SlideDriver™

10, 30, 40, 80, 200

(222, 333, 444)

Hydraulic slide gate operator with Smart Touch controller

HySecurity®

Simple. Reliable. Secure.®

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Tech Support: Call your dealer or distributor
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Sold by

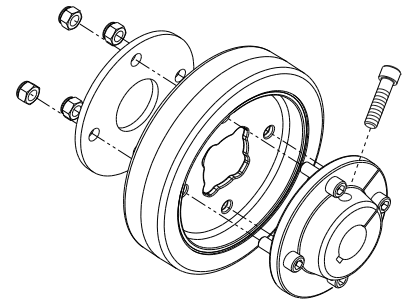Dealer/Installer: _____

Phone: _____

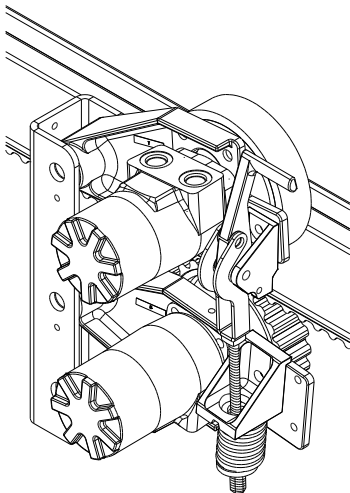Distributor: _____

Phone: _____

D0119

Notifications

Screen Mesh on Gate Height: Per UL 325 and ASTM 2200 Standards, all openings in a sliding gate up to a 72-inch (6 foot or 183 cm) height must be guarded or screened. Note that all references to the 48-inch (4ft or 122 cm) screen mesh height in the manual are incorrect.
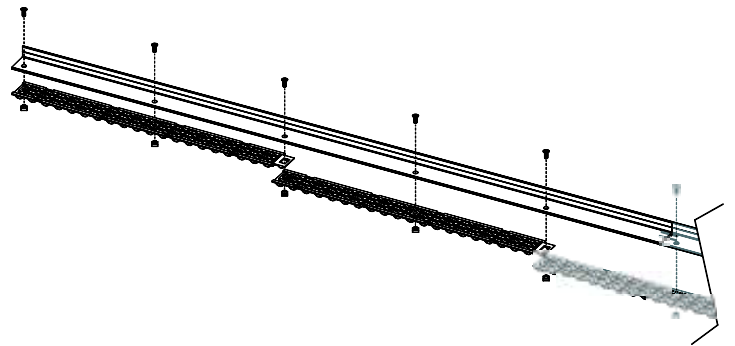
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XtremeDrive™ Option: The XtremeDrive option for HySecurity SlideDriver operators consists of a cogged lower wheel that engages a matching cogged rack which is mounted to the underside of the drive rail. This configuration produces better pull force for large, heavy gates and provides better traction the entire length of the drive rail. The XtremeDrive is available in 6- and 8-inch drive wheel kits that contain installation instructions. The Rack Kit provides one 25-inch rack and the required hardware for installation. A onetime purchase of an Install Kit provides a drill jig, countersink bit, and transfer punch for easy installation.

HySecurity Upgrades

Software: The latest software release for HySecurity operators is now available at www.hysecurity.com. To update your operators and electronic boards, download the following from our website:

- Smart Touch Analyze and Retrieve Tool (S.T.A.R.T. software)
- Smart Touch Controllers (STC) operator code

NOTE: Keep your HySecurity gate operators current by "uninstalling" outdated versions of the S.T.A.R.T. application on your PC (laptop) and uploading the latest version of S.T.A.R.T. and operator code onto it for use in the field. If you are using an outdated version of S.T.A.R.T. with a newly installed operator, an AL22 alert code may appear. To clear the alert code, you need to access the Installer Menu and make sure the sequential gate (SG) menu item is set to 0.

Features of the S.T.A.R.T. software and operator code upgrades include:

- New dual (DG) menu allows easy integration of dual gate installations (Master/Slave and Sally Port Gates) using the RS 485 communication capabilities.

- A new menu item, Sequenced Gates (𝗦𝗴), has been added to the STC Installer Menu. This feature handles communication between gates in sequence, such as a barrier arm and a slide gate. How to program a sequenced gate is described in the *StrongArm M30 Programming and Operations Manual*, available online at www.hysecurity.com. The information will soon be available in the SlideDriver product manuals.
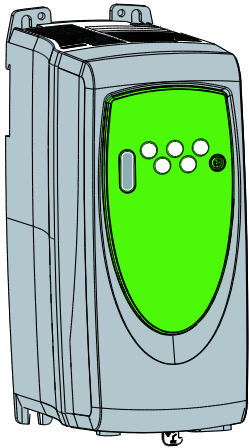
ModBus: New communications protocol for variable frequency drive (VFD) SlideDriver operators.

In the 50VF series SlideDriver™, a new communication protocol allows the STC to constantly monitor the Variable Frequency Drive (VFD) and record events in the STC history log. The history log is easily accessible using the HySecurity S.T.A.R.T. program and a PC laptop computer.

The new communication protocol reduces intermittent operator issues caused by site power quality issues and the STC resets VFD faults or error codes upon receiving a new command which eliminates unnecessary field calls. It also provides smoother acceleration and deceleration.

All 50VF2/3 SlideDrivers shipped after January 1, 2012 will have the new ModBus cable and communication protocol installed. If you need replacement parts for your existing 50VF series operators, be sure to have the serial number of the operator available when you order parts.

New SlideDriver configuration as of June 1, 2012: If you install a new 50VF2/3 operator, the speed is factory set at 2 foot per second (2 ft/s). To change the speed, you will need to access the Installer Menu. Refer to *Section 3 – Smart Touch Basics* in the manual.

- 𝗦𝗣 𝟮 sets the 50VF2/3 speed to approximately 2 ft/s.

- 𝗦𝗣 𝟯 sets the 50VF2/3 speed to approximately 3 ft/s.

- 𝗦𝗣 𝟬 and 𝗦𝗣 𝟭 are not used. (The operator will not run if you change the speed setting to 0 or 1.)

NOTE: To enable Emergency Fast Operate (EFO), you also need to set the Emergency Close Mode (𝗢𝗰 = 1). Refer to *Section 3 – Setting the Emergency Fast Operate*. If you set the speed and receive an ERR6, check the cable & wiring connections between the VFD and STC.

The grooved drive rail has become the standard for all new SlideDriver gate operator installations.

In this manual, several illustrations show the non-grooved, flanged drive rail which is *no longer* available unless a Solenoid Lock option is installed.

The grooved drive rail replaces the non-grooved, flanged drive rail.

A section of the two different drive rails is shown in Figure 1-1.

Standard grooved drive rail

Non-grooved, flanged drive rail

No flanges

Grooves on the underside

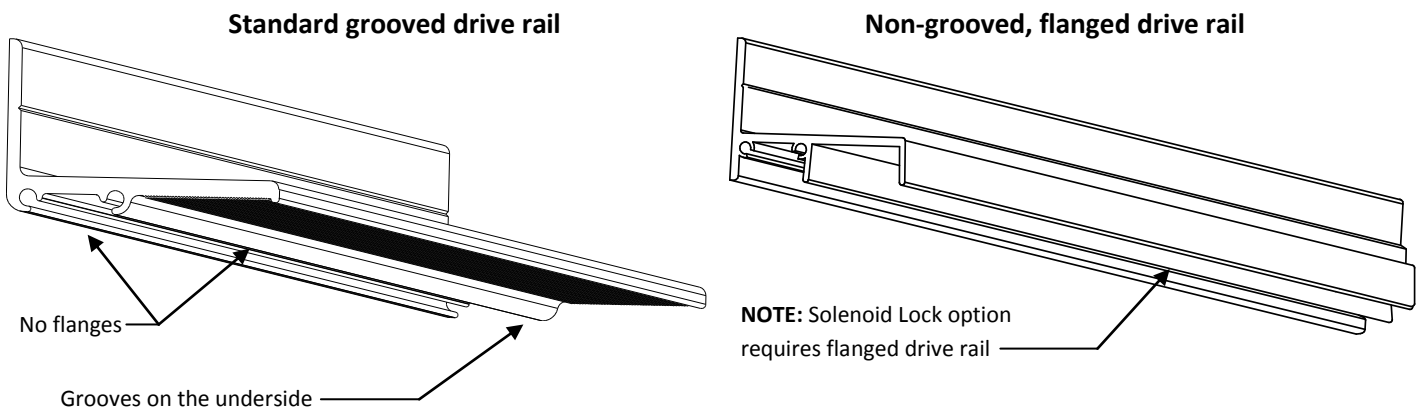**NOTE:** Solenoid Lock option requires flanged drive rail

Figure 1-1. Grooved versus non-grooved, flanged drive rail

The small grooves on the underside of the new drive rail improve traction in slick or wet conditions and provide more pulling and stopping power in SlideDriver installations. The three underside flanges have been eliminated which reduces drive wheel wear and drag in misaligned gate installations. Additionally, the no-flange drive rail stacks better for shipping which reduces the likelihood of freight damage.

NOTE: The non-grooved, flanged drive rail is standard and will be on your order unless you specify otherwise. The non-grooved, flanged drive rail is only available when using the Solenoid Lock option. The Solenoid Lock option requires an outer edge flange and therefore must be installed with the non-grooved, flanged drive rail.

Limit Ramp Fasteners

Since the flanged portion of the drive rail has been eliminated, two bolts are necessary to attach the standard limit ramp and nuts have been added to the standard limit ramp packaging.

1. To secure the standard limit ramp to the drive rail, use the fasteners provided.

2. If you are unfamiliar with installing the limit ramps, refer to Figure 1-2 on the next page and follow the instructions found in this manual.

SlideDriver 10, 30, 40, 80, 200
(222, 333, 444)

**Approximately 4 inch (10 cm) spacing
between bolts. If snow blades are attached
to the chassis, countersink the bolts.**

**Standard limit ramp
All models of SlideDriver**
(Fasten with 2 bolts & 2 nuts)

Slow down limit ramp
(2 bolts & 2 nuts)

**Slow down limit ramp. All models
of SlideDriver 50VF-series**

Slow down
limit ramp
(2 bolts & 2 nuts)

(Bevel not shown)

Extended limit ramp
(1 bolt, one nut)

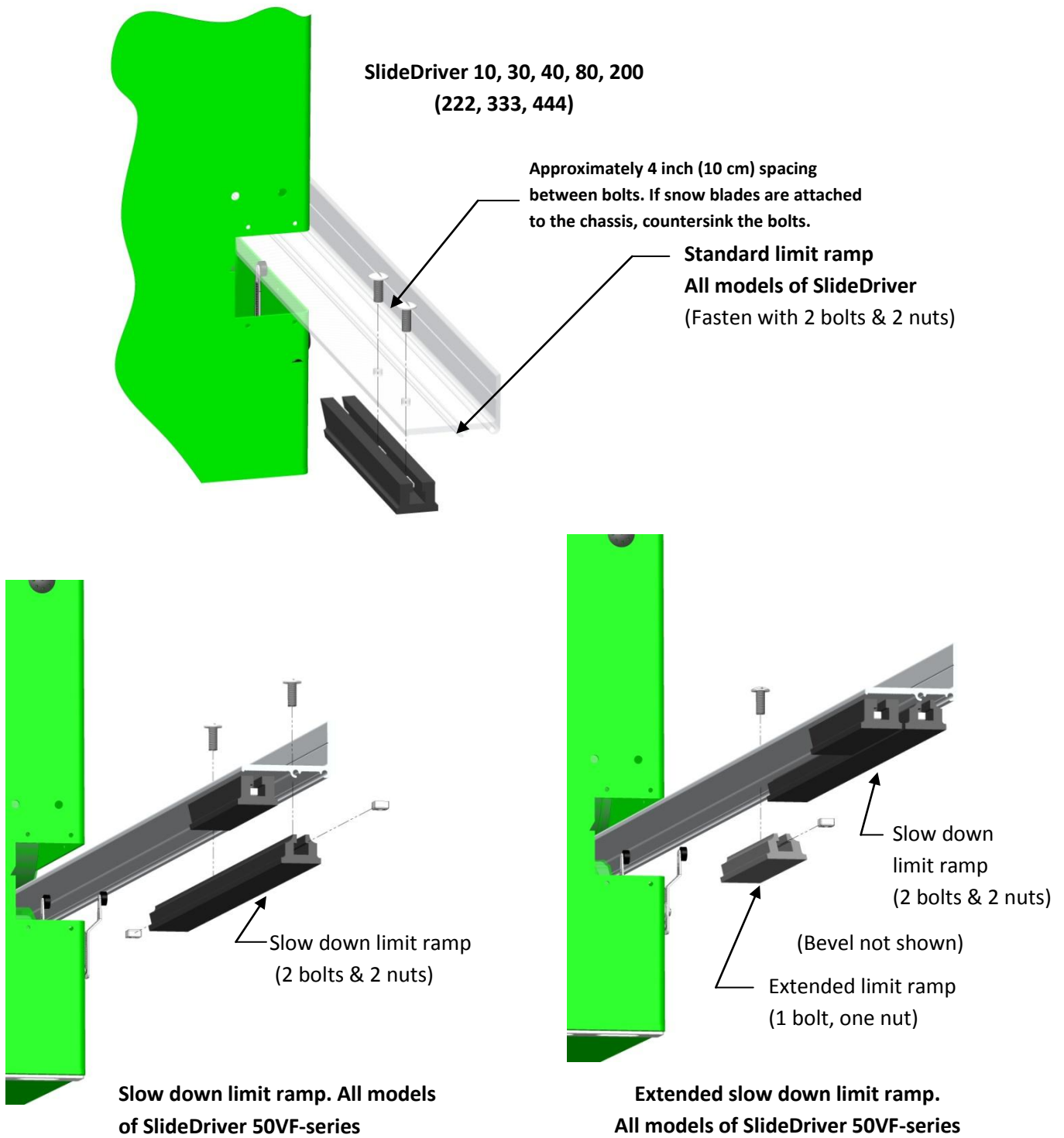**Extended slow down limit ramp.
All models of SlideDriver 50VF-series**

Figure 1-2. SlideDriver Limit Ramp Configurations

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Upgrade features of S.T.A.R.T. software and operator code include:

- New dual (DG) menu allows easy integration of dual gate installations (Master/Slave and Sally Port Gates) using the RS-485 communication capabilities.
- A new menu item, Sequenced Gates (𝖲𝟫), has been added to the STC Installer Menu. This feature handles communication between gates in sequence, such as a barrier arm and a slide gate. The Sequenced Gate menu item will not appear if the Dual Gate function is active (𝖽𝟫 is set to a number other than 0). How to program a sequenced gate is described in the *StrongArm M30 Programming and Operations Manual*, available online at www.hysecurity.com. The information will soon be available in all product manuals.

User Programmable Output Relays

A programmable relay feature has been added, User Relay #25, *DC Power Alert*. The DC Power Alert relay deactivates when the software detects a low battery voltage (below 21VDC, but greater than 18VDC) for a duration of 2 seconds or more. To slow battery drain, accessory power loads are shed.

If you have an operator hooked up to a DC power supply, connect to Output Relay 3, and then access the Installer Menu to program the User Relay 3 (𝗋𝟥_) option. Alerts appear indicating low battery (𝖻𝖠𝖽𝖯) or dead battery (𝖻𝖠𝗍-𝖽𝖤𝖠𝖽) when the battery voltage drops to critical levels.
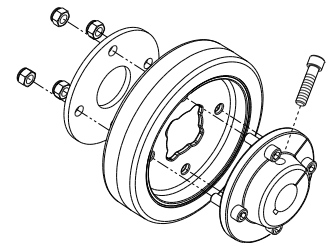
Alert and Error Codes

When troubleshooting, the codes that appear on the display provide an indication of what is happening with the gate operator. With the software upgrade, new codes include:
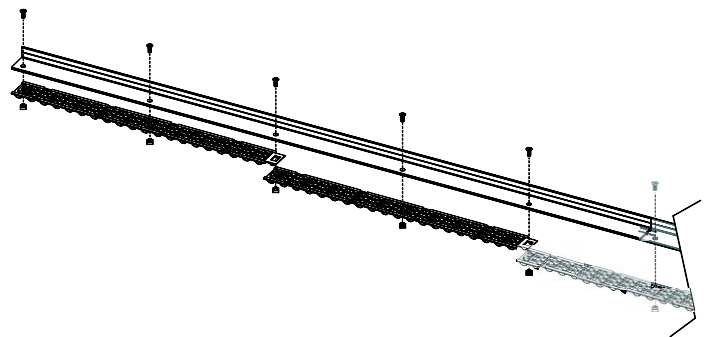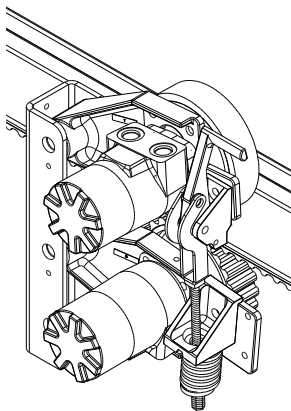
Display Code	Error/Fault/Alert Description	Buzzer Chirp Sequence	Possible Cause & Suggested Corrective Action
AL21	VFD Error Alert	2 chirps per second every 15 seconds	No gate or barrier arm travel will occur until the alert is cleared. Any open or close command resets the alert and allows the operator to run unless the VFD is experiencing a fatal error. If you cannot clear the error alert by pressing the open or close button, contact HySecurity.
AL22	Interlock/Sequential Gate communication lost	2 chirps per second every 3 seconds	Appears when the RS-485 communication connection is lost for more than 5s between interlocked (dual gate) or sequenced gate operators. Check cable connections and wiring. Make sure both operators are working properly and have identical and up-to-date software versions. Make sure you are using the current version of S.T.A.R.T. software. The alert auto clears when communication between the two operators is restored. If the operator on site is a singular gate and the display code AL22 appears, access the Installer Menu. Verify the Installer Menu items: d9 (Dual Gate) and 59 (Sequential Gate) are both set to zero.
Err6	STC – VFD Communication Error	3 chirps per second once per minute	Internal error between the STC board and the VFD. If you set the speed and receive an ERR6, check the cable & wiring connections between the VFD and STC. If a ModBus cable does not exist, reset the speed (5P) to 1.

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- **AdvanceDrive™ Wheel System:** HySecurity has developed a 6-inch composite drive wheel and improved mounting system that is replacing the cast polyurethane drive wheels on SlideDriver models. For more information, refer to the Technical Bulletin on the HySecurity website. Installation Instructions are shipped with the replacement wheels. Plans are in place for 8-inch wheel availability by year end.

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![HySecurity — Simple. Reliable. Secure.®]

HYDRAULIC
SLIDE GATE
Operators
With Smart Touch Controller

Installation and Reference Manual

Models

SlideDriver 10	(222 SS)	Standard
SlideDriver 40	(222 E)	Heavy gates
SlideDriver 30F	(222 EX 1.7)	Heavy, fast gates
SlideDriver 50VF2/3	(222 X2, X3)	Heavier, fast gates
SlideDriver 80	(222 X1)	Very heavy gates
SlideDriver 200	(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. It can be downloaded at www.hysecurity.com.

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Email: info@hysecurity.com
www.hysecurity.com

SlideDriver Quick Start

These instructions are provided as a quick reference guide for the *experienced* installer who is already familiar with all safety precautions and the installation of this gate operator.

⚠️ **CAUTION: Use this QuickStart as a guide and read and follow the information and instructions found in the other sections of this manual. DO NOT attempt to connect this operator to any voltage other than that listed on the nameplate. Be certain the labeled voltage and phase of the operator matches the available supply. For assistance, contact HySecurity Technical Support at 800-321-9947.**

Refer to the *Technical Drawings* on pages 15 - 17 when proceeding through the following steps:

1. Mount the operator with at least four mounting bolts. The operator must be square and spaced 1¾ inches (44mm) away from the gate.

2. Attach the drive rail to every vertical member of the gate at a height 9¼ inches (24cm) above the base of the operator. Use ¼" (6mm) roll pins to splice multiple sections of rail.

3. Mount the limit switch stop ramps to the underside of the drive rail at each end (flat side up, tapered end toward the wheel) in the drive rail slot closest to the operator. Drill ⅜" (9mm) holes in a position that will allow the limit switches to be tripped 6 to 8 inches (15 to 20cm) before full travel.

4. Connect the electrical power wires to the loose wires from the ON/OFF switch at the left corner of the control box and attach the grounding wire to the green grounding wire. Be certain the labeled voltage and phase of the operator matches the available supply.

5. Operators are shipped hydraulically 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 quick disconnect fittings that describe this procedure. Connecting the hose from the top motor to the left disconnect fitting 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 inches (5cm) in height.

7. Turn ON the power switch. The UL usage class [UC 0] appears on the Smart Touch Controller display after a two-second delay. The setting for the usage class must be selected before the gate can function. Press the SELECT button, then the NEXT button and select a usage class of 1 through 4 as appropriate for the site. Press the SELECT button again to lock the setting.

8. Press the NEXT button to move to the next menu item and set the gate handing. The characters [Sh 0] appear on the display. Replace the 0 with [Sh L] or [Sh r] to set the gate handing by following the same button presses described in step 7.

9. Press the PROGRAM button to exit to Run Mode. One, of a possible three, operator status displays may appear: StOP, OPEn or CLOSE (OPEn or CLOSE appears if a limit switch is tripped.)

10. Test the operation of the gate. If the hoses are connected incorrectly, the gate will move the wrong direction. (See step 5.) If the gate moves in the correct direction, but triggers an Err 1 alert, the handing is set wrong. (See step 8.)

11. After normal operation 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 Bus (COM) on the nearby power supply board.

12. To access the User Menu, press the PROGRAM button while there is no active Open or Close input. The operator status displays scroll past and stop at the [Ct _] Close Timer menu item. If a Close Timer function is needed, set it in the same manner as above.

    NOTE: The Close Timer display is the initial menu in the "User Menu" which contains 12 menu items. Access to the 34 items in the "Installer Menu" is also accessible from the Close Timer display by simultaneously pressing the RESET and OPEN buttons. The Usage Class [UC _] which is the first menu item in the Installer Menu appears. Read the instructions found in this manual before attempting any adjustments!

