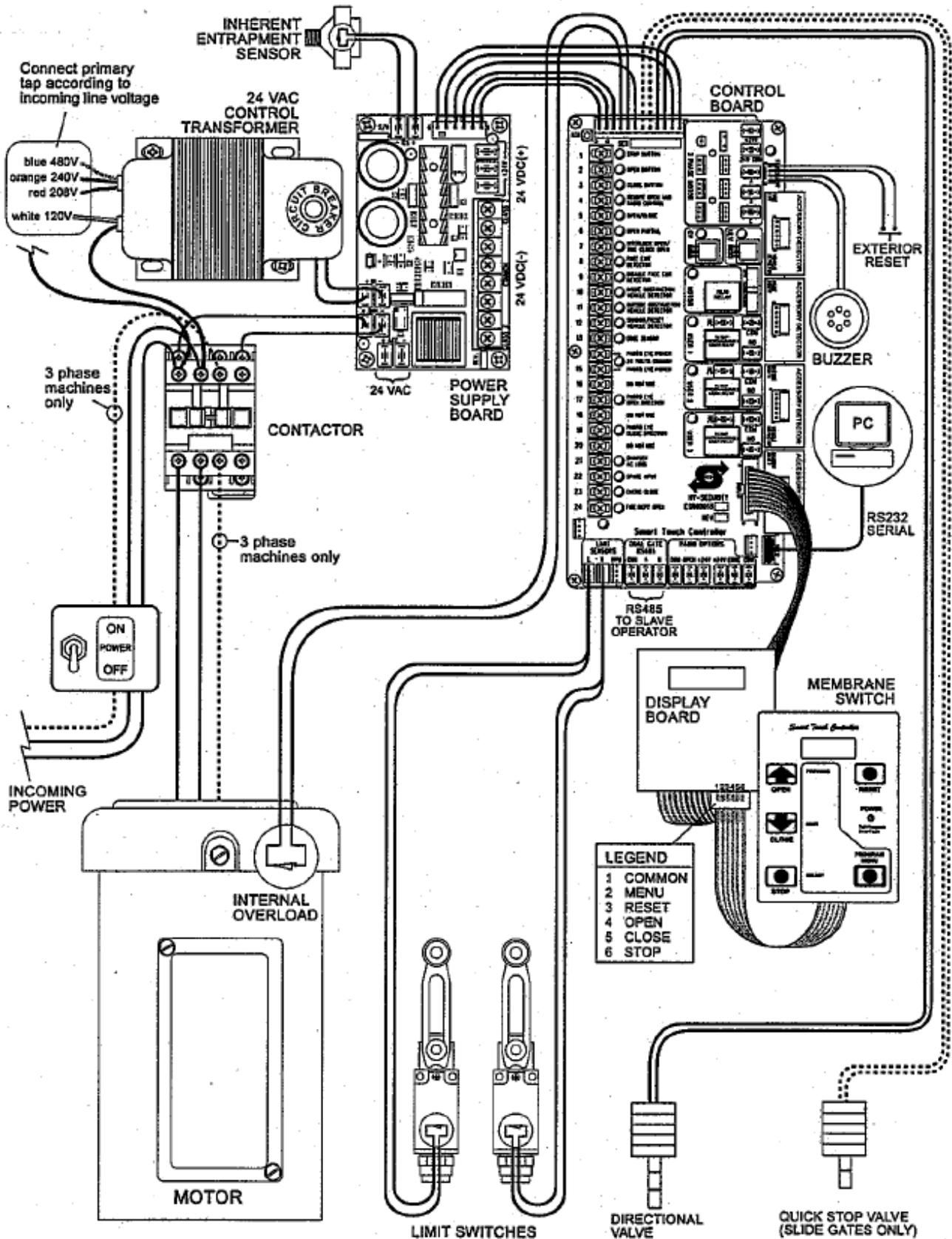
## Parts Breakout – DC Power Supply



Part Name	Part Number	SlideDriver UPS Models (current)
Battery Charger, 60Hz, 115VAC	MX001719	115VAC, 60Hz input
Battery Charger, 60Hz, 208VAC	MX001720	208VAC, 60Hz input
Battery Charger, 60Hz, 230VAC	MX001721	230VAC, 60Hz input
Battery, 12V, 110AH, AGM	MX000877	all
Circuit Breaker, 120A DC	MX000843	all 30F UPS, 40F UPS, 80 UPS (DX1.7, DX, DX1)
Circuit Breaker, 150A DC	MX001096	200 UPS (444DX)
Circuit Breaker, 60A DC	MX000842	all 10 UPS, 40 UPS (DS, DE)
Fuse Block	MX000863	all
Fuse, 15 Amp	MX000865	all
Fuse, 5 Amp	MX000864	all
Switch, Disconnect, DC Power Supply	MX000844	all
Terminal, 2-Pole	MX000859	all
Terminal, 5-Pole	MX001270	all

Call for 50Hz battery chargers.

## Smart Touch Controller Connections



## SlideDriver Wheel Change

Note: Instructions written for installing wheels with retaining collars.  
For wheels without collars skip steps 2, 6, 7 and 12

1.) Remove drive wheel assembly from SlideDriver.



2.) If the old wheel is equipped with a locking collar, loosen the two (2) 3/16" Allen head bolts holding the clamp (requires a wrench at least 4" long for 8" wheels).