HySecurity

Smart Touch Controller Menu Guide for Sliding Gates

To gain access to the User Menu, press the PROGRAM button when the gate is stopped. The display scrolls through several operator status items, and then stops at the Close Timer menu 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)
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 minutes, 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	0	0 = Std. 1 = Extended (resets automatically to 0 in 24 hr) (V4.xx software)

To access the Installer Menu, simultaneously press the RESET & OPEN buttons. See page 18 for clarification.

	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)
I4	[bu 0] Choose Buzzer Type	0	0 = Buzzer not set, 1 = Freq 1, 2 = Freq 2
I5	[dg 0] Set dual gate type	0	0 = Solo operator, 1 = Slave, 2 = Master, 3 = Sally PortA, 4 = Sally PortB
I6	[SG 0] Set sequential gate	0	0 = not active, 1 = Loop Layout #1, 2 = Loop Layout #2
I7	[Ch 0] Set AC Charger or Solar	0	0 = DC + AC charger 1 = DC + Solar charger
I8	[Fo 0] Enable Fire Dept. Open	0	0 = input disabled, 1 = enabled
I9	[oC 0] Enable Emergency close	0	0 = input disabled, 1 = enabled
I10	[SE 3] Inherent Sensor sensitivity	3	1 = Maximum sensitivity, 9 = Lowest sensitivity
I11	[SS 0] Inherent Sensor function	0	1 = stop only (note, functions in usage class 4 only)
I12	[LC 0] Leaf delay Close	0	0 = none (1-7) ½ second steps (Master/slave only)
I13	[Lo 0] Leaf delay Open	0	0 = none (1-7) ½ second steps (Master/slave only)
I14	[rt 0] Maximum run timer	0	0 = 60 Seconds max run, 1 = 300 Seconds max run
I15	[Po 0] Partial Open distance	0	0 = input disabled, or 7 – 99 seconds of travel
I16	[EC 0] PEC reverse to open	0	0 = Close eye stops only, 1 = 2 sec reverse to open
I17	[EO 0] PEO reverse to close	0	0 = Open eye stops only, 1 = 2 sec reverse to close
I18	[gr 0] Edge reverse to open	0	0 = Edge reverses fully open, 1 = Edge reverses for 2 sec
I19	[Sr 1] IES reverse to open	1	0 = IES reverses fully open, 1= IES reverses for 2 sec
I20	[PC 0] Set PEO/ PEC – NO/NC	0	0 = Normally Open PE output, 1 = N.C. (Supervised mode)
I21	[gC 0] Set Edge input – NO/NC	0	0 = Normally Open Edge output, 1 = Normally Closed
I22	[tC 1] Time clock/ Interlock input	1	0 = select Time Clock, 1 = select Open Interlock
I23	[dt 0] Disable Free Exit/Timer to Close	0	0 = disable Free Exit, 1 = disable Close Timer
I24	[or 1] OOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I25	[ir 1] IOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I26	[dL 1] Vehicle detector logic	1	1 = std, 2 & 3 = quick close, 4 = full anti-tailgate logic
I27	[r1 0] User relay 1 option	1	0 = disabled, 1 – 24 = see output options page 30
I28	[r2 0] User relay 2 option	6	0 = disabled, 1 – 24 = see output options page 30
I29	[r3 0] User relay 3 option	1	0 = disabled, 1 – 24 = see output options page 30
I30	[tL 0] Gate Open alert	2	0 = 0 sec, 1 = 15s, 2 = 45s, 3 = 75s, 4 = 105s, 5 = 135s
I31	[Lt 0] Loitering alert	3	0 = 0 sec, 1 = 15s, 2 = 45s, 3 = 75s, 4 = 105s, 5 = 135s
I32	[SA 0] System address	0	0 = no network, 1-99 = network "drop" address
I33	[ELd0] Test factory ELD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I34	[iLd0] Test factory IOLD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I35	[oLd0] Test factory OOLD	0	0=Run, 1=show freq, 2=show call level 0-7, 3= set Freq 1-4
I36	[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
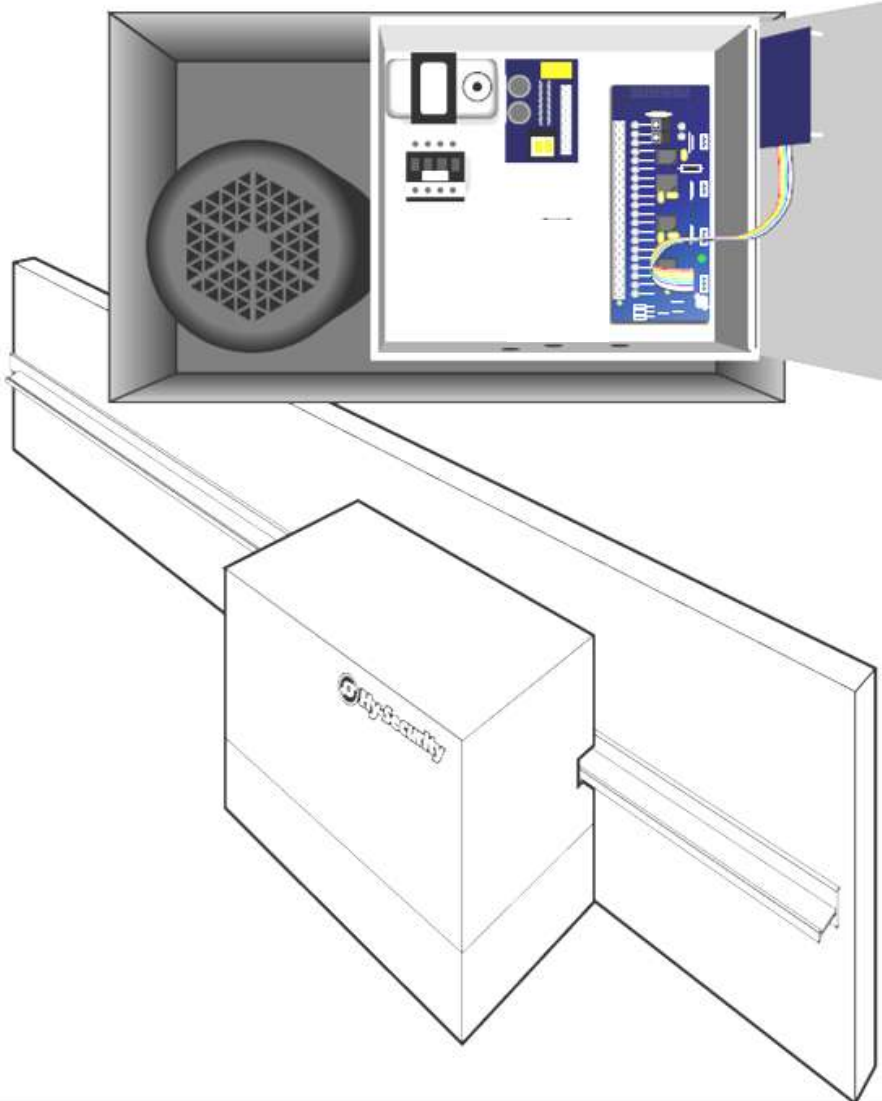
PRODUCT & WARRANTY REGISTRATION

Enter the following information to register your HySecurity product. Please write legibly.   **Today's Date:**_____

NOTE: To extend the operator warranty beyond 1 year, you must return this registration within 60 days of purchase. Refer to the *Limited Warranty*.

Installer Information

First/Last Name: _____

Company Name: _____

Address: _____

City:_____   State/Province:_____

Country:_____   Postal Code:_____

Daytime Phone:_____   Fax: _____

E-mail:_____

End-user Information

First/Last Name: _____

Company/Association: _____

Address: _____

City:_____   State/Province:_____

Country:_____   Postal Code:_____

Daytime Phone:_____   Fax: _____

E-mail:_____

Product Information

Model name/number:_____

Serial number: _____

Purchase Date: _____

Purchase Price: _____

Distributor's name: _____

Distributor's City: _____

Country: _____

Installation Date: _____

Who is completing this form?

☐ Installer   ☐ End User   ☐ Distributor

☐ Maintenance Personnel   ☐ Other_____

Additional Comments

_____

_____

Did you visit the HySecurity website before purchasing your product?

☐ Yes   ☐ No

How did you hear about HySecurity gate operators? (Check all that apply.)

☐ Advertisement   ☐ Exhibition   ☐ Distributor

☐ Business associate   ☐ Other (please specify): _____

What factor(s) most influenced your purchase? (Check all that apply.)

☐ Performance   ☐ Price   ☐ Power

☐ Reliability   ☐ Brand   ☐ Prior Experience

☐ Recommendation   ☐ Warranty   ☐ Product Weight

Fax or Mail this completed form to:

HySecurity, Inc   Fax: 888-321-9946
6623 South 228th Street   Email: info@hysecurity.com
Kent, WA   98032

HySecurity provides product installation, maintenance and troubleshooting training. View opportunities online at the HySecurity website: www.hysecurity.com/support. For Technical Support, call 800-321-9947.

HySecurity does not share this warranty registration information with third parties unless the requested services, transactions, or legal requirements necessitate it.

Table of Contents

Table of Contents, continued

INTRODUCTION

Welcome – Thank you for purchasing a 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 operator life with minimal maintenance costs.

Installers and owners must read and follow the Important Safety Information contained in this manual, especially the information regarding pedestrian entrapment protection. Hazards associated with automatic gates can be greatly reduced with proper design, installation and use. When an automatic gate is first commissioned, the installer must instruct the owners and users how to correctly operate the 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.

SlideDriver Models

HySecurity manufactures many hydraulic slide gate operator models to suit the desired gate panel size, weight and speed. This manual should be used for the SlideDriver operators. (The 50VF series has its own manual, D0125). 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
General	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
Gates	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.)
Duty	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Part Number	222 SS	222 E	222 EX 1.7	222 X2	222 X3	222 X1	444 XS
Modular	10-M	40-M	30F-M	50VF2-M	50VF3-M	80-M	-
Prison	10-C	40-C	30F-C	50VF2-C	50VF3-C	80-C	200-C
24V UPS	10 UPS	40 UPS	30F UPS	-	-	80 UPS	200 UPS
Solar	10-S	40-S	30F-S	-	-	80-S	200-S
HP	1 hp	1 hp	2 hp	2 hp	2 hp	2 hp	5 hp
Speed	12" / sec.	12" / sec.	20" / sec.	26" / sec.	36" / sec.	12" / sec.	12" / sec.
Soft Stop	no	yes	yes	yes	yes	yes	yes
Brake Valves	no	yes	yes	yes	yes	yes	yes
Soft Start	no	no	yes	ultra soft start and stop	ultra soft start and stop	yes	yes
Drawbar Pull	300 lbs.	300 lbs.	300 lbs.	300 lbs.	300 lbs.	600 lbs.	1,200 lbs.
Weight Capacity	1,000 lbs.	4,000 lbs.	3,000 lbs.	5,000 lbs.	5,000 lbs.	8,000 lbs.	20,000 lbs.
Drive Wheels	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
UL Class	I, II, III, IV	I, II, III, IV	III, IV	III, IV	III, IV	III, IV	III, IV
Warranty	5 years	5 years	5 years	5 years	5 years	5 years	5 years

*SlideDriver 50VF models use *Installation and Reference Manual D0125*. Download it at www.hysecurity.com.

Stopping the Gate

Most models (except SlideDriver 10 and 40) 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.

brake valves

soft stop manifold
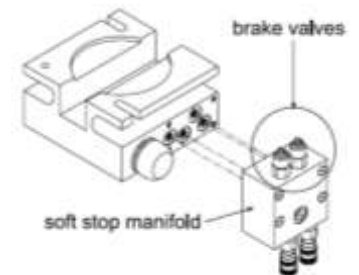
Starting the Gate

To accommodate for loads moving beyond one foot per second, it is necessary to **Soft Start** the load gently and stop 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, accommodates for the load, and starts the gate smoothly, similar to letting your foot slowly off a car clutch without any lurching.

The downward facing AWOG (shown right) improves the life and performance of a gate system and never needs adjustment.

soft start manifold

Downward facing AWOG
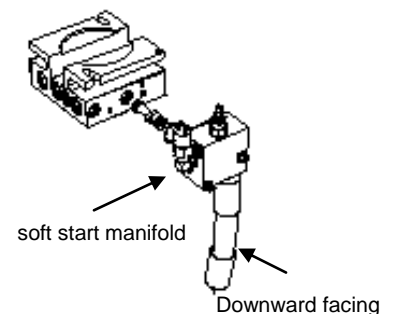
Descriptions of Various Models Derived from SlideDriver 10

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 AWOG 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, 50VF2-EFO, and 50VF3
UL class III & IV only.

These operators are designed for very heavy, up to 5,000 lbs gates moving at high and very high speeds. The variable frequency drive moves very heavy gates at the following speeds:

26 inches per second, 50VF2
26 inches per second, 50VF2 – EFO (Close in 36in/s with a constantly held CLOSE command.)
36 inches per second, 50VF3

SlideDriver VF models close gates to a very precise point and are extremely easy on gate hardware. SlideDriver VF operators use a variable frequency drive, larger wheels and a higher flow rate pump to reach 26 to 36 inches per second. These operators use the same powerful HySecurity Smart Touch controller and simple and reliable hydraulics of all SlideDriver models.

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. Correctional Facility 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 areas requiring a very quiet operator.

The Smart Touch Controller
This is the brain of HySecurity operators. Groundbreaking technology combined with sturdy construction 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 site specific functional requirement. All system settings are performed with the use of four programming buttons and an LCD display. The Smart Touch Controller has no switches to set. An RS232 port for external communication is standard. An EEPROM records date stamped 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 deep, user-friendly diagnostics.

Important Safety Information – Review before Installation

Automatic gate operators provide user convenience and security. However, because these machines can produce high levels of force, it is important that all automated gate 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 automated gate system. It is the joint responsibility of the specifier, designer, purchaser, installer and end user to verify that the system is appropriately configured for its intended use. All parties should be informed that entrapment in a moving gate can 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 found in the gate operator manual 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 (1.2m) height above the ground, to prevent a sphere 2¼ inches (57mm) 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.

❑ You have reviewed and met all ASTM F-2200 and UL 325 automated gate system standards.

⚠WARNING

Moving Gate Can Cause Serious Injury or Death

KEEP CLEAR! Gate may move at any time without prior warning.
Do not let children operate the gate or play in the gate area.
This entrance is for vehicles only. Pedestrians must use separate entrance.

minimize gap
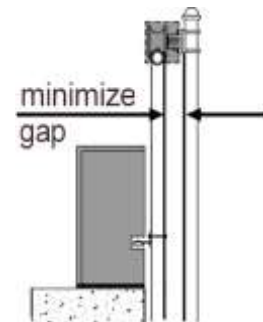
Sliding Gate
Entrapment Protection

Attention

Guard posts

Photo Eyes for both directions

Keep this gap as small as possible

Gate edge sensors

Physical travel stop, both ends

Warning signs must be on both sides

Stop and reset button

2 ¼" safety mesh prevents reach-through: height not less than 48 inches

Access controls at least 6 feet away from gate and operator

Audio alarm

Gate edge sensor, on leading edge and trailing edge

Physical travel stop, both ends

Photo Eyes for both directions each side of gate

Note: Wheels and covers are not shown. However, all gate wheels must be covered.

This schematic view is not meant to recommend a specific configuration. It is not meant to point out the important elements of a proper automatic vehicular gate installation. The gate operator 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 grounded and the intended supply voltage matches the voltage label on the operator.

⚠ DANGER

The potential for lightning discharge exists with all gates, fences, and gate operators. National Electric Code (NEC) requires a separate earth ground in addition to the required equipment ground.

HySecurity recommends grounding the operator with a separate ground rod to shield the operator against electromagnetism and other electrical signals that may cause erratic operation with or damage to the Smart DC Controller.

NOTE: If you do not ground the operator with a separate ground rod, you risk voiding the Limited Warranty.

❑ The gate operation controls 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 line-of-sight to the gate. Radio controls and other remote access controls must be connected only to the **Remote Open input.**

❑ 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 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 illustration 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 page 32 for details on the requirements.

❑ If 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 no automatic closing device, of any kind, shall be used.

❑ The automatic operator is labeled as appropriate for both the type and UL usage class of the gate.

NOTE: Slide Driver 50VF2, 50VF2-EFO and 50VF3 sliding gate operators must be installed only for Class III & IV applications.

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 alternative means, such as:

• Employing the use of a 100dB buzzer which sounds at least 3 seconds before the gate moves.
• Employing the use of a constant hold-type push button control.

Section 1 — Important Safety Information — READ FIRST!

⚠ **WARNING: To reduce the risk of serious injury or death, read and follow all instructions found in this manual and on 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 gate area. 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 the controls that operate the gate. Keep all remote controls away from children, especially radio transmitters.

□ Teach all users how to turn off the electric power source and how to release and move the gate manually. Use the manual release only when the gate is not moving.

□ Test gate operator functionality monthly. The gate MUST reverse direction of travel upon contact with a rigid object, and/or stop upon a sensing a second 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 routinely test and replace its battery.

□ KEEP AUTOMATIC GATES PROPERLY MAINTAINED. Have a professional gate installer perform routine entrapment protection sensor tests. This includes photo eyes and gate edges. Repair gate hardware when encountered to keep the gate running smoothly. Failure, to make timely repairs or 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 pressure relief valve setting to the lowest setting allowable that reliably operates the hydraulic gate. This valve controls the force of the operator, and the sensitivity of the inherent reversing sensor.

□ **Do not attempt to disable or muffle the Warn Before Operate buzzer, except in Class IV restricted access locations. This buzzer provides an alert that the gate is about to move.**
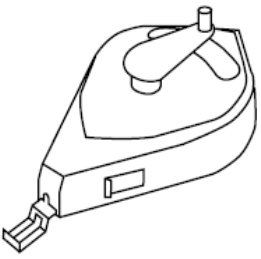
1. Chalk line or other builders' string
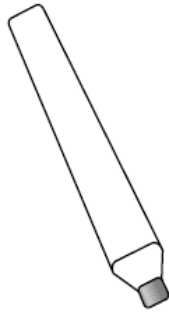
2. Carpenters pencil or crayon
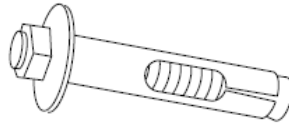
3. Concrete anchor bolts: ½″ x 4″
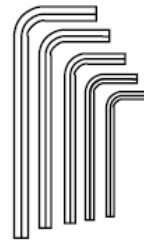
4. Allen wrench set
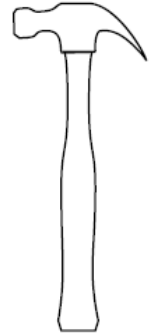
5. Hammer

6. Screwdriver sets, Straight and Phillips
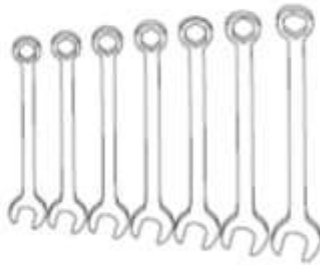
7. Wrench set, open end, ¼" through 1"
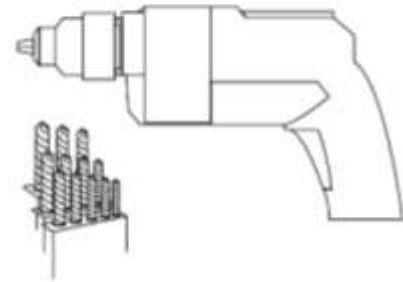
8. Electric drill and bits, ⅛" through ⅜"
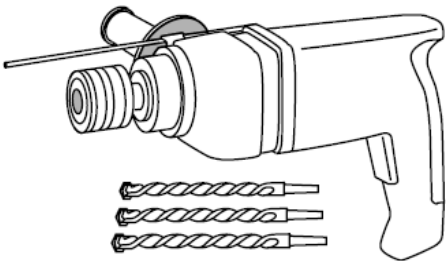
9. Root-hammer and bits

10. Level (installation must be level)
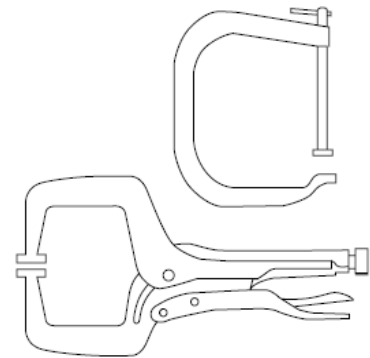
11. Two pair wide Jaw pliers or two C clamps, 4″ cap.

How this hydraulic operator works

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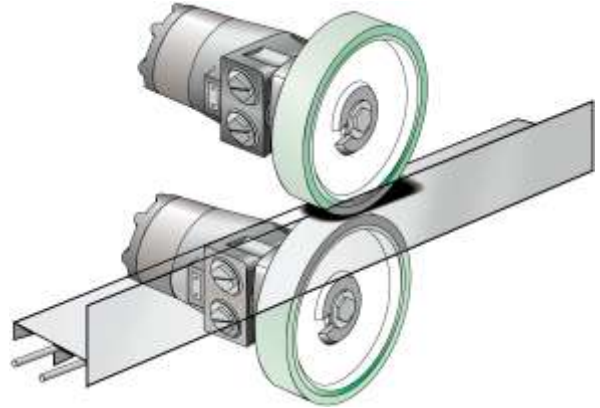
Pedestrian Entrapment Protection

Before installing the gate operator, read and understand all the important information in Section 1. 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.

Accessory Compatibility

HySecurity hydraulic slide gate operators are fully compatible with all standard access control devices and entrapment protection devices, some of which are listed below.

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

Entrapment Protection/Obstruction Sensing Devices
Inherent Sensing Device
Gate Edges
Photo Eyes
Vehicle Detectors (HY-5A)
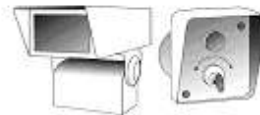
Security
Key Locks
Closed Circuit Television
Gate Position Indicator
Interlock/Sally Port
Gate Status Indicator

Section 2 — Installation Preparation Checklist

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

2. Make sure the concrete pad is the recommended size and ready for operator attachment. Also, check that electrical conduits are correctly located and in proper alignment with the chassis. HySecurity recommends that the concrete pad reaches below the local frost line and extends somewhat above grade. See the footprint plan and elevation view on pages 15 and 16.

Figure A

safety mesh to prevent reach-through

Drive rail location

9¼″ from top of slab to top of drive rail

1¾″ between gate face/fence and operator.

concrete slab

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

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

Figure B

Remember to cover all four of the cantilever gate wheels

5. There are three steps to a perfect install: location, location, location.
One of the most critical installation aspects is to make sure the operator is positioned the proper distance from the gate and the gate and operator are as parallel as possible. See Figure C below. Prepare shims to align the drive rail.

fence

Figure C

1 ¾″   slab

operator
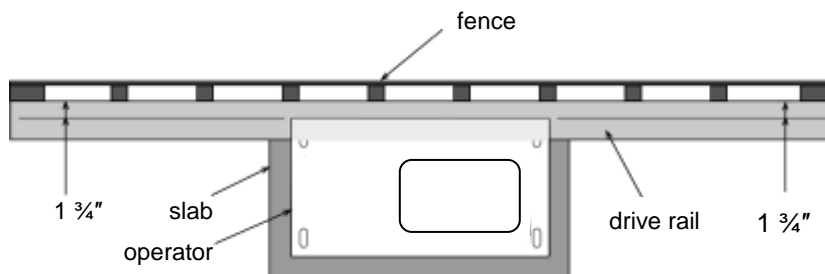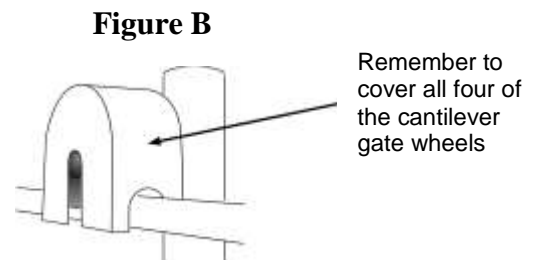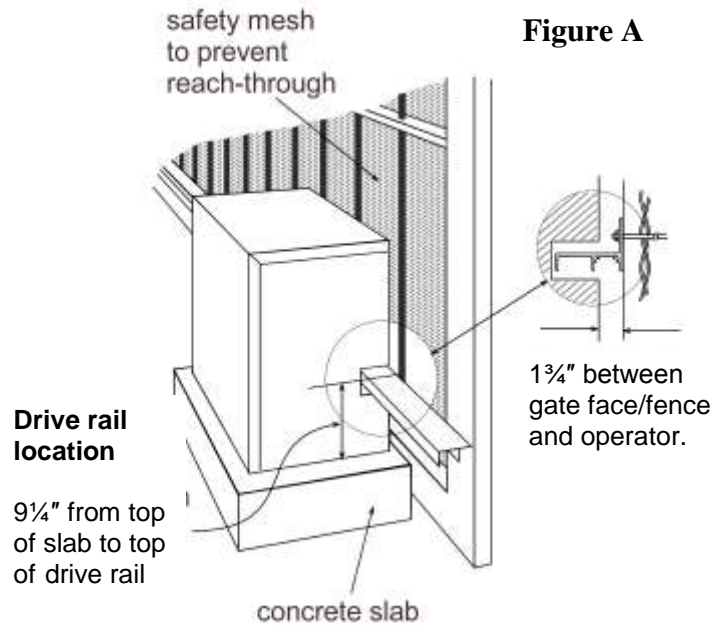
drive rail   1 ¾″

NOTE: If necessary, shim the drive rail so that it is straight (± ¼ inch) *throughout* the gated travel distance.

Section 2 — Installation

1. Drill four holes for concrete anchors

When you have removed the operator from its shipping container, cut out the template found on the box. Use it to trace the outside edges and anchor slots. Place the template on the concrete pad; making sure that it is parallel to and 1¾-inches from the gate. Trace the slots, remove the template, and then scribe the locations for anchor bolts. Drill holes for the anchor bolts in the center of the slots you marked so that you will have some room for adjustments. Install at least four ½-inch x 4-inch concrete anchor bolts (two bolts per side).

slab

2. Line up the operator

Put the operator in position onto the anchor bolts. Verify that the operator is parallel (within ⅛-inch) and measure the distance between the operator and the gate. It should be 1¾-inch away from the gate on both the left and right sides. Refer to Figure A on page 9. Tighten the anchors securely.

3. Bolt the Drive Rail to the Gate Panel

Connect multiple sections of drive rail together with ¼-inch 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 + ¼-inch throughout the travel of the gate. When the drive rail has been installed at the correct height, the top surface is 9¼-inches above the operator base. A label and notch on each side of the operator indicates the correct height. See Figure B on page 9.

Roll pins line up drive rail segments to assure perfect splicing

Fencepost

Shim as necessary

Drive rail
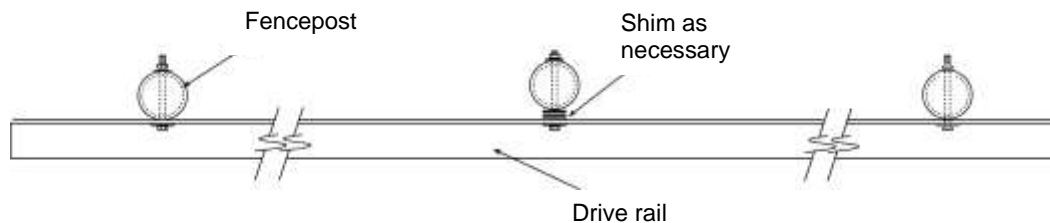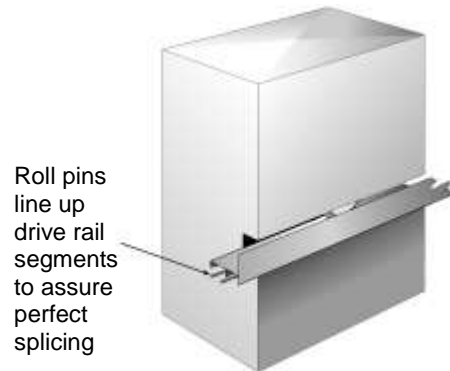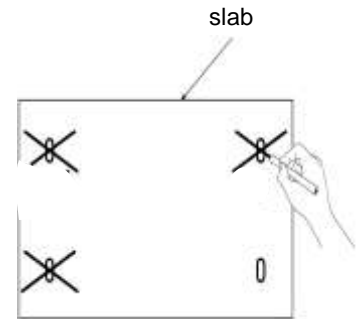
Once the gate rail is straight, verify the alignment of the wheels to the rail. Place a straightedge (≥24-inch) across the face of the upper wheel, through the rail slot in the face of the operator. The straightedge should be in line with the rail and touching the aluminum rim of the wheel on across the face. The straightedge and rail should be parallel within ⅛-inch over 24-inch. If not, loosen the chassis mounting bolts and rotate the chassis until the straightedge and rail are parallel then retighten the chassis bolts.

WRONG

CORRECT

RAIL

Wheel   Straightedge

Unequal Spacing

Chassis

Wheel   Straightedge

Equal spacing +/- 1/8"

Chassis
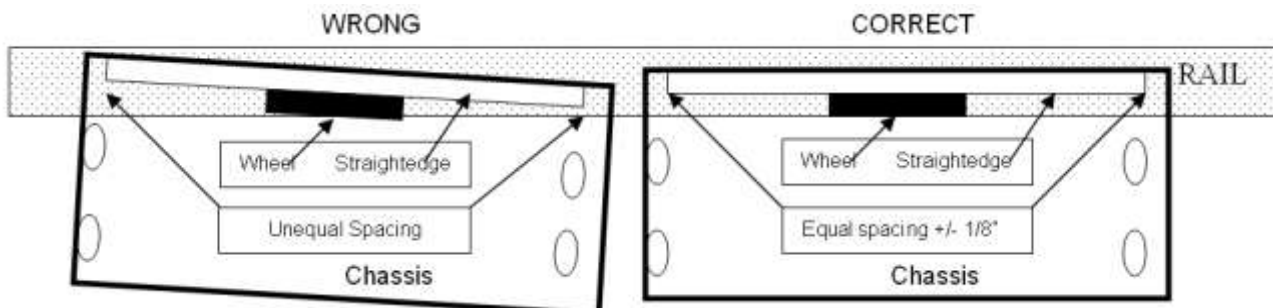
4. Install Limit Ramps on Underside of Drive Rail

- Push the gate to the fully closed position and drill two ⅜-inch holes through the drive rail to mount a 12-inch plastic limit ramp under the drive rail.
- Locate drive rail so that it will trip the limit switch approximately 6-inches 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 ¼-inch.
- Push the gate fully open and repeat this procedure with the other limit ramp.
- Refer to the drive rail drawing S22 on page 17.

Drill 2 holes to secure limit ramp.

Drive rail

Limit ramp

Limit Roller

Limit switch
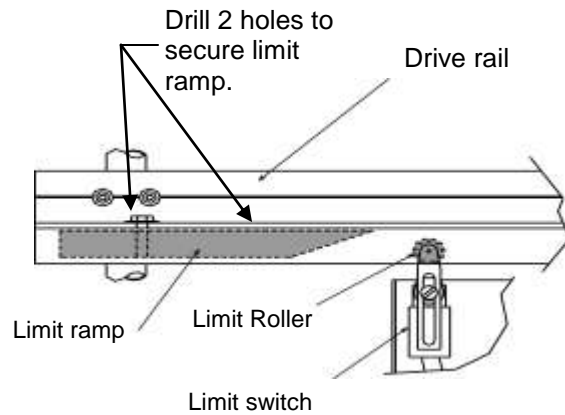
5. Clamp the Drive Wheels to the Drive Rail

When the wheels are fully clamped on the drive rail, the red spring should be compressed to 2-inch 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 *Section 8 — Use and Adjustment of the Manual Release Mechanism* on page 54.

manual release

verify 2" when engaged
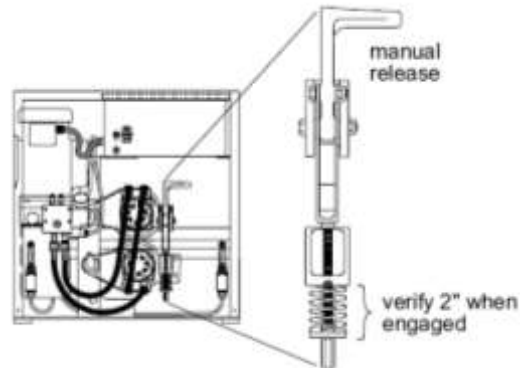
6. Grounding

Make sure that the ground rod installation meets NEC, NFPA 780 and local building standards and codes. Attach a large earth ground wire (6AWG) from the grounding rod to the ground lug on the chassis. Properly grounding the gate operator is critical to gate operator performance and the life of its electrical components. Use sufficient wire size during installation.

Ground lug

7. Electrical Power Connection

This operator is intended for permanent installation. All electrical conduits must be properly connected to the control box. The entry for the primary power is a ½ - ¾-inch knockout on the left side of the control box next to the power switch. The operator is built to run on a specific voltage and phase. Make sure you have compared the available line voltage and phase with the voltage and phase listed on the nameplate on the machine. **They must match!** Be certain that the branch circuit wire size versus the distance of the run from the main panel is large enough to avoid excess voltage drop. At a minimum, a 20A circuit (protected with a 20A Inverse Time Breaker) should be provided. Also be sure the operator is electrically grounded per NEC Article 250 and local codes. See page 62 for correct wire sizes and detailed electrical wiring information.
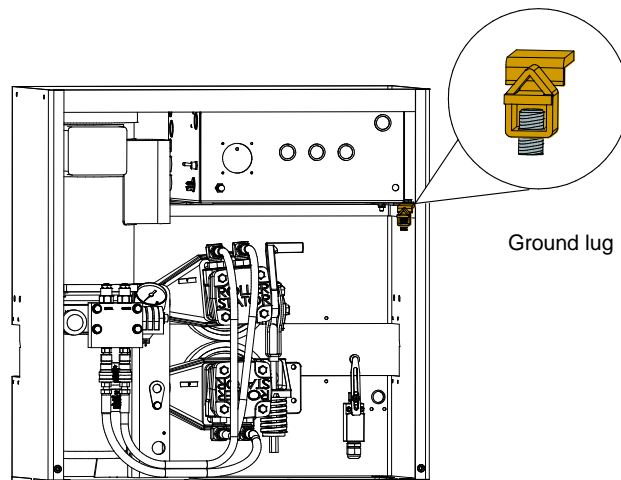
8. Primary Tap of Control Transformer

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 or between 390V and 460V branch circuits. A label on top of the transformer identifies the various voltage taps. This connection must match the voltage on the operator nameplate.

blue - 480V
orange - 240V
red - 208V
white - 120V
black common

NOTE: Primary taps do not exist on battery operators.

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: A minimum of two separate conduits must be provided, 2-inch for the hydraulic hoses and ¾-inch 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 limits switches. AC Power is not needed in the gate operator, unless there is an optional heater. Join the hydraulic hoses by plugging the quick coupling together according to the hand of the gate. See the technical drawing on pages 59 and 60.

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

Reset switch

Power switch

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 55 titled "Important: DC Powered Gate Operators" and Drawing E125.
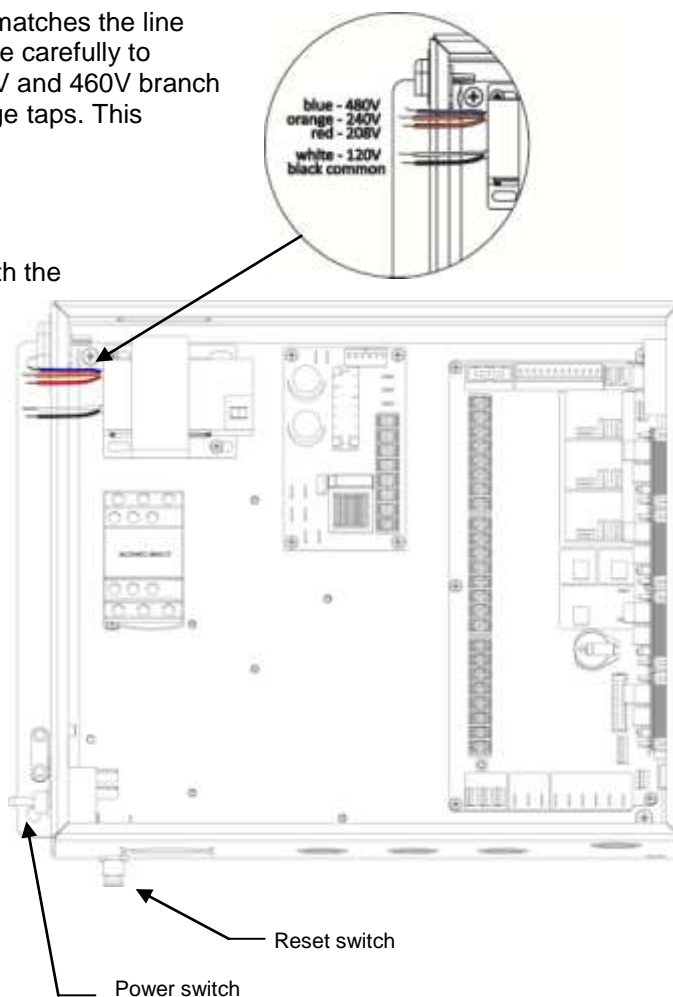
11. Check the operator "Hand"

All slide operators must have their "handing" set before they can function. The "handing" must be set both by the proper hydraulic hose connection and by programming the Smart Touch Controller. The proper handing hose connection is described on a label near the hose connection point. Also, see the instructions to set handing on page 19. Operators are shipped configured for right hand operation. Handing is viewed by standing on the secure side looking out. A gate which opens to the right is a right-handed gate.

12. Replace the Shipping Plug!

Replace the red plastic shipping plug on the front side of the pump with the black breather cap.

13. Setup the 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.

"Right Hand" shown

Remove red plastic shipping plug and replace with black breather cap.

To change handing connect hoses according to label on tank.
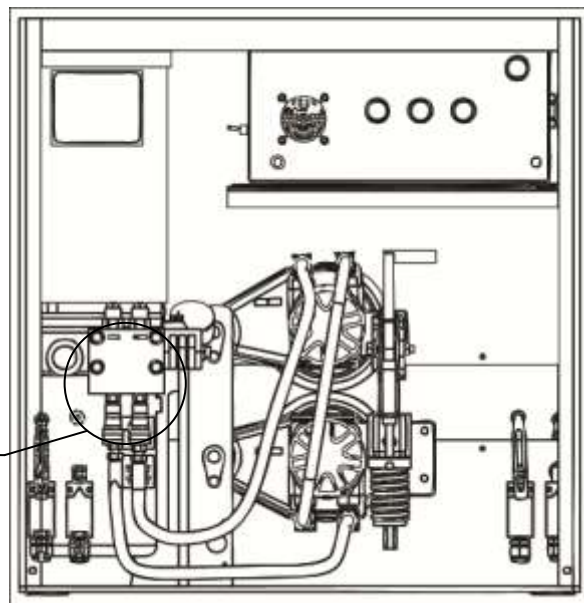
Section 2 — Mechanical and Hydraulic Adjustments

1. Drive Wheel Spring Tension

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

2. Drive Rail

Unclamp the wheels and move the gate manually to verify that the drive rail does not move more than 1-inch up and down or ¼-inch side-to-side throughout the entire horizontal travel of the gate. Re-alignment is simple if the rail is mounted with U bolts. Adjusting the rail for side-to-side movements requires inserting shims between the rail and the gate where necessary. To adjust side-to-side movements, 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.

3. Brake Valves
SlideDriver 40 & 30F (222E & EX1.7) models only.

These operators are equipped with brake valves and proper brake valve 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 where 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-inch lock nut on the top of the brake valve and make ¼-inch incremental turns on the adjustment stem with an Allen wrench. The adjustment is counter-intuitive, such that a counter-clockwise adjustment stops 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. Brake valves are factory-set to midpoint, two turns. This *should* be sufficient for most applications. If the switch stops with less than two inches of limit ramp remaining, increase braking. Set the brake valves to achieve a controlled smooth stop with the limit ramp 1½ to 3-inches from the wheels. When the adjustment is complete, retighten the locking nut to hold the setting.

Optional brake valves CCW = quicker stop
Left valve controls open
Right valve controls close
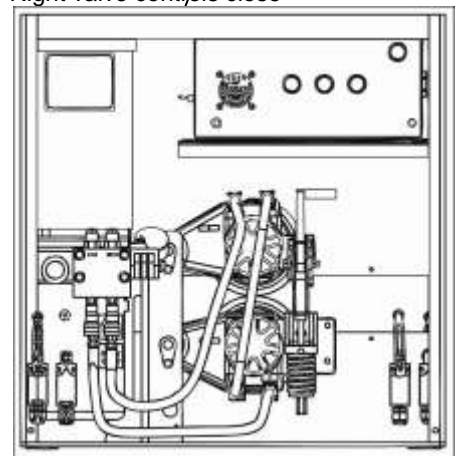
"Right Hand" Hose connections shown

4. Pressure Relief Valve

This valve governs the maximum system hydraulic pressure. It 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. The pressure relief valve is not factory set and may need to be adjusted depending on the gate weight. Reduce the pressure relief valve setting to the lowest pressure that will reliably operate the gate. A lower setting reduces the operator's maximum force. Refer to the yellow tag wire tied to the unit, and follow the instructions.

NOTE: The only way to display the actual relief valve setting is to unplug the hydraulic hoses from the quick disconnect fittings and run the operator. View the setting on the pressure gauge. Retighten the locking nut to hold the desired setting and reconnect the hoses correctly.

Pressure Relief Valve
Left: SlideDriver 40, 80, 200
   Behind black switch

Right: All other models

Open Valve

Unloader Valve

5. Open and Unloader Valves

These two valves are solenoid operated and, when energized, direct the hydraulic flow to open the gate. The Unloader Valve energizes at the beginning of a cycle to allow no load motor starts, and again at the end of each cycle to aid in decelerating the gate. No adjustment of these valves is possible or necessary. The black solenoid coil mounts on its valve stem.
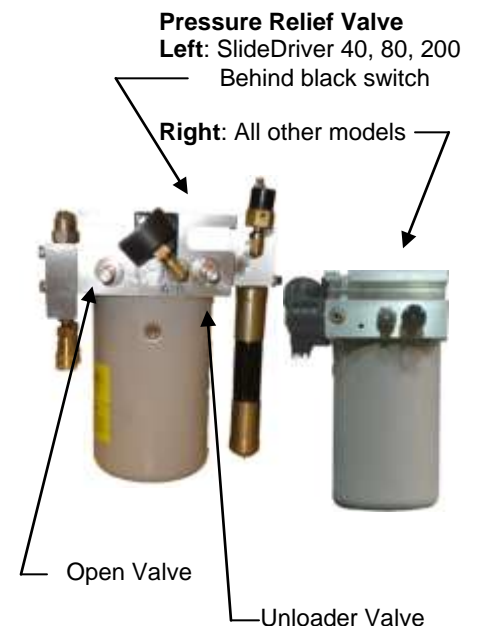
NOTES:

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.