3.) Remove bolt and drive wheel. A wheel puller or other mechanical means may be required to slide the wheel off the motor shaft. Remove old clamp (if any).



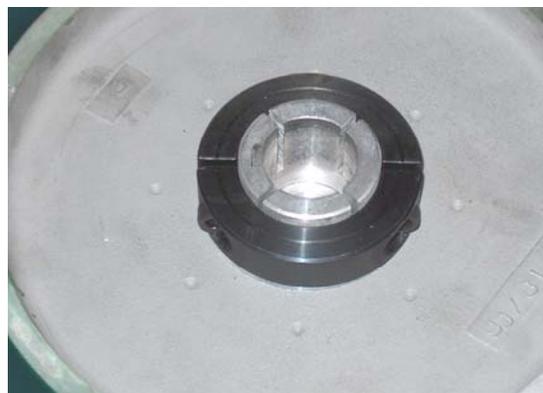
4.) Clean debris from shaft (emery cloth works well), and replace the motor shaft key with the key included in the installation kit.



5.) Locate new wheel and locking collar. Remove the Cap Screws from the collar. Put blue "thread-locker" on the Cap Screws and reinstall them.



6.) Place the locking collar on the machined inside hub on the replacement wheel (collar splits between hub splits) and lightly tighten. **Be sure the collar is seated against the back of the wheel hub.**



7.) Slide new drive wheel (with collar) onto the motor shaft and seat with mallet.



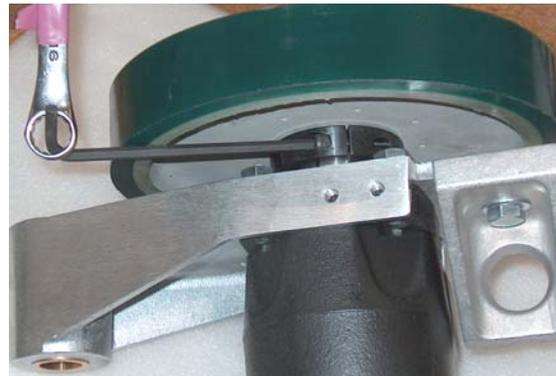
8.) Install new bolt and new washer on wheel/motor assembly.



9.) TIGHTEN BOLT TO APPROXIMATELY 35 - 50 FT\*LBS.



10.) Use a 3/16" Allen wrench to tighten the (2) bolts securely. Be sure the collar is seated against the back of the wheel hub, with the collar splits between the wheel hub splits. (If not fully seated against the wheel, the collar may contact the motor mounting bolts during operation.)



11.) Re-install the drive wheel assembly in the operator.