NOTE: SEE DWG# SI3B FOR
RECOMMENDED SLAB DIMENSIONS.
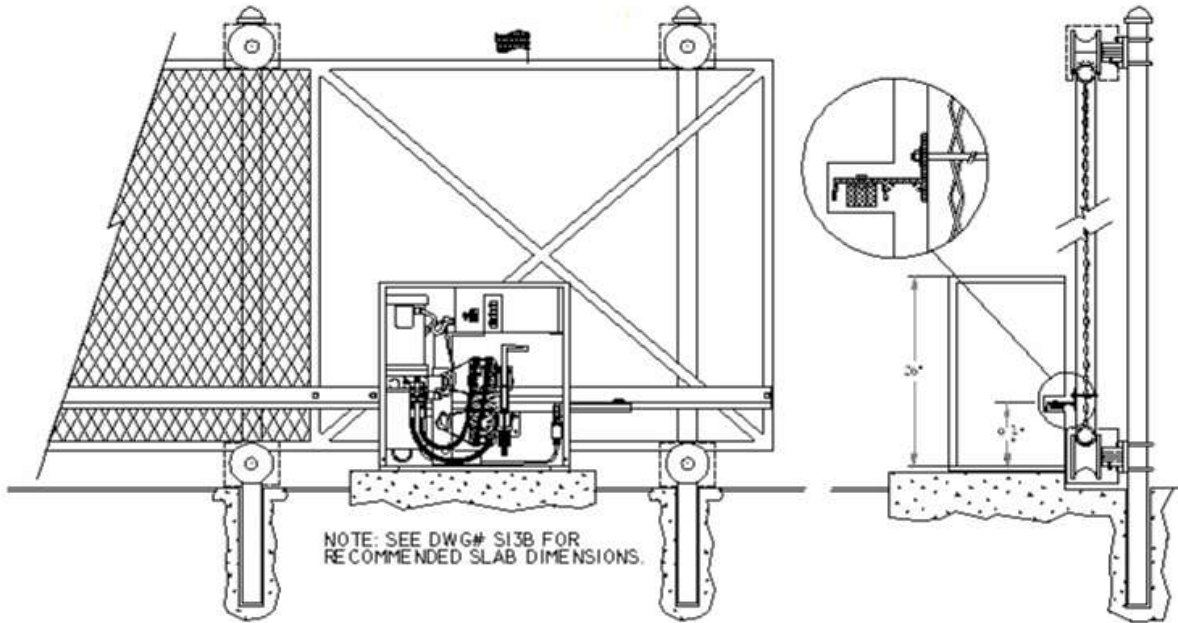
ELEVATION

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	DRAWN	DATE	THIRD ANGLE PROJECTION	REV
Slide Gate Operator (typ) R.H. Cantilever Gate Panel	KERI	6/12/00		--
	CHECKED SHOP	DATE MM/YY/DD	PART NUMBER N/A	
seattle, washington	APPROVED ENGRNG	DATE MM/YY/DD	DRAWING NUMBER: SI3A	SHT 1 OF 1

FENCE LINE

GATE POST

ALLOW 12" TO 16"

GATE PANEL WITH DRIVE RAIL ATTACHED

GATE OPERATOR

1-3/4"

NOTE: CANTILEVER WHEELS MUST BE COVERED TO HELP PREVENT INJURIES. COVERS SHOWN HERE IN DOTTED LINES.

NOTE:

MINIMUM CONCRETE SLAB DIMENSIONS RECOMMENDED ARE: 30"WIDE, 20" FROM FRONT TO BACK AND 16" DEEP. CHECK LOCAL FROST CONDITIONS AND SOIL CHARACTERISTICS FOR EXACT REQUIREMENTS IN YOUR AREA.

ROADWAY

REPRESENTS FACE OF GATE.

OPERATOR FOOT PRINT

BACK SIDE OF OPERATOR TO BE FLUSH WITH BACK SIDE OF PAD.

NOTES:
1. RECOMMENDED MINIMUM CONCRETE SLAB DIMENSIONS: 20"W X 30"L X 16"D. CHECK LOCAL FROST CONDITIONS AND SOIL CHARACTERISTICS FOR EXACT REQUIREMENTS IN YOUR AREA.
2. MOUNTING REQUIRES FOUR (4) 1/2" X 6" ANCHOR BOLTS WITH HEAVY WASHERS.
3. THIS TEMPLATE IS FOR BOTH RIGHT HAND AND LEFT HAND OPENING OPERATORS.
4. *THESE DIMENSIONS ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY DEPENDING ON PAD SIZE.
5. DIMENSIONS IN BRACKETS ARE MILLIMETERS.
6. UNDER NO CIRCUMSTANCES SHOULD THE BASE BE CUT, DRILLED OR OTHERWISE ALTERED. DOING SO WILL VOID ANY AND ALL WARRANTIES.

2" [50.80]

2" [50.80]

$1\frac{3}{4}$" [44.45]

$1\frac{1}{4}$" [31.75]

8" [203.20]

2" [50.80]

6" [152.40]

$7\frac{1}{4}$" [184.15]

$14\frac{1}{2}$" [368.30]

$10\frac{1}{2}$" [266.70]

20" [508]

THIS AREA TO REMAIN CLEAR. HYDRAULIC MOTOR LOCATION

CONDUIT SAFE LOCATION

CONCRETE PAD

$23\frac{1}{2}$" [596.90]

26" [660.40]

30" [762]

NOT SCALE

TITLE		DRAWN	DATE	THIRD ANGLE PROJECTION	REV
Slide Gate Operator (typ) R.H. Cantilever Gate Panel		KERI	6/12/00		B
		CHECKED	DATE	PART NUMBER	
		SHOP	MM/YY/DD	N/A	
		APPROVED	DATE	DRAWING NUMBER:	SHT OF
	seattle, washington	ENGRNG	MM/YY/DD	S13B	1 1

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VERTICAL GATE MEMBER

'U' BOLTS

LIMIT SWITCH RAMP

4.00

1.83

KEYWAYS FOR SPLICE PINS

LIMIT SWITCH RAMP

3/8"

LIMIT SWITCH WHEEL

OPERATOR

LIMIT SWITCH ARM

LIMIT SWITCH BODY

SECTION THROUGH DRIVE RAIL AND LIMIT SWITCH SHOWING RELATIONSHIP OF SWITCH, LIMIT RAMP AND DRIVE RAIL.

SIDE VIEW OF LIMIT RAMP AND LIMIT SWITCH IN OPERATION. TAPERED ENDS, ALWAYS POINT TOWARD THE OPERATOR DRIVE WHEELS.

DRIVE RAIL

LIMIT RAMP

3/8"

NOTE: ALUMINUM RAIL SHOWN, STEEL RAIL SIMILAR.

S22 REV A

LIMIT RAMP CONFIGURATION

SlideDriver 50VF2 (X2)

bolts
cure
it
mp.

er
oes

s
e

30″ limit ramp placed in the outside channel with the tapered end toward the wheels and the flat end out.

11.5″ limit ramp placed along the inside channel with the tapered end toward the wheels and the flat end out.

SlideDriver 50VF3 (X3)
SlideDriver 50VF2-EFO (X2EFO)

NOTE: For the 50VF2-EFO, refer to the setup and programming instructions on page 20.
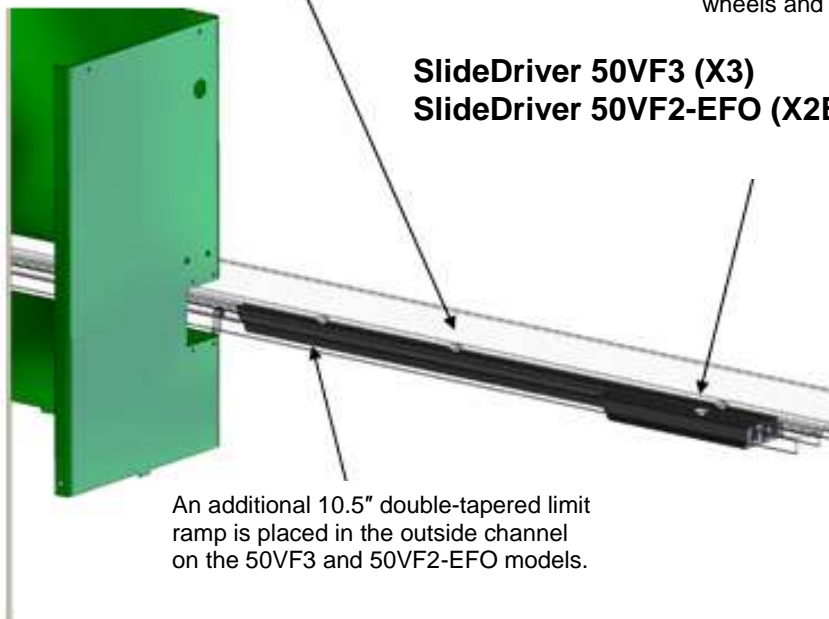
An additional 10.5″ double-tapered limit ramp is placed in the outside channel on the 50VF3 and 50VF2-EFO models.

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Section 3 — Smart Touch Basics

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. This page describes how to use the Smart Touch Controller keypad and access the User and Installer Menus.

NOTE: Until a new operator has been configured, the controls are not functional and the display is locked in the menu mode until the usage class and handing have been selected. See the page 19 for instructions on how address these settings.

1. Five buttons on the membrane switch pad provide total operator control. The OPEN, CLOSE and STOP buttons serve as a three-button control station, but in programming (Menu Mode), they become PREVIOUS, NEXT and SELECT buttons. The PROGRAM 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, programming the operator is accomplished by pressing the PREVIOUS, NEXT and SELECT buttons as described in the chart below:

To edit the display	To navigate through the selections	To choose what appears on the display	To navigate between menus
1. Press SELECT *Two characters blink.*	2. Press NEXT *Continue to press NEXT to view all selections.*	3. Press SELECT. *Blinking characters become static.*	4. Press NEXT or PREV *Advance = press NEXT Previous = press PREV*

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:

   NOTE: The PROGRAM button only works when the gate is at rest, when no open or close inputs are active, and when no faults, alerts or errors appear on the display.

   a. Verify system status by viewing lighted (active) inputs. Active inputs are lighted on all "New Generation" (post September 2006) Smart Touch Controller operators (other than DC operators without AC power). **NOTE**: To verify active inputs on New Generation DC operators (running without AC power) and "Classic" pre-September 2006 operators, press the tact button on the Smart Touch Controller (see page 20).

   b. Press the PROGRAM button and watch the operator status displays scroll past. Press the PROGRAM button a second time to skip the scroll. The operator status displays are described on page 24.

   c. The scrolling displays stop at the menu item for the automatic close timer setting [Ct _ #]. This is the first item in the User Menu. Note that the number (#) symbol in the example can be any number from 0 to 99. You can access the Installer Menu when the close timer display appears.

   d. To access the Installer Menu, press and hold the RESET button and, while holding, press the OPEN button. The display changes to the usage class menu item [uC 3] or item [uC 4]. This is the first item in the Installer Menu.

4. Pressing the PROGRAM button from any menu item returns the system to Run Mode.

   NOTE: The PROGRAM button does not function if the characters in the menu display are blinking.

NOTE: The # symbol shown in the example display will appear on your operator as a number (0 to 99).

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NOTE: Make sure the hydraulic hoses are connected properly to the quick disconnect fittings on the manifold. A label near the connection point describes this procedure. If the hoses are connected incorrectly, the gate will run backwards (close when the OPEN button is pressed) and this may trigger an error [Err 1] on the display. If this occurs, the hoses need to be reconnected properly and the RESET button must be pressed to reset the operator).

To change handing connect hoses according to the label on the pump pack.
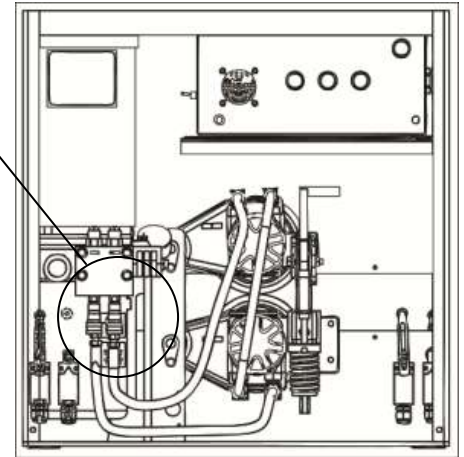
1. Turn the power switch ON. The operator status displays scroll past. The display directly enters the Installer Menu and the usage class [uC 0] menu item appears.

    NOTE: If the operator has been configured, the Installer Menu must be accessed in order to reach the system configuration menu items. See steps 3c and 3d on page 18.

2. While the usage class [uC 0] is being displayed), set the user class as defined by UL. Press SELECT, and then press NEXT to choose between [uC 3] or [uC 4]. See page **Error! Bookmark not defined.** for UL usage class definitions. Refer to page 18 for a reminder on how to use the Menu Mode buttons.

3. When the appropriate usage class is displayed, press SELECT to accept it. The characters on the display stop blinking.

    NOTE: The Installer Menu cannot be exited and the operator will not function until the selection for usage class and gate handing have been entered.

4. To set the gate "hand," press the NEXT button. The handing menu item appears [Sh -]. Press SELECT, and then press NEXT to choose between " r" for right hand or " L" for a left-hand gate opening.

5. When the appropriate handing is displayed, press SELECT to accept it.

    NOTE: Never disconnect the limit switch wires from the Smart Touch Controller or rearrange the limit switch hardware on the chassis to affect the handing of the gate.

6. At this point, you should exit the Installer Menu by pressing the PROGRAM button. The display jumps to the Close Timer [Ct -] setting in the User Menu, Either set the Close Timer by the same programming sequence described on the previous page or press the PROGRAM button again to exit to Run Mode.

7. Test for proper handing by observing which way the gate moves. Cycle the gate close and open using the CLOSE and OPEN buttons on the keypad. Note what appears on the display. If the display states that the gate is OPENING, when in reality, it is closing, then you need to correct gate handing through the Installer Menu.

    NOTE: If you press the CLOSE button and the gate remains open, further test the operator. Press STOP and then press OPEN. If the gate begins to close, then you need to press STOP to halt gate travel, turn the power switch OFF, and swap the hydraulic hoses on the operator. See the illustration above.

8. When you have completed testing the operator, press RESET to clear the display and reset the operator to RUN mode.

Test the Operator

Complete the installation by testing the operation of the gate.

1. Make sure the operator is turned ON.

2. Close the control box lid.

3. Press OPEN to open the gate. The gate should open at rated speed.

Section 3 — Wiring Control Inputs

1. Test the open and close function of the gate before wiring to accessory devices (external control inputs). This makes it easier to troubleshoot if an unexpected functionality arises. The Smart Touch Controller has a tact button you can push which lights an LED next to the active inputs. This button is in bottom left corner of the Smart Touch Controller board.

2. All the Smart Touch Controller inputs listed below are shown as a single input. The second wire is connected to the Common Terminal Bus (COM) on the Smart Touch Controller.

   NOTE: The Emergency Close and Fire Dept. Open inputs are an exception and require a +24V input. The +24V is located on the spade terminals next to the Common Bus. Refer to the photograph on the next page.

Smart Touch Controller Inputs

1.	***Stop Push button** N.C. input, jumper to Common if unused
2.	***Open Push Button** Not for radio or remote access controls
3.	***Close Push button** Not for radio or remote access controls
4.	**Remote Open & Radio Control** For radio / remote open device – Program to Close using Smart Touch Controller keypad
5.	**Open/Close button** Pushbutton or radio controls
6.	**Partial Open** Installer adjustable from 7- 99 seconds
7.	**Open interlock input or Time clock Open** programmable
8.	**Free Exit vehicle detector**
9.	**Disable Free Exit vehicle detector or Timer to Close** 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.	**Inside Obstruction vehicle detector** Inside reversing loop
11.	**Outside Obstruction vehicle detector** Outside reversing loop
12.	**Shadow/Reset vehicle detector** Shadow function used for Swing gates only - Reset function is for Arm gates
13.	**Edge Sensor** One input works for both travel directions
14-15.	**Photo eye Common Power** 24V common connection for open and close photo eyes
17.	**Photo eye Open direction**
19.	**Photo eye Close direction**
21.	**Charger AC power loss** Only used in DC, battery type operators
22.	**Spare Input** Software ≤ h3.26,- non functional, **Gate Lock Interlock Input** Software > h3.26, prevents start until external gate lock releases
23.	****Emergency Close** Must menu enable and input +24 Volts to trigger. Requires constant hold or maintained input. This overrides photo eyes, gate edges & vehicle detectors.
24.	****Fire Dept. Open** Must menu enable and input +24 Volts to trigger. Overrides photo eyes, gate edges, and vehicle loops.

Tact button

⚠ **CAUTION: *Only connect an external control to terminals #1, 2 or 3 when the controls are located in clear view of the entire gate area. For controls that need not be in line of sight, 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 and supervised.**

Power Connector

DRIVE | POWER | RS485

RS-485

Motor Relay

Reset & Buzzer Connector

MOTOR

STOP/BUZZER

Stop Button* - 1 — 1 — STOP BUTTON

Open Button* - 2 — 2 — OPEN BUTTON

Close Button* - 3 — 3 — CLOSE BUTTON

Remote Open and Radio Control - 4 — 4 — REMOTE OPEN AND RADIO CONTROL

Open / Close - 5 — 5 — OPEN/CLOSE

Open Partial - 6 — 6 — OPEN PARTIAL

Interlock Open / Time Clock Open - 7 — 7 — INTERLOCK OPEN TIME CLOCK OPEN

Free Exit Detector - 8 — 8 — FREE EXIT DETECTOR

Disable Exit Detector / Close Timer - 9 — 9 — DISABLE EXIT DETECTOR DISABLE CLOSE TIMER

Inside Obstruction Vehicle Detector - 10 — 10 — INSIDE OBSTRUCTION VEHICLE DETECTOR

Outside Obstruction Vehicle Detector - 11 — 11 — OUTSIDE OBSTRUCTION VEHICLE DETECTOR

Shadow / Reset Vehicle Detector - 12 — 12 — SHADOW/RESET VEHICLE DETECTOR

Edge Sensor - 13 — EDGE SENSOR

Photo Eye Power (-) 24V Common - 14 — 14 — PHOTO EYE POWER 24 VOLTS COMMON

Photo Eye Power (-) 24V Common - 15 — 15 — PHOTO EYE POWER

DO NOT USE - 16 — 16 — DO NOT USE

Photo Eye Open Direction - 17 — 17 — PHOTO EYE OPEN DIRECTION

DO NOT USE - 18 — 18 — DO NOT USE

Photo Eye Close Direction - 19 — 19 — PHOTO EYE CLOSE DIRECTION

DO NOT USE - 20 — 20 — DO NOT USE

Charger AC Loss - 21 — 21 — CHARGER AC LOSS

Gate Lock Interlock - 22 — 22 — SPARE INPUT

Emergency Close** - 23 — 23 — EMERG CLOSE

Fire Department Open** - 24 — 24 — FIRE DEPT OPEN

Tact Push Button Switch — LED

FREE EXIT

USER 1

VEHICLE DETECTOR

INSIDE OBSTR

USER 2

VEHICLE DETECTOR

USER 3

COM

NO

OUTSIDE OBSTR

VEHICLE DETECTOR

STATUS

SHADOW RESET

VEHICLE DETECTOR

DISPLAY

RS232

WIEGAND

STATUS

HySecurity

MX000585
VERSION
S/N

User Relay 1

HY-5A Free Exit Socket

User Relay 2

HY-5A Inside Obstruction Socket

User Relay 3

HY-5A Outside Obstruction Socket

Clock Battery

HY-5A Shadow / Reset* Socket

RS-232 Connector

Weigand Connector

Smart Touch Controller

LIMIT

RPM

DUAL GATE

COM A B

RADIO OPTIONS

COM OPEN +24V +24V EDGE COM

Limit Switch Connectors

Master Slave

Open Radio

Gate Edge Radio

Power Module

+24V

COMMON

24V AC Accessory power

24V DC Accessory Power (+)

Common Bus (-)

LED lights when energized

MODEL HY-5A

HY-5A

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# Section 3 — Connecting a Master / Slave Pair

Configuring two operators to be a Master and 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 and Slave operators.

NOTE: Master and Slave operators must have the same version of the Smart Touch Controller and the same software version 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 ≤ 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 20A 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* pages 55 and 62.

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 as shown in the table below:

Slave	Master
A	A
COM	COM
B	B
Shield wire to Ground*	***NOTE**: Only ground to one operator. Do NOT attach the shield wire to both operators. Cut off the shield and insulate (tape up) the exposed strands at the other operator.

6. The Installer Menu in each operator must be set as a Master or a Slave under menu item [d9 ̲]. Set one operator as a Slave [d9 1] and the other as a Master [d9 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 are 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 Err4 appears on the display (a Master/Slave communication error). This error cannot be reset until both machines are functional and communicating properly again.
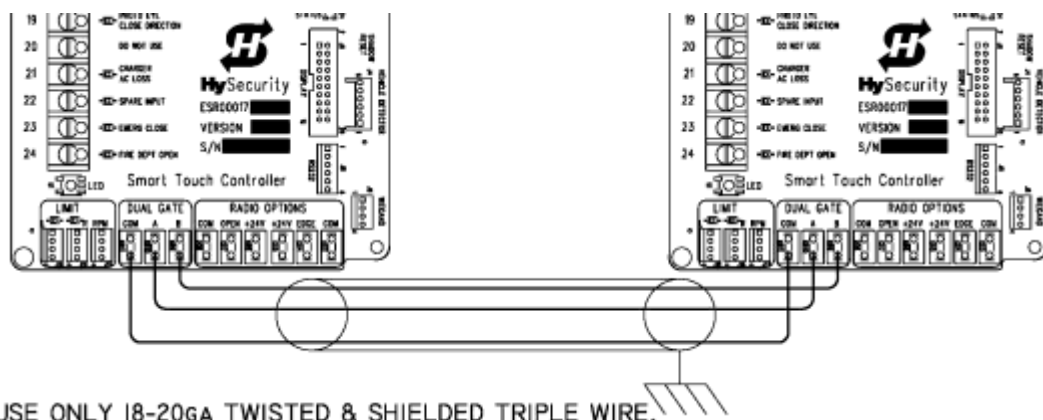
NOTE: USE ONLY 18-20GA TWISTED & SHIELDED TRIPLE WIRE.

Section 3 —User Menu Functions

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

Display Revision Number	2s delay	Displays software version Number, ex. [h2.17]

Operator Status Displays (system data) and accessing the User Menu Settings:

If the gate is stopped in Run Mode, pressing the PROGRAM button accesses the User Menu. When the PROGRAM button is pressed, the operator status displays (shown in the following chart) scroll past. The scrolling display stops at the Close Timer setting, which is the beginning of the User Menu.

	Operator Status Displays	Time		Description
S1	[SLAu] or [LEAd]	2s		SLAVE Operator or LEAd Operator (master)
S2	[ot 7] Gate type (1-7)	2s		Operator type: 1 =HSG, 2 =HRG, 3 HVG, 4 =HTG, 5 = SW24, 6 = SW38, 7 = 50VF
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 need. Once you have learned to navigate the menus and how to change a setting, as described in the chart 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 programmable items and the Installer Menu contains the more advanced programmable items.

To exit Menu Mode, simply press the PROGRAM button and return to Run Mode.

NOTE: If the display is blinking, you must press SELECT to accept what appears on the display and then press PROGRAM. Also, the operator automatically returns to the Run Mode if there is no key press activity for two minutes.

	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)
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 3s before + in motion, 2 = Buzzer alerts 3s before + 2s 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 4s, time out in 30s
U8	*[dA 0] Drift Closed Alert and automatic gate reposition*	0	0 = disabled, 1 = sound buzzer (2 pulses/) 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 minutes, 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*	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 NEVER disable (turn off) the Warn Before Operate buzzer per UL 325 regulations.

The User Menu functions shown in the chart on previous page are described in more detail on this page.

User 1 [Ct _] **Close timer setting:** Assign how many seconds before the open gate initiates closure. Keep the setting at 0 if a hard-wired, push-button control device is being used.

NOTE: The CLOSE TIMER display does not appear when the HOLD TO CLOSE is set to 1.

User 2 [hC 0] **Momentary Close:** Set to 0 produces a gate closure when a momentary signal is transmitted. Set to 1 if a constant hold to close signal, such as a push-button control, is being used. A setting of 1 also deactivates the automatic close timer and causes its menu to disappear. You must set HC to 1 to comply with UL 325 Type D protection.*

User 3 [ho 0] **Momentary Open:** Similar to HOLD TO CLOSE, but configures the OPEN push button for a constant-hold function. 0 = Momentary open signal. A setting of 1 means a constant hold open push button is required. You must set HO to 1 to comply with UL 325 Type D protection.*

User 4 [AP 0] **Power loss function:** This menu item only appears if the operator is a DC battery-powered (UPS) version. Configures the gate function that will occur if AC power fails.

User 5 [ro 0] **Radio control option:** Configures radio input for open only (0) or at setting 1 adds the capability for radio input to close the gate when it is fully open.

User 6 [bF 2] **Warn before operate:** Controls the warn-before-operate buzzer and can be configured three ways:
Set to 1: Buzzer beeps for 3 seconds before gate motion begins and continues through entire gate travel.
Set to 2: Buzzer beeps for 3 seconds before gate motion begins and continues for 2 seconds of gate travel.
Set to 0: Buzzer is disabled. Set at 0 the buzzer will still beep when alerts, faults, errors, or entrapment are detected.

WARNING: Do NOT cut the wires to the buzzer or unplug it as the operator will not be in compliance with UL 325. Failure to comply may result in serious injury or death.

User 7 [FA 0] **Forced open Alert and automatic gate reposition:** Intended for highly secure facilities. Set to 1, the operator sounds the 3-second "warn before operate" buzzer alarm, and then initiates a closure if the gate is forced open and the closed limit switch disengages. The motor restarts to secure the gate. If the gate does not fully close within 4 seconds, the motor turns off and the alert buzzer sounds for 30 seconds. The display shows ALE1.

User 8 [dA 0] **Drift Closed Alert and automatic gate reposition:** Set to 1, the operator sounds the 3-second "warn before operate" buzzer alarm and initiates an open command if the gate is forced, or drifts, off the open limit switch. The motor starts to reopen the gate. The motor runs for a maximum of 4 seconds and, if the gate is not fully open at the end of this period, the buzzer sounds for 10 seconds. The display shows ALE2.

User 9 [PE 0] **PE Alignment Mode:** When set to 1, the operator serves as an aide in photo-eye transmitter/receiver alignment. The buzzer chirps once when the emitter and receiver are not aligned. When the emitter and receiver are aligned, the buzzer chirps twice. If they go out of alignment again, the buzzer will chirp once. The Alignment Mode is reset with a 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; thus events of significance are logged and stamped with the time and date. This feature is useful to read historical operation data, which can be accessed with a computer via the USB or RS232 port. To set or adjust the hour, minute, day or month, see page 31.

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:** Set this item to 1 to record all gate operator open and close events, in addition to the normal alert, fault and error logs. This parameter automatically resets to the default 0 (off) after 24 hours, which is useful when experiencing intermittent problems. Set to 0, the Smart Touch Controller logs pertinent gate operator events such as faults, errors, or menu manipulation.

*NOTE: For gate operators using Type D entrapment protection, an automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed.

Section 3 —Installer Menu Functions

The Installer Menu is accessed by entering the User Menu first [Ct _], and then pressing the RESET button and the OPEN button simultaneously. The display reverts to the usage class [uC_] which is the first menu item in the Installer 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 full menu)
I4	[bu 0] Choose Buzzer	*0*	0 = Buzzer not set, 1 = Freq 1, 2 = Freq. 2
I5	[dg 0] Set dual gate type	0	0 = Solo operator, 1 = Slave, 2 = Master, 3 = Sally PortA, 4 = Sally PortB
I6	[SG 0] Set sequential gate	0	0 = not active, 1 = Loop Layout #1, 2 = Loop Layout #2
I7	[Ch 0] Set AC Charger or Solar	*0*	0 = DC + AC charger 1 = DC + Solar charger
I8	[Fo 0] Enable Fire Dept. Open	0	0 = disabled, 1 = enabled
I9	[oC 0] Enable Emergency close	0	0 = disabled, 1 = enabled
I10	[SE 3] Inherent Entrapment Sensor	3	1 = maximum sensitivity, 9 = Lowest sensitivity
I11	[SS 0] Inherent Sensor function	*0*	1 = stop only (note, functions in usage class 4 only)
I12	[LC 0] Leaf delay Close	*0*	0 = none (1-7) ½ second steps (Master/Slave only)
I13	[Lo 0] Leaf delay Open	*0*	0 = none (1-7) ½ second steps (Master/Slave only)
I14	[rt 0] Maximum run timer	0	0 = 60 Seconds max run, 1 = 300 Seconds max run
I15	[Po 0] Partial Open distance	0	0 = none, or 7 – 99 seconds
I16	[EC 0] PEC reverse to open	0	0 = Close eye stops only, 1 = 2 sec reverse to open
I17	[EO 0] PEO reverse to close	0	0 = Open eye stops only, 1 = 2 sec reverse to close
I18	[gr 0] Edge reverse to open	0	0 = Edge reverses fully open, 1 = 2 sec reversal only
I19	[Sr 1] IES reverse to open	1	0 = IES reverses fully open, 1 = 2 sec reversal only
I20	[PC 0] Set PEO/ PEC – NO/NC	0	0 = Normally Open PE output, 1 = N.C. (supervised)
I21	[gC 0] Set Edge input – NO/NC	0	0 = Normally Open Edge output, 1 = Normally Closed
I22	[tC 1] Time clock/ Interlock input	1	0 = select Time Clock, 1 = select Open Interlock
I23	[dt 0] Disable Free Exit/Close Timer	0	0 = disable Free Exit, 1 = disable Close Timer
I24	[or 1] OOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I25	[ir 1] IOLD detector function	1	0 = pause closing only, 1 = enable reversing to open
I26	[dL 1] Vehicle detector logic	1	1 = std, 2 & 3 = quick close, 4 = full anti-tailgate*
I27	[r1 0] User relay 1 option	1	0 = disabled, 1 – 24 = see output options page 30
I28	[r2 0] User relay 2 option	6	0 = disabled, 1 – 24 = see output options page 30
I29	[r3 0] User relay 3 option	1	0 = disabled, 1 – 24 = see output options page 30
I30	[t L 0] Gate Open alert	*2*	0 = 0 sec, 1=15s, 2=45s, 3=75s, 4=105s, 5=135s
I31	[Lt 0] Loitering alert	*3*	0 = 0 sec, 1=15s, 2=45s, 3=75s, 4=105s, 5=135s
I32	[SA 0] System Address	0	0 = Off, 1-99 = Network "Drop" Address (RS-485)
I33	[ELd0] Test factory ELD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I34	[iLd0] Test factory IOLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I35	[oLd0] Test factory OOLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7
I36	[SLd0] Test factory SLD*	0	0 = Run mode, 1 = show freq, 2 = show call level 0-7

∗See page 43 for description of Vehicle Detector & Loop Fault diagnostics

If you wish to restore the factory default settings, go to menu item [Fd_0] and change the setting to 1, then press the PROGRAM button. The entire menu will reset to the factory defaults. You will need to reprogram the operator if you want it to recognize any settings other than its factory defaults.

These Notes Refer to the chart above:
I1, I2, I3a   These settings must be configured before the gate operator can function. Once set, the User and Installer Menu items become accessible as well
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

Section 3 —Installer Menu Functions

The Installer Menu functions shown in the chart on previous page are described in more detail on the next few pages.

Installer 1 [UC 0] **Set UL Usage Class:** Assign the operator's Usage Class designation per UL 325 standards. The installer must designate a usage class before the operator will function. See page 19.

Installer 2 [Sh 0] **Set Handing of gate** The handing determines which way the gate opens as you view it from the operator side. The installer must designate a left or right handing before the operator will function. See page 19.

Installer 3 [Fd 0] **Load Factory Defaults:** Globally restores all menu settings back to new machine status. To activate, change the setting from 0 to 1 and press the PROGRAM button. Note that if the factory defaults are reinstated, the UL usage class, handing, and buzzer type will need to be set again.

Installer 4 [bU 0] **Select Buzzer Type:** Selects the type of audible buzzer installed on the machine. To set, press the SELECT button; the display flashes 0. Press OPEN and listen to the buzzer volume, and then press OPEN again and listen to the buzzer volume. If the volume increased, press SELECT to change to the louder volume. If the volume decreased, push CLOSE to retain the louder volume then push SELECT to lock in the louder volume.

Installer 5 [d9 0] **Set Solo, Master/Slave type, or Sally Port:** Programs and establishes communication protocols when wiring two operators as dual gates in a Master/Slave or Sally Port site configuration. This menu item appears when the sequenced gate menu item (S9) is set to 0 (off). Settings: 1 = Slave, 2 = Master, 3 = Sally Port A, 4 = Sally Port B

Installer 6 [S9 0] **Set Sequential Gate status:** Programs and establishes communication protocols when wiring two operators as sequential gates. This menu item appears when the sequenced gate menu item (d9) is set to 0 (off). Settings: 1 = Loop layout #1, 2 = Loop Layout #2

Installer 7 [Ch 0] **Set AC Charger or Solar:** Appears on 24VDC battery (UPS) machines only.

Installer 8 [Fo 0] **Enable Fire Dept. Open:** Enables the Fire Department Open input. When set to [Fo_ 1], overrides 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 9 [oC 0] **Enable Emergency Close:** Enables the Emergency Close input. When set to [oC 1], overrides vehicle detectors, photo eyes and gate edges to close a gate. A reset is required before the gate can be opened.

Installer 10 [SE 3] **Inherent Sensor sensitivity:** Adjusts the sensitivity of the internal inherent sensor. Available settings are 1-9 with 9 being the least sensitive.

Installer 11 [SS 0] **Inherent Sensor function:** Only available in UL Class 4 Gate Operators and allows an option whereby the inherent sensor will only stop the gate.

Installer 12 [LC 0] **Leaf delay Close:** Only appears if the Gate Operator is set up as a Master or a Slave. Available settings are 1-7. Each increment adds ½ second, to a maximum of 3½ seconds time delay, before the operator activates when commanded to close.

Installer 13 [Lo 0] **Leaf delay Open:** Only appears if the Gate Operator is set up as a Master or a Slave. Available settings are 1-7. Each increment adds ½ second (with a maximum of 3½ seconds) time delay following a command to open before the operator activates.

Installer 14 [rt 0] **Maximum run timer:** Allows an optional setting of 300 seconds if changed to [rt 1] as opposed to the maximum run timer default setting of 60 seconds.

Installer 15 [Po 0] **Partial Open distance:** 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 [Po 0] leaves this input inactive.

Installer 16 [EC 0] **PEC (photo eye close) reverse to open:** The default setting is 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 17 [ΕΠ　Π] **PEO (photo eye open) reverse to close:** The default setting is non-reversal if the open photo eye is triggered. The optional setting of [ΕΠ ╵] will cause the gate to reverse to close for two seconds if triggered while opening.

Installer 18 [gr　0] **Edge reverse to open:** The default setting is to reopen fully. The optional setting of [9r ╵] sets the gate at a 2-second reversal if triggered while closing.

Installer 19 [5r ╵] **IES (inherent sensor) reverse to open:** The default setting is a 2-second duration reversal if the inherent sensor is triggered. The optional setting of [5r Π] will cause the gate to reopen fully if triggered while closing.

Installer 20 [ΡΕ　Π] **Set PEO/ PEC – NO/NC:** The default setting is photo eyes with Normally Open outputs. The optional setting [ΡΕ ╵] will require a Normally Closed (NC) 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 21 [9Ε　Π] **Set Edge input – NO/NC:** The default setting is edge sensor with Normally Open (NO) outputs. The optional setting [9Ε ╵] will require a NC output..

Installer 22 [ΕΕ 　╵] **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 29, or for an external time clock to open input, as described on page **Error! Bookmark not defined.**. The default setting is [ΕΕ ╵] for the interlock function.

Installer 23 [dΕ　Π] **Disable Free Exit / Close timer:** Configures the input at Terminal No. 9 on the controller circuit board to disable either the Free Exit Detector on terminal #8, or the Timer To Close function. Default setting is [dΕ　Π] allowing disabling of the free exit detector.

NOTE: The free exit is disabled when the gate is at its closed limit. If the closed limit is not tripped, the free exit continues to work.

Installer 24 [or　╵] **OOLD (Outside Obstruction Loop Detector) function:** The default is for full reversal when the OOLD is triggered. The optional setting [or‿Π] causes the gate to only pause when triggered. Gate closure begins as soon as the loop is clear again.

Installer 25 [ιr　╵] **IOLD (Inside Obstruction Loop Detector) function:** The default is for full reversal when the IOLD is triggered. The optional setting [ιr‿Π] causes the gate to only pause when triggered. Closure begins as soon as the loop is clear again.

Installer 26 [dL　╵] **Vehicle detector logic:** Configures quick close and anti-tailgate logic. There are four modes. See the full description on page 44.

Installer 27, 28, 29 [r ╵　Π], [r2　Π], [r∃　Π] **User output relay 1 - 3 options:** Configures the function of the three user output relays. The choices are described in detail starting on page 30.

Installer 30 [ΕL　Π] **Gate Open alert:** Adjusts the time delay before activating the user relay function #8, described on page 30. Time settings up to 135 seconds.

Installer 31 [LΕ　Π] **Loitering alert:** This menu item is to adjust the time delay before activating the user relay function #13, described on page 30. Time settings up to 135 seconds.

Installer 32 [5Π　Π] **System Address:** Sets the system address for network communication; 0 = no network communication, 1-99 sets individual poling addresses. Requires v4.24 software or higher.

Installer 33 [ΕLdΠ] **Factory ELD:** Controls the HY-5A Free Exit detector, see page 43.

Installer 34 [ιLdΠ] **Factory IOLD:** Controls the HY-5A IOLD detector, see page 43.

Installer 35 [oLdΠ] **Factory OOLD:** Controls the HY-5A OOLD detector, see page 43.

Installer 36 [SLd]. **Factory SLD:** Controls the HY-5A Shadow detector, see page 43.

Section 3 —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 30.

NOTE: User 3 Relay on STC boards 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 bus 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 30.
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].

   NOTE: Wiring schematic (D0014) shows connection to the electromechanical User Relay 1. On the New Generation board, current recommendations are to connect to the electronic User Relay 3, but either relay can be used. Remember to always follow standard grounding procedures.

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 30.

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 30.

The Smart Touch Controller is able to interface with many types of external devices through the use of three user-programmable output relays. All of the output functions described below are accessible in the Installer Menu under the selection [r1__], [r2__] and [r3__].

NOTE: The User Relays will operate normally to less than 18VDC.

Access the Installer Menu and program the output relays according to the following steps:

1. Select the relay you wish to use; either [r1__], [r2__] or [r3__].
2. Enter the appropriate function using the associated number listed in the table.

1. **Close limit output:** Creates 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.

2. **Close limit pulse output:** Used in a sequenced system to command a second machine to close. Generates a brief pulsed output that occurs when the close limit is triggered.

3. **Open limit output:** Indicates a fully-opened position. This output becomes active when an open-limit is triggered and releases when the open-limit is released.

4. **Open limit pulse output:** Trips 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-opened.

5. **Warn before/during operate output:** Controls an external warning device. This output operates at the same time as the internal warn before operate buzzer.

6. **Gate Lock output:** Controls external solenoid locks or magnetic locks. In both directions of travel, this output is activated about 7/10ths of a second before the operator starts moving the gate and remains active while moving as well as 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 is open longer than a user-selected period of time. Adjustable from 0 delay to 135 seconds delay in 15-second time increments. Installer Menu I30

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 one or more of the relay options has been programmed for Tailgater activation. If that is the case, then while the gate remains unsecured and the OOLD and then the IOLD are both tripped in that order for a second time without a renewed open command, a tailgater alert output is generated on the configured relay to warn of an unauthorized entry. This can happen only if loops are installed properly. The maximum distance (span) between loops is 8 feet (2.4 meters). This output releases when an access control input signals open or the gate reaches the close limit position.

12. **Outside Obstruction Vehicle Detector output:** Interlocks 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:** Annunciates a vehicle or indicates loitering. Adjustable from 0 delay to 135 seconds delay in 15-second time intervals. Installer Menu I31

14. **Gate nearing full travel output:** Applies to operators with RPM sensors only. Activated when the gate is three feet from full travel in both the open and close directions. This output is used to reduce the sensitivity of a proximity sensor near the ends of gate travel.

15. **Gate Failure output**: Activated to report occurrence of a problem. Indicates the system in an Error Mode, Fault Mode or Entrapment Mode. If active, the gate is disabled.

16. **Motor Running output:** Active when the motor is running and the gate is in motion.

17. **AC Power Failure output:** This relay is normally energized and 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:** 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**Flasher Relay:** Controls flashing lights that pulse once per second. The relay is constantly activating except when the open limit switch is triggered.

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 software version h3.23 and higher. Active whenever the ELD is tripped.

21. **Inside Obstruction Vehicle Detector output (available in h3.23 and higher software):** Activated when the Inside Obstruction Vehicle Detector (IOLD) is tripped.

22. **Reset/Shadow Loop Detector output:** (Not used in SlideDriver.) Activated when the Reset or Shadow loop detector (RLD/SLD) is tripped. Since this input it 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. **Gate Lock Output:** Available with software version h3.25 or h4.23 and higher. Activates when the Lock Interlock Input (Terminal No. 22) is active at the start of an Open cycle and remains on until the Lock Interlock releases or 10 seconds passes, 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 with software version h3.25 and higher. Active when the partial open position is reached or exceeded.

25. **DC Power Alert:** Deactivates when the software detects a low battery voltage (below 21VDC, but greater than 18VDC) for a duration of 2 seconds or more. To slow battery drain, accessory power loads are shed.

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 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 PROGRAM 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 from our website – www.hysecurity.com. A serial communication cable and USB adaptor (Part MX000667) can be ordered through your HySecurity distributor.

Section 4 — Entrapment Protection Devices for Sliding Gates

Refer to the illustration on page 4.

UL 325 Standard Requirement for Entrapment Protection Devices

Gate Operator Category & Usage Class

	Horizontal Slide, Vertical Lift, Vertical Pivot		Swing and Vertical Barrier (arm)	
Usage class	Primary type[a]	Secondary type[a]	Primary type[a]	Secondary type[a]
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. Using 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 a Type B1 for one direction and a 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.

[a]**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.

The Usage Classes are:

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 unauthorized access is prevented via supervision by security personnel.

Section 4 — Placement & 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 for vehicular use and pedestrians must be routed to a separate main gate. However, to provide a degree of protection should anyone happen to stray into the area of an automatic gate, sensors are required. Generally two types of external sensors may be used:

- Contact type sensors, such as an edge sensor

- Non-contact sensors, such as photoelectric sensors

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 alternative options exist 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 sensors 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 hard-wired contact sensor shall be located and its 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.

Section 4 — Installing Gate Edge (Contact Type) Reversing Sensor

1. Follow the guidelines in the Entrapment Protection Device illustration 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-inches 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 ¼-inch 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.

General Information:
To plan the most appropriate mounting positions for the photoelectric sensors, review the Entrapment Protection Device illustration on page 4. If secondary external entrapment protection sensors (typically an edge sensor) are NOT installed, at least two photoelectric sensors are required. The purpose of the photoelectric sensors is 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).

Two common types of photoelectric sensors exist:
- Thru beam - A thru beam sensor is generally more powerful and able to function reliably with dirty optics and in poor weather.
- Retro-reflective - 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.

NOTE: Avoid use of a retro-reflective device to span a distance greater than 24 feet (7.3 meters) 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 24VDC source power.

Installation:
Mount the photo eyes approximately 15 to 30 inches (38 to 76cm) above the ground and as close to the gate as possible. A minimum of two photo eyes are required for both the opening and closing directions of travel unless gate edges for entrapment protection exist.

NOTE: The installation locations described above are intended for pedestrian detection.

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 close positions of travel. In some situations, an additional photo eye should be installed on the public side of the gate. If photo eyes are also being used for vehicular detection, consider, installing the low elevation photo eye for cars and another photo eye at a height of about 55 inches (140cm) 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:
Four wires to the emitter and two wires to the receiver are all that is required.

a. The +24 Volt source power is obtained at one of the three spade terminals on the power supply board.

b. The –24 Volt source power is obtained from spade terminals on our terminals #14 or #15, labeled (Photo Eye Common Power) on the Smart Touch Controller board.

   NOTE: The –24 Volt Photo Eye Power also supplies the photo eye output Common.

c. 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.

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 Menu 18 on page 28.

Photo Eye Function
If the gate is not in motion, a tripped photo eye will prevent the gate from starting in either direction. If tripped while in motion, the gate pauses, and then automatically restarts again if the photo eye is cleared within five seconds. An optional setting in the Installer Menu causes a two-second reversal of travel. See Installer Menu 14 and 15 starting on page 27.

Alignment
Most photo eyes require careful optical alignment in order to aim the emitter beam to the center of the receiver or reflector. 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 25 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 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.

Section 5 —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 StrongArm operator (HTG 320), a loop may be as small as 4ft x 6ft (1.2m x 1.8m). 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

NOTE: Refer to the drawing on page 39.

1. The side of the loop closest to the gate shall be located at least 4 feet (1.2 meters) distant from its line of travel.

2. The shortest side of the loop shall be between 6 and 8 feet (1.8 and 2.4 meters) in length. The longest side of the loop shall be between 6 and twenty 20ft (1.8 and 6m) in length. For applications that need to span a wide area, use several smaller loops. Do not exceed a maximum of 200ft² of loop area (61m²) to only one detector.