## LIMITED WARRANTY

### 1. Warranty.

Hy-Security Gate, Inc. (“HySecurity”) warrants that at the time of sale each of its products will, in all material respects, conform to its then applicable specification and will be free from defects in material and manufacture. This warranty does not extend to items listed as “accessories” in HySecurity’s price list, when those items carry another manufacturer’s name plate and they are not a part of the base model. HySecurity disclaims all warranties for such accessory components, which carry only the original warranty, if any, of their original manufacturer. HySecurity hereby assigns its rights under such manufacturer warranties to buyer.

HySecurity further warrants that the following components will, with recommended maintenance and without being subjected to extraordinary or abnormal use or abuse, remain serviceable for the following periods, which begin on the date that the product is shipped from HySecurity:

- a. All Gate Operators: Five Years or 500,000 gate cycles whichever comes first.
- b. Hydraulic Gate Operator Drive Wheels: Two Years
- c. Batteries in D.C. operators: One Year from date of battery manufacture.
- d. New replacement parts: One Year

Any modification made to products will void the warranty unless the modifications are approved in writing by HySecurity, in advance of the change. This exclusion does not apply to normal installation of approved accessories and/or safety devices. This warranty shall not apply to equipment that has been (1) improperly installed or installed contrary to instructions; (2) subjected to negligence, accident, vandalism, or damaged by severe weather, wind, flood, fire, or war; or (3) damaged through improper operation, maintenance, storage or abnormal use or abuse.

**THIS IS THE ONLY WARRANTY GIVEN BY HYSECURITY AND IS IN PLACE OF ALL OTHERS.** This warranty extends to HySecurity’s distributors and to the first user of its products.

### 2. Exclusion of Other Warranties.

The warranties contained in Section 1 are the exclusive warranties given by HySecurity and supersede any prior, contrary or additional representations, whether oral or written. Any prior or extrinsic representations or agreements are discharged or nullified. **HYSECURITY HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES—WHETHER EXPRESS, IMPLIED, OR STATUTORY—INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR USAGE OF TRADE.**

### 3. Buyer's Exclusive Remedies for Any Nonconformity.

If a HySecurity product fails to conform to the warranties in Section 1, Buyer must notify HySecurity within a reasonable time and in no event more than thirty (30) days after the discovery of the nonconformity. HySecurity will investigate and, in the event of a breach, will provide, at its option and within a reasonable period of time, one of the following: (1) repair or replacement of any nonconforming products or components, or (2) refund of the purchase price upon return of the nonconforming items. Replacement goods will conform to this warranty for (1) the unexpired duration of the warranty period for the original, nonconforming product or (2) 90 days, whichever is longer. HySecurity reserves the right to supply used or repaired material for all warranty claims. This warranty does not cover or extend to any incidental expenses, including labor, shipping, travel time or standby time, that are incurred for inspection or replacement of any nonconforming items. As a condition of warranty coverage, warranty claims must be submitted in accordance with the following paragraph. **THE REMEDY SELECTED BY HYSECURITY IN ACCORDANCE WITH THIS PARAGRAPH SHALL BE THE EXCLUSIVE AND SOLE REMEDY OF BUYER FOR ANY BREACH OF WARRANTY.**

For warranty coverage, you must follow the procedures described on HySecurity’s form, “RMA Procedures.” A current version of the form is available from HySecurity and is also posted on HySecurity’s web site.

### 4. Exclusion of Consequential and Incidental Damages.

**IN NO EVENT SHALL HYSECURITY BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM NONDELIVERY OR FROM THE USE, MISUSE, OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT OR FROM HYSECURITY’S OWN NEGLIGENCE OR OTHER TORT.** This exclusion applies regardless of whether such damages are sought for breach of warranty, breach of contract, negligence, or strict liability in tort or under any other legal theory.

### 5. Severability.

If any provision of this warranty is found to be invalid or unenforceable, then the remainder shall have full force and effect, and the invalid provision shall be partially enforced to the maximum extent permitted by law to effectuate the purpose of the agreement.

### 6. Applicable Law.

This Warranty will be interpreted, construed, and enforced in all respects in accordance with the laws of the State of Washington, without reference to its choice of law principles. The U.N. Convention on Contracts for the International Sale of Goods will not apply to this Warranty.