3. In applications with multiple loops, keep each loop at least 6ft (1.8m) 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 2 inches (5cm) 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 10 turns per foot (10 times per 30cm).
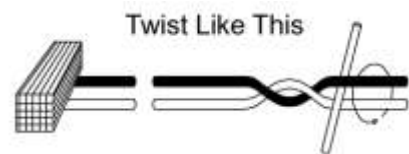

Twist lead-in at least 10 turns per foot

Like This

Not Like This

Twist Like This

E31a

9. Follow this guide for the correct number of turns in the loop;

   **12 to 20 sq. ft = 5 turns** (3.6 to 6 sq. meters)
    20 to 60 sq. ft. = 4 turns (6 to 18 sq. meters)
    60 to 240 sq. ft. = 3 turns (18 to 73 sq. meters)

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 ¼" wide x 1½" deep (6.3mm x 38mm).
*   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: If the loop wires are able to move in the slot after the sealer has set, the detector may give false calls.
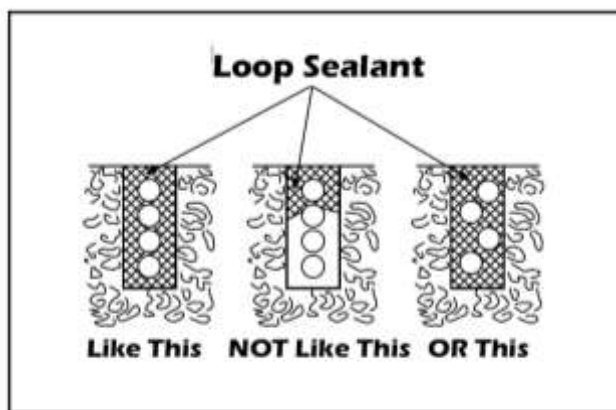
Detector Logic
HySecurity recommends that vehicle detectors be used for free open and obstruction sensing logic only. The exception is in parking applications with our StrongArm operator (HTG 320) where detectors may be also used to close the gate. In applications employing our swing, vertical lift, 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.

EXIT

ENTER

A

BI-DIRECTIONAL TRAFFIC SYSTEM WITHCONTROLLED ACCESS ENTRY (CARDREADER RADIO CONTROL, ETC.) AND FREE EXIT GATE IS CLOSED BY A "TIMER TO CLOSE". FOR A SINGLE DIRECTIONAL SYSTEM OMIT EITHER THE FREE EXIT LOOP OR THE ENTRY CONTROL DEVICES.

GATE STARTS TIMING TO CLOSE AS ALL LOOPS ARE CLEAR. TIMER IS ADJUSTABLE FROM 1 TO 99 SECONDS.

ACCESS CONTROL DEVICE, CARD READER, ETC.

OBSTRUCTION LOOP

B

PUBLIC SIDE

C

OPERATOR

C

SECURE SIDE

D

OBSTRUCTION LOOP

E

OPTIONAL FREE EXIT LOOP

DIMENSION "A" = 6 TO 20 FEET
DIMENSION "B" = 6 TO 8 FEET
DIMENSION "C" = MAINTAIN 4 FEET
DIMENSION "D" = MAINTAIN 5 FEET BETWEEN LOOP AND EDGE OF ROADWAY.
　　　　　NO VEHICLE CAN PASS THROUGH SUCH A SMALL AREA AND ESCAPE DETECTION

DIMENSION "E" = LOCATED FOR CONVENIENCE OF USE.

TITLE	DRAWN	DATE	THIRD ANGLE PROJECTION	REV
	DB	05/15/00		
SLIDE GATE LOOP LAYOUT	CHECKED	DATE	ERN NUMBER	DATE	A
	-	-	-		
	APPROVED	DATE	DRAWING NUMBER	SHT OF
seattle, washington	-	-	E96	1 1

HySecurity

Section 5 —Vehicle Detector Installation Options

The Smart Touch Controller provides a feature rich interface to four different vehicle detector inputs. Standard box type 11 pin (24VDC or 24VAC) vehicle detectors may be connected in the traditional manner, see page 42. 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:

a. Loop frequency is automatically set and monitored by the Smart Touch Controller
b. Cross talk between multiple loops is impossible
c. The best operating frequency for each loop is automatically chosen
d. Smart Touch can report the both loop frequency and call strength on its LCD display
e. Smart Touch will report loop malfunctions and store this data in its memory.
f. 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:

1. Free Exit Loop Detector – **"ELD"** for short
2. Outside Obstruction Loop Detector – **"OOLD"** for short (this is the outside reversing loop)
3. Inside Obstruction Loop Detector – **"IOLD"** for short (this is the inside reversing loop)
4. Shadow/Reset Loop Detector – **"SLD"** for short (this is for swing gates only)

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 second vehicle tailgating detection, loitering alert, several anti-tailgating options and selectable non-reversing. Multiple obstruction detectors may be mandatory because not more than 200ft² of loop area (61m²) may be connected to any one detector or the sensitivity becomes inadequate.
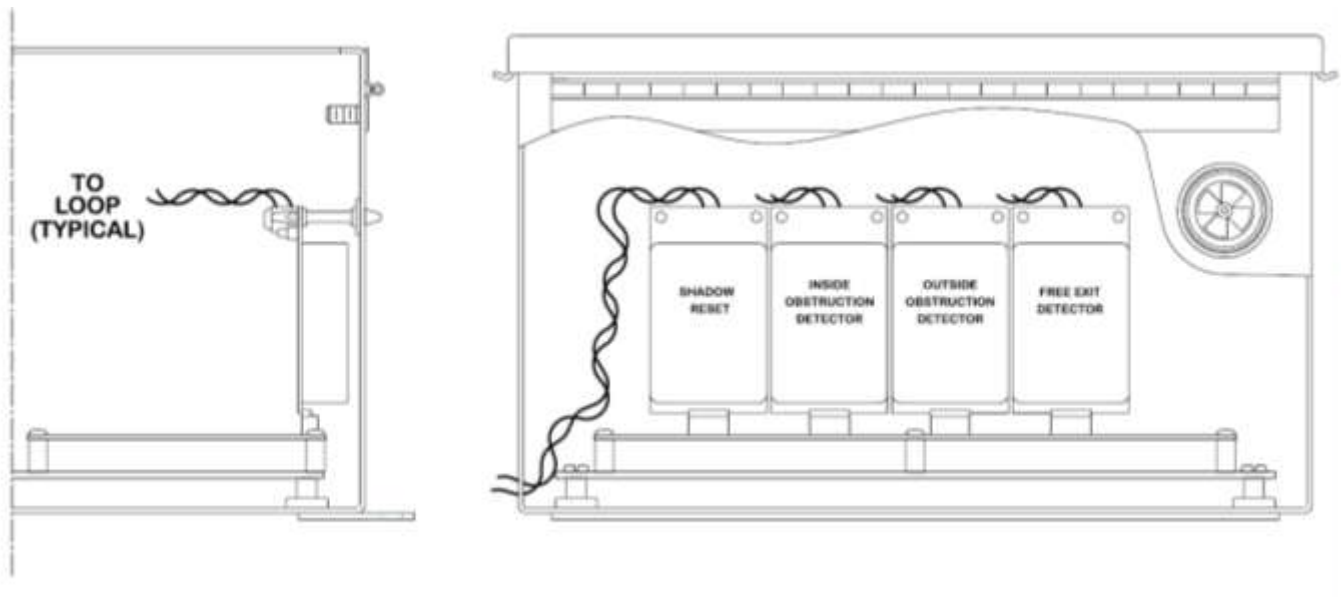
Section 5 —HySecurity HY-5A Vehicle Detector Installation

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 43.

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 (0 - 3 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 44 for optional Vehicle Detector logic modes and anti-tailgate option.

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 Bus and the +24 V spade terminals next to the Common Bus.

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 Bus 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.
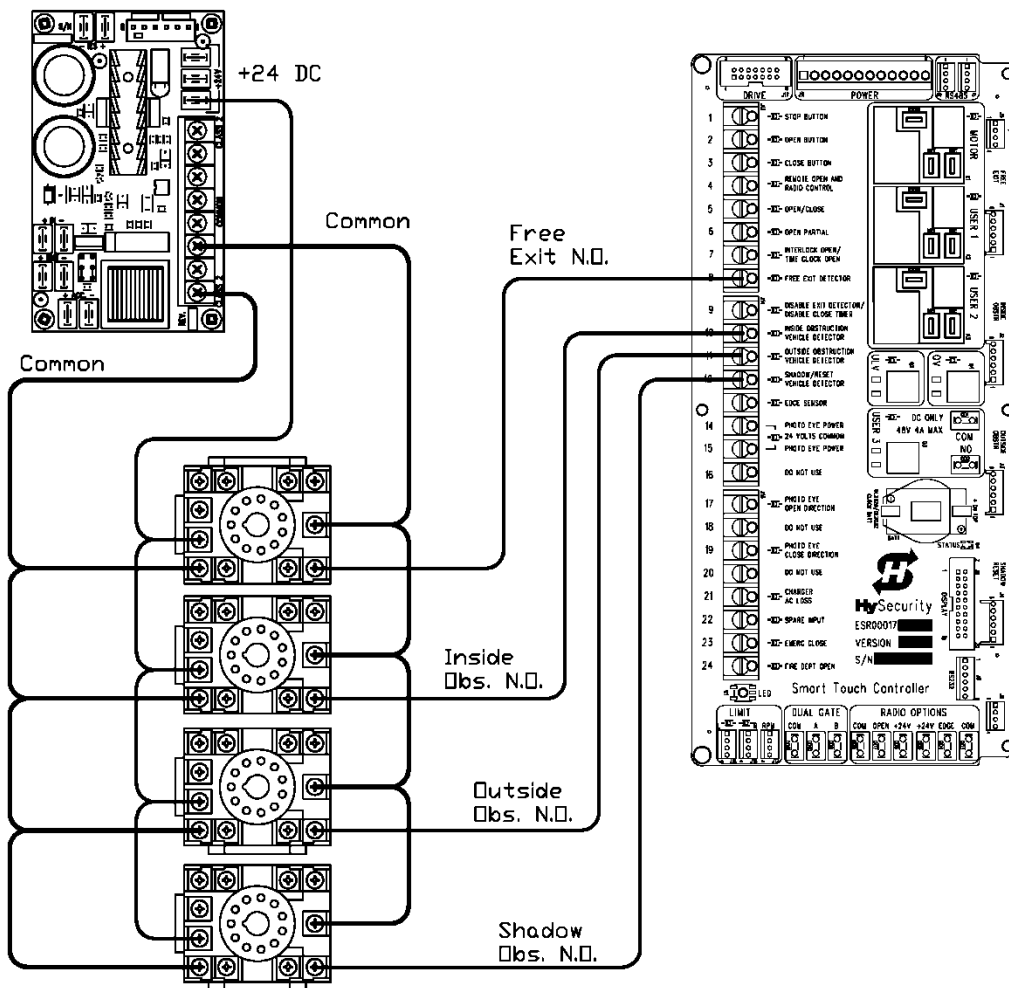
Section 5 —Detector & Loop Fault Diagnostics

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 31).

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 PROGRAM 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 PROGRAM 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 PROGRAM 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. Set the selection back to 0 by pressing NEXT, then press PROGRAM twice to return to Run Mode.

Section 5 — 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 page 28.)

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.

Section 6 — 24-Hour, 7 Day Time Option

This is an option you can order from HySecurity. The timer generates an open command which will hold the gate open until it is released. Instructions on how to use and program it accompany the timer.

To connect the optional timer to the Smart Touch Controller, use the following schematic:
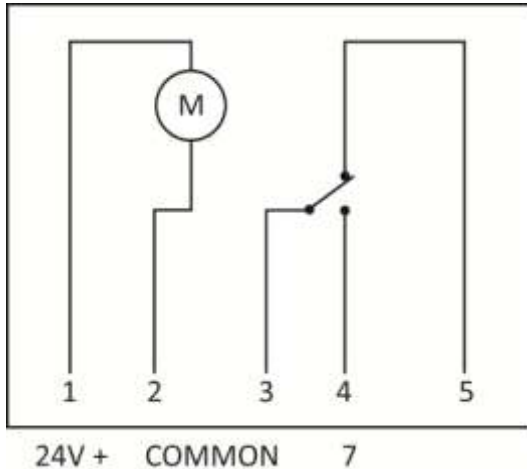
Connect the Timer Power Pin 1 to 24V (+)

Connect the Timer Power Pin 2 to COM

Connect the Timer Com Pin 3 to COM

Connect Timer NO Pin 4 to #7, Time Clock Open

Section 6 –Radio Remote Open Option

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.

Radio output wires
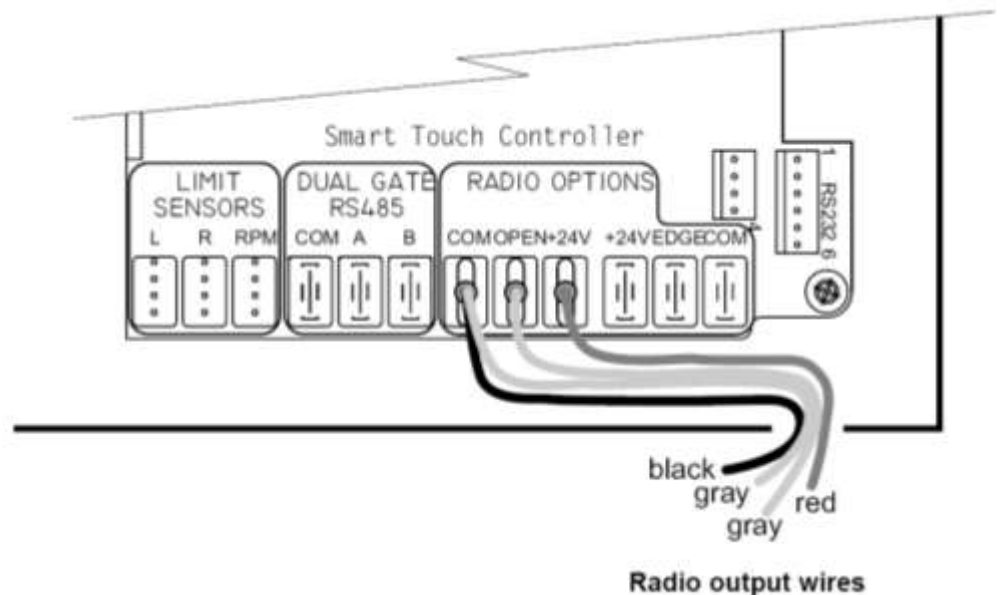
Mount an external antenna onto the top of a fixed post of the fence near the operator.
Connect the antenna into the socket on the radio receiver.
Set the "DIP" switches in the receiver to match the same code used in the transmitter.

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.

Section 6 — Remote Release Option

Instructions for Releasing the Drive Wheel Clamp Mechanism for Manual Operation
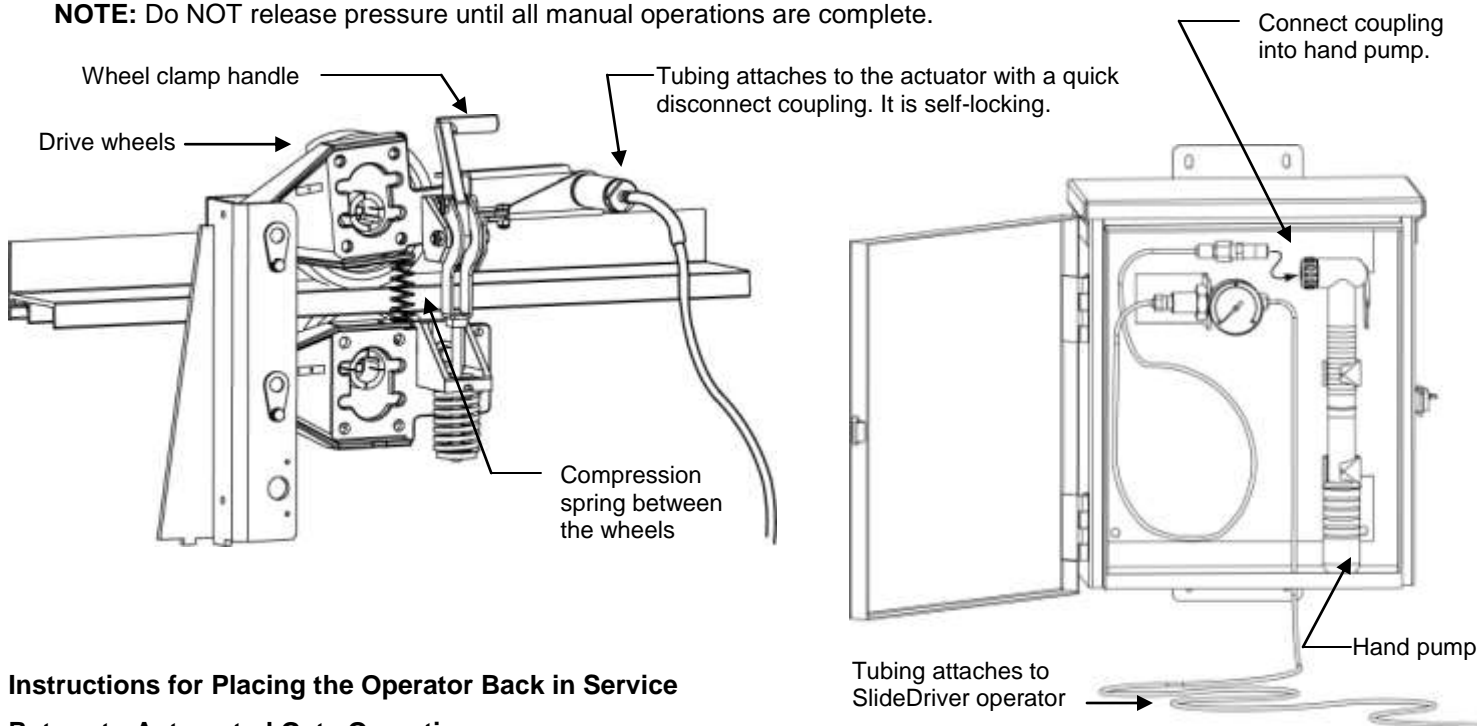
Assembling the Hand Pump

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 the hand pump from the box. (Pull straight out to disengage the mounting clips.)
2. Push the threaded coupling into the hand pump. Do not screw or twist it.
3. Lock the coupling in place by pushing the locking lever up so it is horizontal.
4. Extend the base of the hand pump.
5. Pump until gauge pressure indicates 50 psi. This releases the wheel clamp inside the operator. The compression spring will assist in the separation of the wheels.
6. The gate can be manually opened or closed.

   NOTE: Do NOT release pressure until all manual operations are complete.

Wheel clamp handle

Drive wheels

Tubing attaches to the actuator with a quick disconnect coupling. It is self-locking.

Compression spring between the wheels

Connect coupling into hand pump.

Hand pump

Tubing attaches to SlideDriver operator

Instructions for Placing the Operator Back in Service

Return to Automated Gate Operation

1. When you are ready to return to automatic gate operation, lower the locking lever on the hand pump.
2. Disconnect the threaded coupling from the hand pump. Do NOT twist or turn the coupling. Pull it straight out. (Removing the threaded coupling releases pressure on the wheel clamp mechanism.)
3. Place the hand pump and tubing inside the box. Do NOT disconnect the tubing from the pressure gauge.
4. Remove the cover from the SlideDriver chassis and re-engage the wheel clamping device inside the operator by pushing the wheel clamp handle up.
5. Make sure the compression spring is properly placed. The spring ends should be over the fasteners and compressed against the wheel arms. See illustration.
6. Cycle test the gate using the OPEN, CLOSE, and STOP buttons on the keypad.

Section 6 — Internal Solenoid Lock Instructions

Internal Solenoid Lock Description:

HySecurity offers an optional internal solenoid deadbolt lock that employs a ¾ inch 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 the operator voltage matches the solenoid voltage requirements. 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-inch 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 ½ inch open end wrench, loosen the two bolts retaining 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.

UPPER TORSION
SUPPORT ARM

DRIVE WHEELS

DRIVE RAIL

LOCK BOLT

ELECTRICAL
ACCESS

MAIN SUPPORT
COLUMN & PIVOTS

INTERNAL
SOLENOID
LOCK

LOWER TORSION
SUPPORT ARM
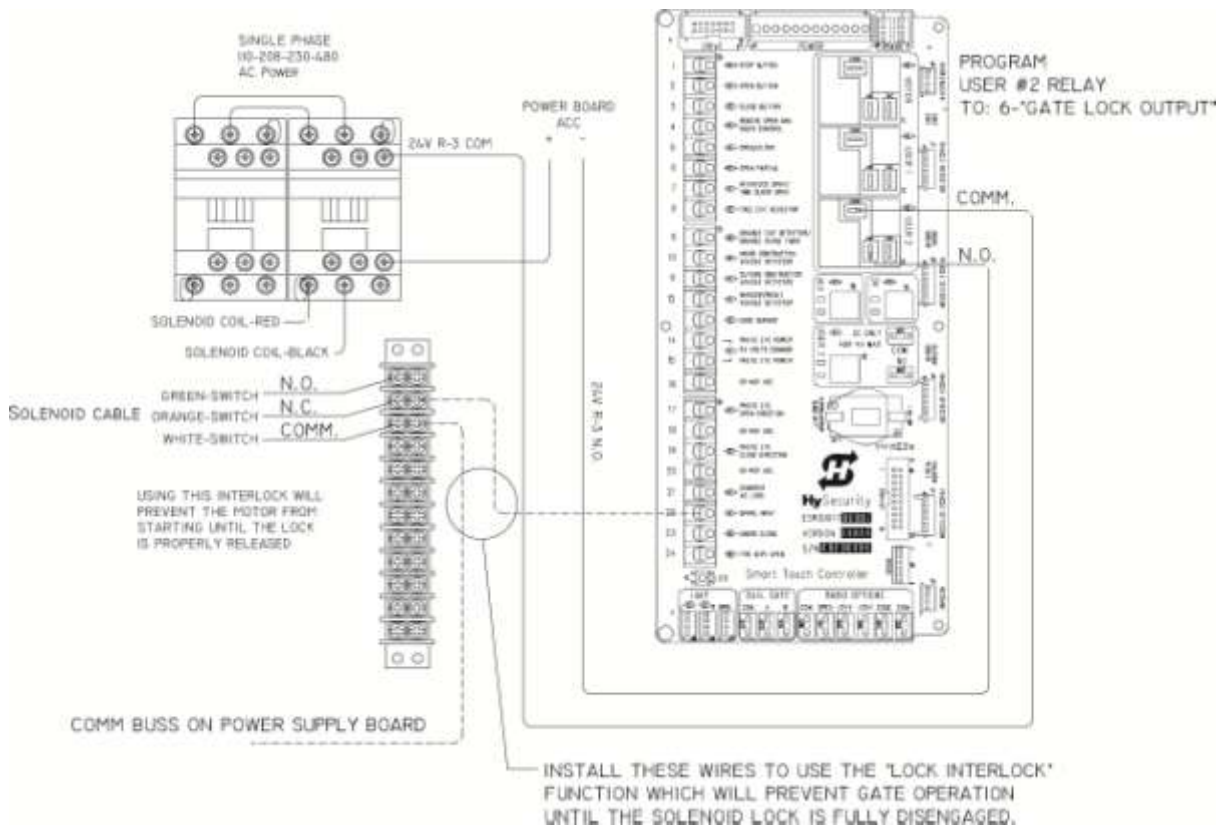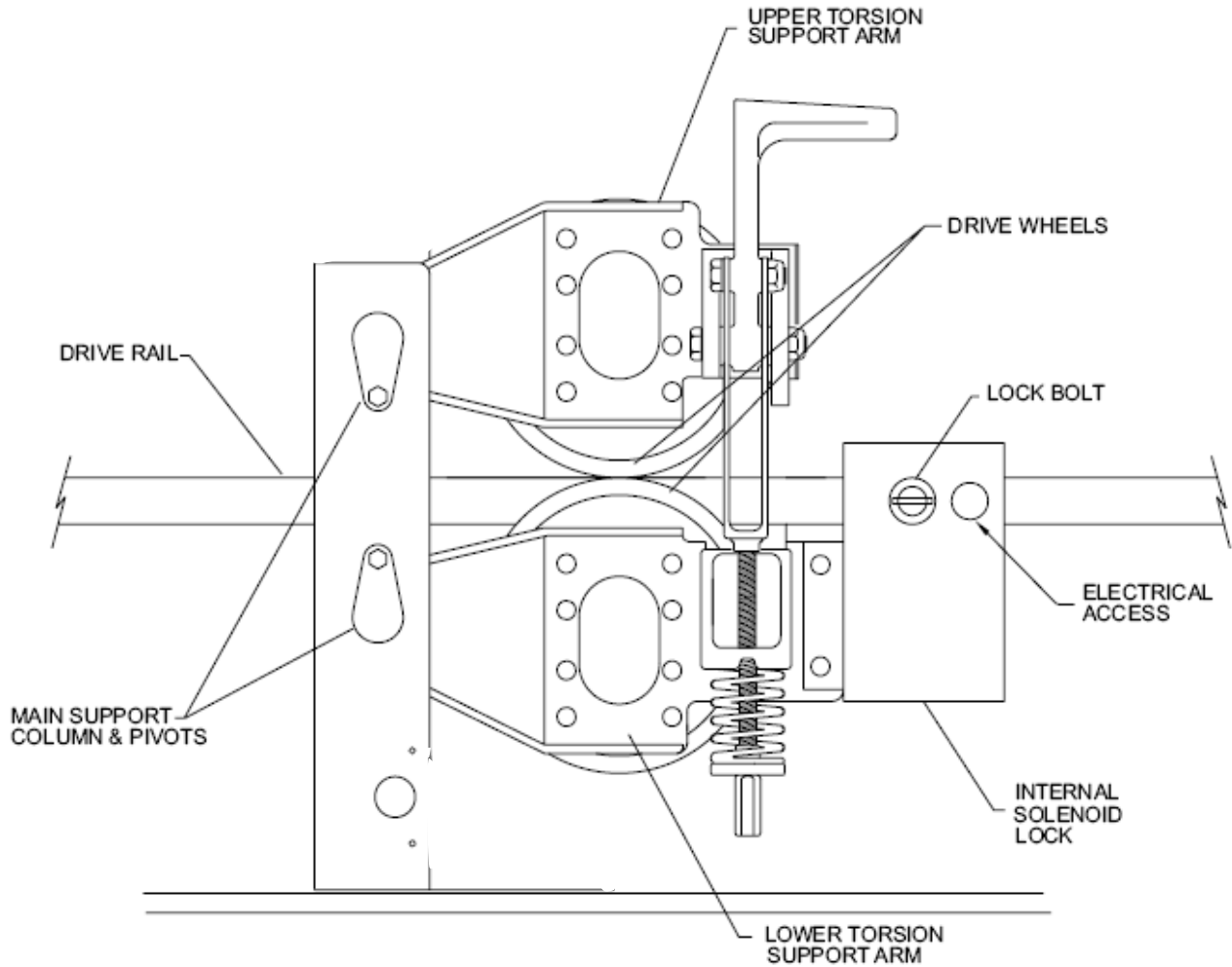
ELEVATION

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.

MANUAL RELEASE

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

S18B

UPPER DRIVE WHEEL

DRIVE RAIL

OUTLINE OF
OPERATOR HOUSING

LOWER DRIVE WHEEL

INTERNAL SOLENOID LOCK

S26B

Section 2 — 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-inches in height. Adjust by unclamping and turning the nut at the bottom of the threaded rod.
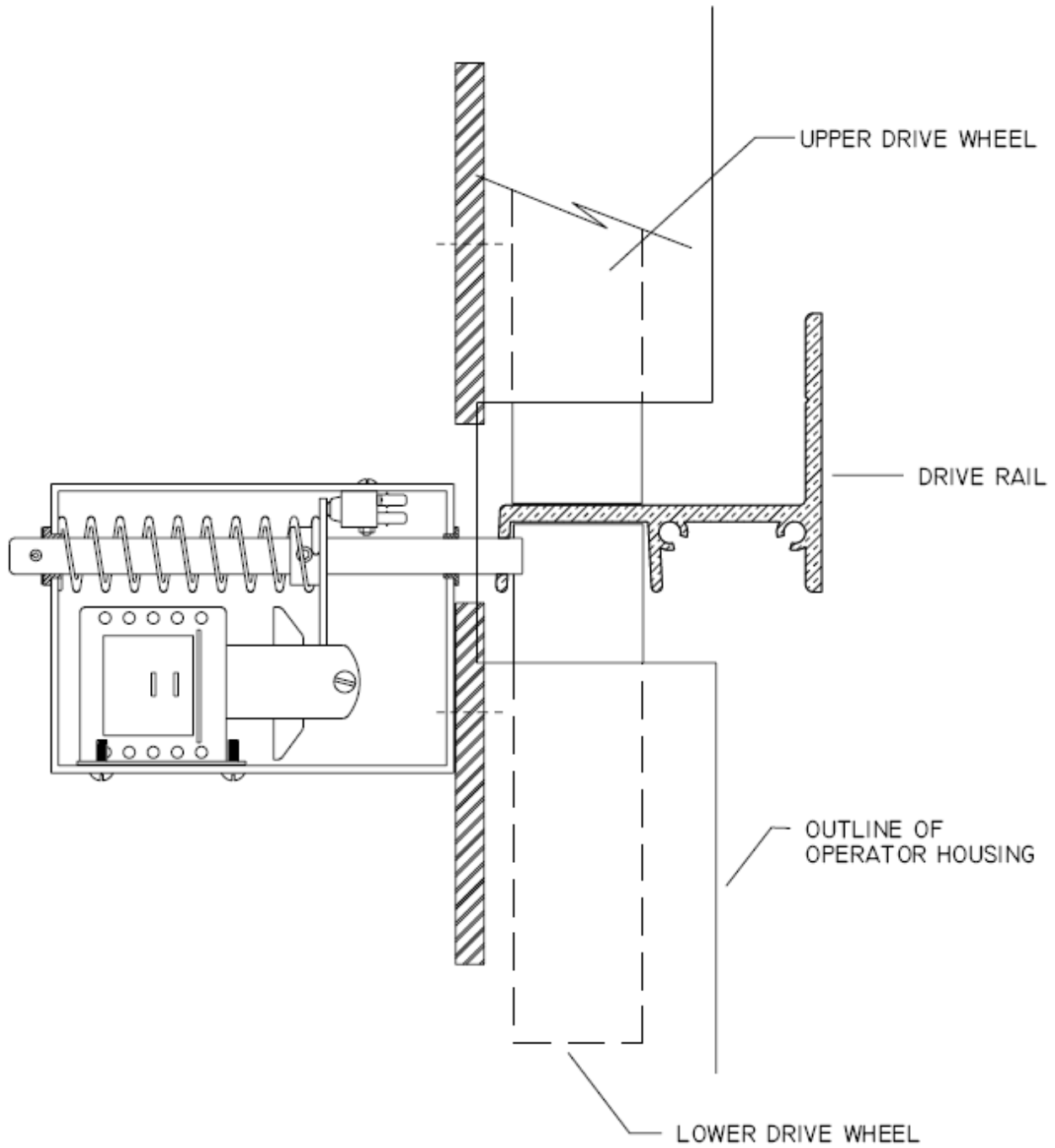3. Look inside the operator under the wheels for metal shavings. Shavings indicate that the gate panel or the operator is out of alignment. Realign the operator as necessary. The operator must always be square to the gate and the drive rail must be shimmed if necessary to maintain an in/out tolerance of ¼-inches 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 upper left corner near the STOP input.

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 + 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 (COM) 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 VFD intermittently shuts off, voltage drop due to undersized wires is the likely cause. See page 62 for maximum allowable length of wiring runs versus 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. Verify VFD display reads 50Hz or greater during normal operation. If not reading >50Hz, verify deceleration switches and ramps are installed correctly.
2. If the motor has been replaced, verify CCW motor rotation. To reverse, switch any two AC lines between the motor and the VFD.
3. 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.
4. Unplug the hoses and run the pump. If the pressure is low, adjust the relief valve.
5. If valve does not respond to adjustment, remove it entirely and depress the plunger at the nose end with a blunt tool (Allen wrench) and blow it to remove any debris.

"Hydraulic pressure is above 1100 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. Loosen brake valves 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. If the gate only opens, the directional valve is probably stuck and needs replaced.
2. If the gate only closes, the valve coil is not being energized, or is defective.

*Refer to page 14, as well.

HySecurity

Section 7 — Troubleshooting

The Smart Touch Controller includes many self diagnostics. Specific messages appear on the display 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 the HySecurity website. The following chart lists problem codes detected by the Smart Touch Controller. Updates to this chart appear on HySecurity's website at www.hysecurity.com

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 3s – controls disabled
Dead 24V Battery Alert – DC only	bAt - dEAd	bat – dEAd	3 chirps upon any operating command
Gate Forced Open Alert	ALE1	ALE1	2 pulses/sec for 30 seconds
Gate drift closed Alert	ALE2	ALE2	2 pulses/sec for 10 seconds
Motor thermal overload Alert	ALE4	ALE4	2 chirps/sec once every 15 seconds
Both Limits Tripped Alert	ALE5	ALE5	2 chirps/sec every 15 seconds
Limits not released in 10 seconds	ALE6	ALE6	2 chirps/sec every 15 seconds
Loop detector freq change alert	ALE7	ALE7	2 chirps/sec every 15 seconds
Loop shorted to ground alert	ALE8	ALE8	2 chirps/sec every 15 seconds
Loop open (disconnected) alert	ALE9	ALE9	2 chirps/sec every 15 seconds
Loop detector comm. alert	AL10	AL10	2 chirps/sec every 15 seconds
Loop detector failed alert	AL11	AL11	2 chirps/sec every 15 seconds
Loop detector active >5 minutes	AL12	AL12	2 chirps/sec every 15 seconds
General I2C Comm. Buss failure	AL16	AL16	2 chirps/sec every 15 seconds
Bad 3V coin battery	AL17	AL17	2 chirps/sec every 15 seconds
False slow down signal	AL19	AL19	2 chirps/sec every 15 seconds
Lock Intrlk (Input #22) Blocks Open	AL20	AL20	2 chirps/sec every 15 seconds
VFD Error Alert	AL21	AL21	2 chirps/sec every 15 seconds
Dual/Seq. Gate communication lost	AL22	AL22	2 chirps/sec every 3 seconds
Maximum Run Fault	FAL1	FAL1	1 chirp once every 15 seconds
Photo eye Fault (supervised)	FAL2	FAL2	2 chirps/sec once per minute
Critical AC sag – bad supply wire	FAL3	FAL3	2 chirps/sec once per minute
Open or Closed limit failed	FAL5	FAL5	2 chirps/sec once per minute
Directional Motion Error	Err1	Err1	3 chirps/sec once per minute
Disconnected IES Error	Err2	Err2	3 chirps/sec once per minute
Serial comm. internal Error	Err3	Err3	3 chirps/sec once per minute or 3 on Cmd.
Serial comm. mast/slave Error	Err4	Err4	3 chirps/sec once per minute
STC-VFD Communications Error	Err6	Err6	3 chirps/sec once per minute
EEPROM Data Error (factory)	Err7	Err7	3 chirps/sec once per minute
EEPROM Data Error (installer)	Err8	Err8	3 chirps/sec once per minute
EEPROM Data Error (user menu)	Err9	Err9	3 chirps/sec once per minute
Open or Close slow down switch failed	Er10	Er10	3 chirps/sec once per minute
Memory Checksum Error	FAiL	Fail	3 chirps/sec once per minute

NOTE: The green LED near the "coin" battery on Smart Touch Controller is the "heartbeat" of the processor. This LED always blinks at a steady pace which indicates normal operation.

Gate Speed: The gate speed is determined by the size of the hydraulic operator's pump and its actuator components. Just like a gear box, this speed is not adjustable. Do not attempt to slow a gate by changing a valve setting. If the speed of a gate must be changed, contact your HySecurity distributor. Extremes in temperature usually does not affect the speed of the gate. HySecurity hydraulic gate operators use a special fluid called *Uniflow*, which maintains a linear viscosity over a broad range of temperatures. HySecurity operators are rated for service in ambient temperatures of -40°F to 158°F. If the speed of your operator is affected by temperature, verify that the gate hardware is not impaired and check that the reservoir is filled with *Uniflow*. Consider adding a heater in extreme weather.

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 only recommend our *Uniflow* hydraulic oil; part number **MX000970**, which is sold in one-gallon containers by our distributors. ***Never use brake fluid. It will severely damage the hydraulic system. Use of any oil other than Uniflow oil may void the operator warranty.***

Look for leaks: Occasionally there may be slight seeping at the fittings after some usage. Tightening of the fittings usually corrects the problem. If 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. Oil changes do not need to be frequent. HySecurity recommends draining the reservoir and replacing the oil at five-year intervals. 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.

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 oil (available from your distributor). To avoid overfilling, fill only through the removable plug opening near the tank top. 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. Spilled oil will dry to a very sticky and messy consistency.

Cold Weather:

1. Check that your reservoir is filled with our *Uniflow* high performance oil.

2. Excessive ice buildup can partly or totally jam gate operation. Check function by operating the gate manually.

3. If the operator is located in an area of extreme snow conditions, regular maintenance to dig the operator out and clear the rail is required. A heater option may help, but the SlideDriver will not operate well if it is covered with 5ft of snow.

Electrical Controls
Before servicing, turn off power and 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 electrical enclosure holes. 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 operator service record, especially any work that has been done recently.

How to Adjust the Pressure Relief Valve: To check your relief valve setting, first disconnect the hoses. Run the operator either open or closed (the gate will not move with the hose disconnected). The pressure gauge will show current relief pressure. The relief valve is found on the pump pack. It has an adjusting head and lock nut. To adjust, loosen the lock nut and screw the threaded bolt clockwise for increased pressure, counterclockwise to decrease pressure. More information is available   on the yellow tag attached to the pump pack.

Pressure Relief Valve

Left: SlideDriver 40, 80, 200
Behind black switch

Right: Other SlideDrivers

AWOG

NOTE: 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.
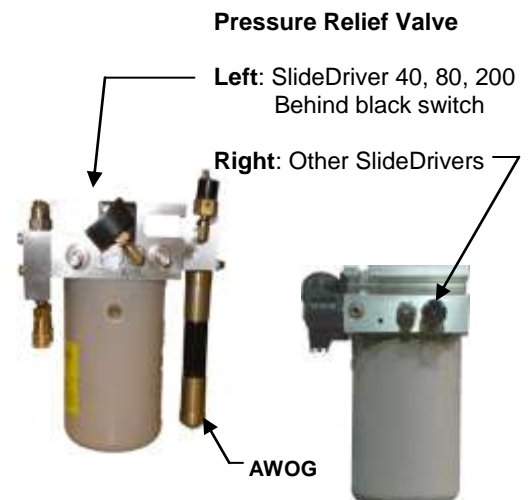
SlideDriver Operator Maintenance Schedule

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			
Stop limit switches	Check for adjustment	*4		X			
Deceleration 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 gate hardware will require more maintenance than your HySecurity operator. A damaged gate or worn hardware may cause slow or erratic operation and will result in excess drive wheel wear. Lubricate 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, drive wheel life is many years. They are designed to avoid slipping on the rail. Wheels may be greatly shortened by any of these faults: clamping spring not adjusted correctly, operator misaligned in relation to gate panel, badly warped gate panel, extremely stiff gate hardware, and/or loose wheel mounting bolts (tighten to 25 ft. lb).

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

*4. The limit switch and deceleration switch rollers should ride ¼ to ½-inch below the drive rail, near the center of the channel. Maladjustment 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 no less than 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.

Section 8 — 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. During shipment, a piece of Styrofoam is placed between the coupling nut and the chassis. If the packaging is still in place, discard it.

To disengage the drive wheels, simply pull the aluminum handle down.

DANGER: The toggle handle rapidly "pops" down as the loaded spring releases. Hold the handle appropriately so your finders do not get pinched. As the lower drive wheel drops and disengages from the drive rail, it causes the coupling nut on the threaded rod to drop to its lowest position and push on the base of the operator. This causes the upper drive wheel to lift and disengage from the drive rail.

If the drive rail was 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 ⅜" bolt so the drive wheels spread equally when the manual toggle release is fully disengaged.
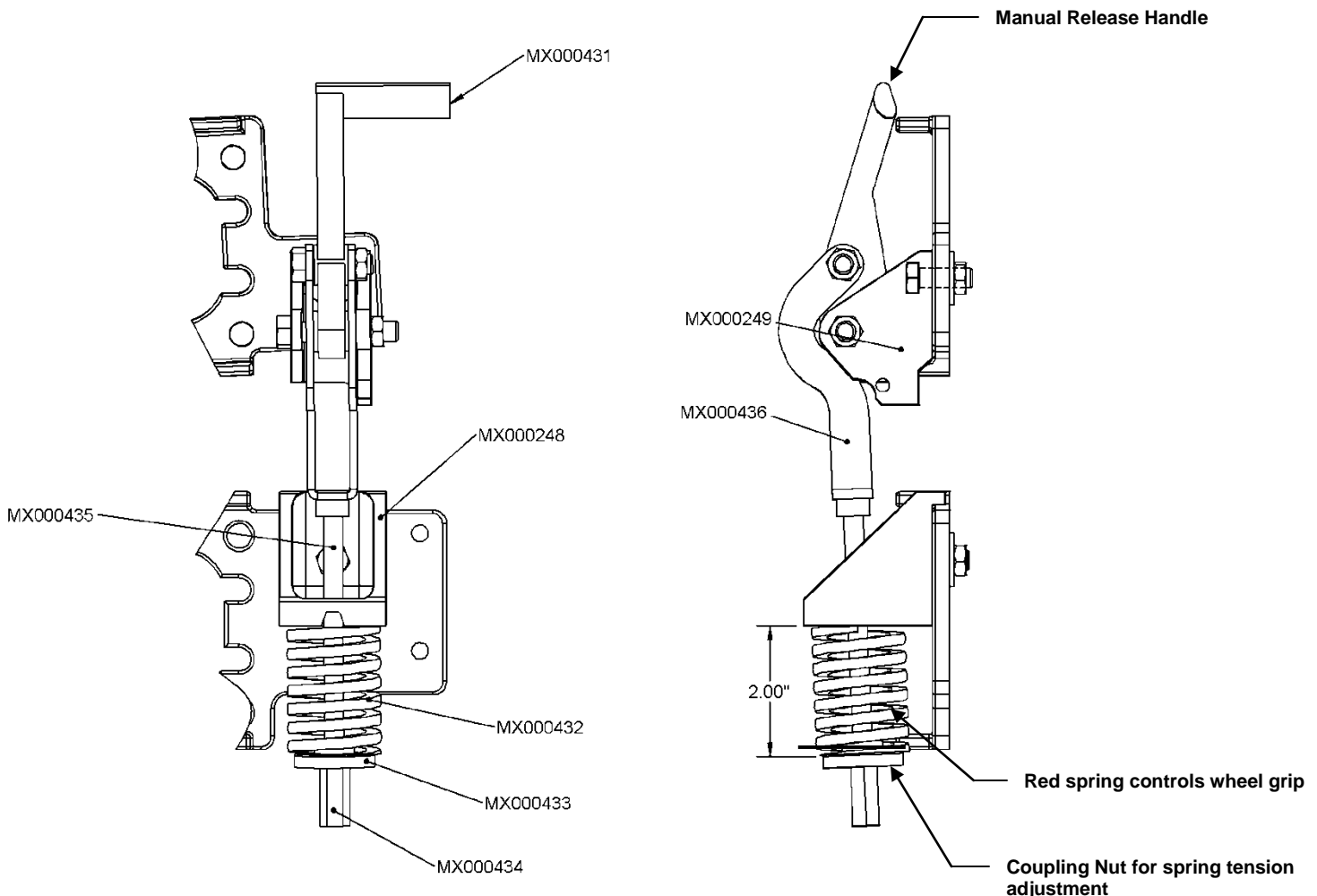
MX001103 - TOGGLE HANDLE ASSEMBLY

NOTE: The coupling nut must be adjusted correctly so the wheels provide a strong clamping force on the drive rail. The red spring should measure 2 to 2⅛-inch (5 to 5.5cm) in height when under the 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 dropped 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° F. Below 77° F, 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 and replaced every 5 years or 100,000 cycles. (Refer to the Smart Touch Controller to view log). However, in high use and/or severe duty applications, changing the brushes every 2 years of operation is recommended. The replacement maintenance interval may be adjusted based on the actual observed wear rate of the brushes. To do this, compare the length of the old brush to the replacement brush and calculate the brush life consumption. A brush has reached its useful life when it is worn to ½ its original length.

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 **Error! Bookmark not defined.** 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 Bus 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.
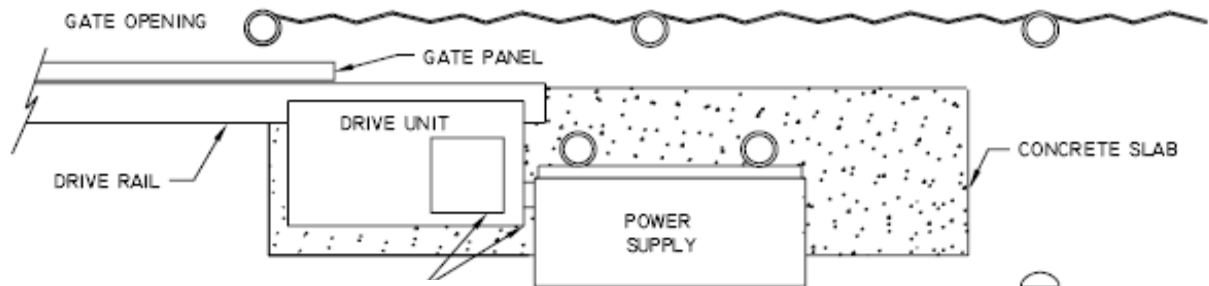
GATE OPENING

GATE PANEL

DRIVE UNIT

DRIVE RAIL

CONCRETE SLAB

POWER SUPPLY

8 x 7¼ inch electrical access
(2½ inch from corner)

PLAN VIEW

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

GATE PANEL

FENCE LINE

WHEEL COVERS

DC POWER SUPPLY

30"W X 42"H
X 12"D

OR

30"W X 30"H
X 12"D

GATE OPERATOR

26"W X 26"H
X 14½"D

PUMP AND ELECTRICAL ENCLOSURE

OFFSET 3"

1¾"
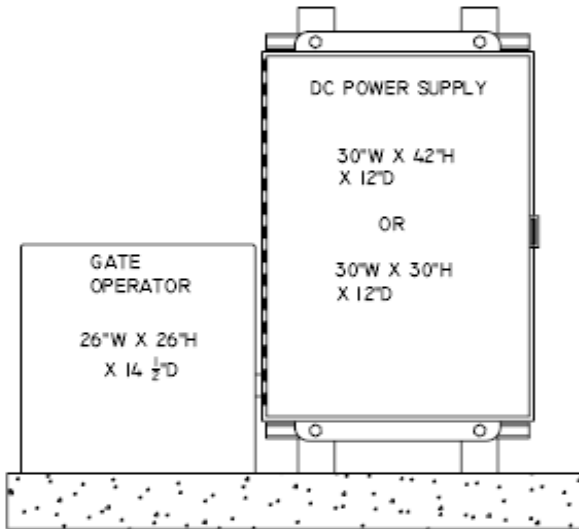
DRIVE UNIT

FRONT VIEW
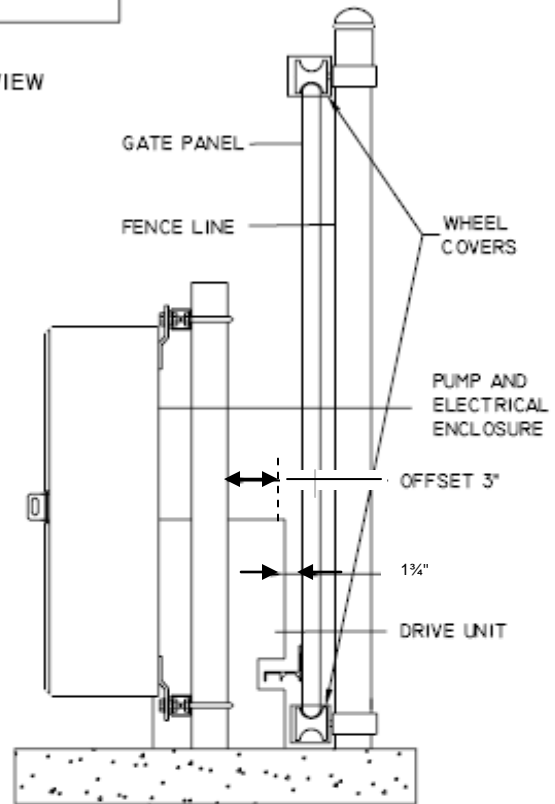
END VIEW

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
4 BATTERY, 170AH: AS SHOWN.

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 I HP MODELS
  2 GA. MINIMUM FOR 2 HP MODELS
  ADD 2 14 GA. MINIMUM IF DRIVE UNIT
  HEATER IS SUPPLIED.

TITLE	DRAWN	DATE	THIRD ANGLE PROJECTION	REV
	KERI	7/27/0	⊕	
DC REMOTE POWER PACKAGE	CHECKED	DATE	ERN NUMBER	DATE	—
	-	-	ERN000010	5/16/00	
SEATTLE, WASHINGTON	APPROVED	DATE	DRAWING NUMBER	SHT	OF
	-	-	SS20	1	1

HySecurity

Battery Connection Diagram

24 VOLT FUSE (5 AMP)

LINE VOLTAGE FUSE (15 AMP)

(-) LUG

(+) LUG

A.C.POWER

TO OPERATOR POWER SWITCH

TO SMART TOUCH CONTROLLER

ON

OFF

CHARGER

COMPLETE

IN PROGRESS

DC AMPERES

BATTERY CHARGER

FUSE

(+)

(-) 12 VOLT BATTERY (+)

(-) 12 VOLT BATTERY (+)
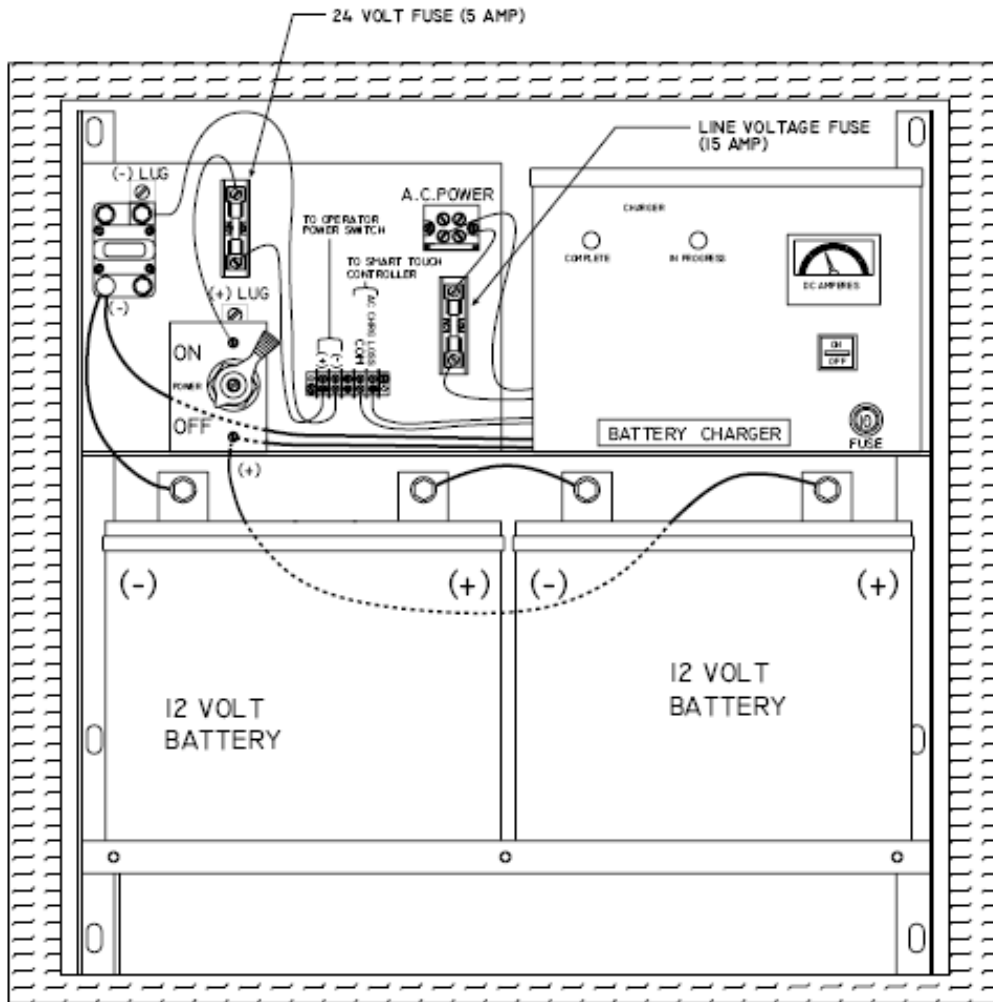
CONNECT SIX WIRES TO GATE OPERATOR AS SHOWN.

FOUR 14GA. WIRES TO CONTROL CIRCUIT
CONNECT FROM LUG
TERMINALS TO DC MOTOR:

Two 6 gauge minimum

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		DRAWN	DATE	REFERENCE RELEASE NOTICE	REV
24V 110A.H. BATTERY POWER SUPPLY FOR DC OPERATORS		CMK	28JUN01		A
		CHECKED	DATE	PART NUMBER N/A	
		APPROVED	DATE	DRAWING NUMBER: E125	SHT 1 OF 1

HySecurity

MEMBRANE SWITCH
(SEE BELOW)

OPEN LIMIT

CLOSE LIMIT

MOTOR
CAPACITOR
(1 Ø, ONLY)

END HEAD

QUICK STOP
VALVE

CHECK VALVE

DIRECTIONAL
SOLENOID
VALVE

BRAKE VALVES
(NOT ON 333MS MODEL)

NOTICE
FILL ONLY WITH HY SECURITY
EMPLOY HYDRAULIC OIL.
FOR THERMAL SERVICE
USING OTHER OILS CONSULT
OPERATOR MANUAL OIL.

MEMBRANE SWITCH

Smart Touch Controller

Open
Previous

Reset

Close
Next

Power

Stop
Select

Program

FLUID
RESERVOIR

OIL FILL PORT

HYDRAULIC
HOSES

OPTIONAL
HEATER
250W

ENCLOSURE SIZE: 42" X 30" X 12"

TITLE	DRAWN D. B.	DATE 05/08/00	THIRD ANGLE PROJECTION	REV
333MS, 333E, 333EX TYPICAL PUMP AND ELECTRICAL PANEL	CHECKED -	DATE -	ERN NUMBER -	DATE -	A
	APPROVED -	DATE -	DRAWING NUMBER: MSI2	SHT 1 OF 1

HySecurity Gate Operators
SEATTLE, WASHINGTON

HySecurity

GATE OPENING

GATE PANEL

DRIVE UNIT

DRIVE RAIL

CONCRETE SLAB

POWER SUPPLY

8 x 7¼ inch electrical access
(2½ inch from corner)

PLAN VIEW

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

GATE PANEL

FENCE LINE

WHEEL COVERS

PUMP AND ELEC. ENCLOSURE

30"W X 42"H
X 12"D

PUMP AND ELECTRICAL ENCLOSURE

OFFSET 3"

DRIVE UNIT

26"W X 26"H
X 14 ½"D

DRIVE UNIT

FRONT VIEW

END VIEW

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 AND
HYDRAULIC HOSES.

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.

TITLE		DRAWN	DATE	THIRD ANGLE PROJECTION		REV
		KERI	7/27/0			—
333 MODULAR SLIDE GATE OPERATOR		CHECKED	DATE	ERN NUMBER	DATE	
		-		ERN000010	5/16/00	
SEATTLE, WASHINGTON		APPROVED	DATE	DRAWING NUMBER	SHT	OF
		-	-	MS14	1	1

HySecurity

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 startup, will prevent the motor from attaining its rated horsepower. The percentage of horsepower lost is far greater than the percentage of 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 lost performance resulting from undersized wires, except to replace them; Choose a sufficient wire size at initial installation to avoid costly rewiring.

Ground lug

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. A 20A circuit (protected with a 20A Inverse Time Breaker) should be provided, at minimum.
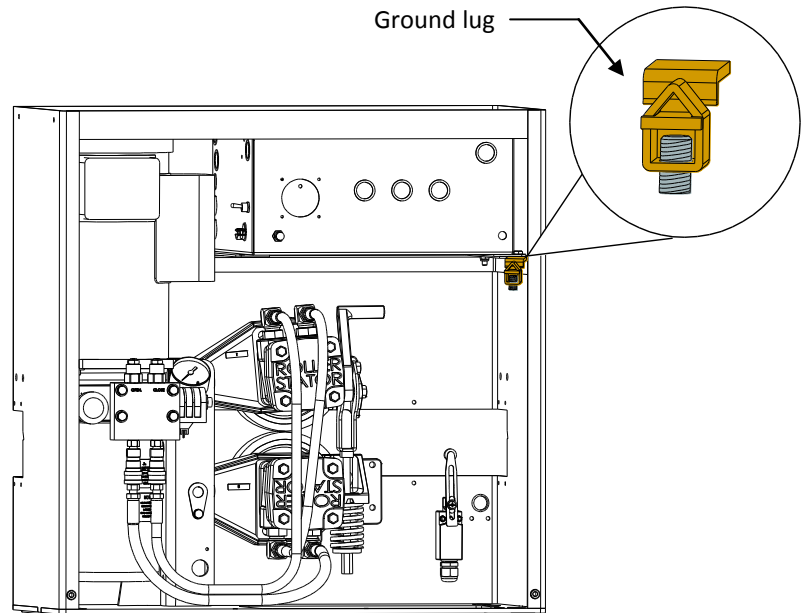
Always connect electrical power and ground the operator in accordance with the National Electrical Code, article's 430 and 250 plus other local codes that may apply. For your convenience, a ground lug is mounted on the operator. Use the ground lug to fastener the ground wire to the operator's chassis. See the illustration.

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 controls:

Wire Size	Maximum Distance
18 ga	7.0 miles (11km)
20 ga	3.5 miles (5.6km)
22 ga	2.7 miles (4.3km)
24 ga	2.0 miles (3.2km)
26 ga	1.0 mile (1.6km)
28 ga	3700 feet (1.1km)

WIRE CHART

Distances allowed (in feet) for specific power wire sizes.

SINGLE PHASE

Amps	10.0	11.6	14.4	27.2	NA	NA
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	115V Single Phase					
12 gauge	90	75	60	30		
10 gauge	140	120	100	50		
8 gauge	220	190	155	80		
6 gauge	350	300	245	130		
4 gauge	555	480	385	205		
2 gauge	890	765	620	330		

Amps	5.5	6.1	7.6	14.2	16.2	NA
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	208V Single Phase					
12 gauge	290	260	205	110	100	
10 gauge	460	415	330	175	155	
8 gauge	725	650	525	280	245	
6 gauge	1,150	1,040	835	445	390	
4 gauge	1,825	1,645	1,320	710	620	
2 gauge	2,920	2,630	2,110	1,130	1,000	

Amps	5.0	5.8	7.2	13.6	14.8	27.0
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	230V Single Phase					
12 gauge	350	300	245	130	120	65
10 gauge	560	480	385	205	190	105
8 gauge	880	760	610	325	300	165
6 gauge	1,400	1,120	975	515	475	260
4 gauge	2,220	1,915	1,550	815	750	410
2 gauge	3,550	3,060	2,465	1,305	1,200	660

Distances allowed (in feet) for specific power wire sizes.

THREE PHASE

Amps	2.7	3.1	4.2	6.5	6.7	16
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	208V Three Phase					
12 gauge	590	510	375	245	235	100
10 gauge	930	810	600	390	375	160
8 gauge	1,475	1,285	950	615	595	250
6 gauge	2,350	2,045	1,510	975	945	400
4 gauge	3,720	3,240	2,390	1,545	1,500	630

Amps	2.4	3.0	3.8	6.2	6.4	15.4
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	230V Three Phase					
12 gauge	730	585	460	280	270	115
10 gauge	1,160	930	730	450	435	180
8 gauge	1,835	1,470	1,160	710	690	285
6 gauge	2,925	2,340	1,845	1,130	1,095	455
4 gauge	4,625	3,700	2,920	1,790	1,735	720

Amps	1.2	1.5	1.9	3.1	3.2	7.7
Horsepower	½ hp	¾ hp	1 hp	2 hp	3 hp	5 hp
	460V Three Phase					
12 gauge	2,915	2,350	1,850	1,130	1,100	455
10 gauge	4,640	3,710	2,930	1,800	1,740	725
8 gauge	7,340	5,870	4,650	2,840	2,750	1,150
6 gauge	11,700	9,350	7,400	4,500	4,400	1,800
4 gauge	18,500	14,800	11,700	7,200	7,000	2,900

NOTE: Always connect power wires in accordance with the National Electric Code, Article 430 and comply with all local government codes and regulations.

43.125"

NINE SLOTS 3/4 X 2 TYP

43.0"

2.00"

8.00"

5.00"

14.5"

8.00"

6.50"

2.00"

1.25

10.0"

OPERATOR FOOTPRINT

1.25"

10.0"

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

CHASSIS HEIGHT = 43.125"

SECTION THRU GATE
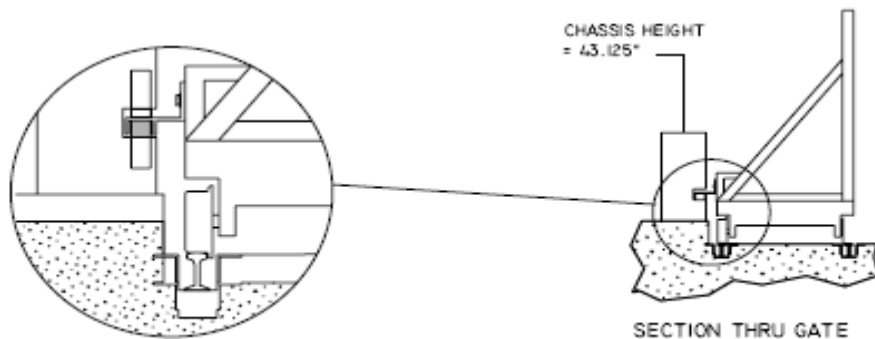
NOTES:

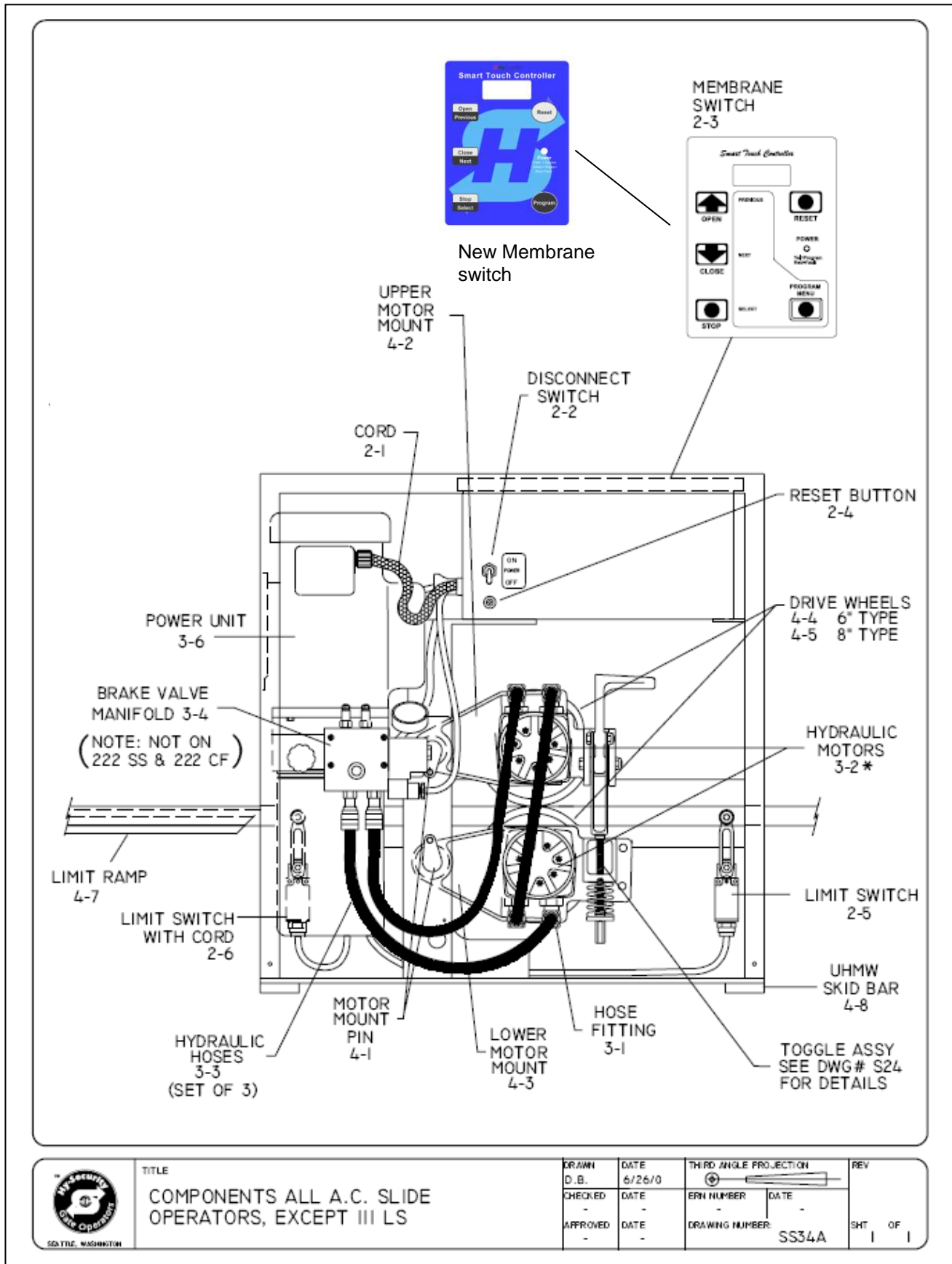IF GATE PANEL IS BOWED, SHIM RAIL FOR EVEN TRAVEL THROUGH GATE OPERATOR.

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

New Membrane switch

MEMBRANE
SWITCH
2-3

UPPER
MOTOR
MOUNT
4-2

DISCONNECT
SWITCH
2-2

CORD
2-1

RESET BUTTON
2-4

POWER UNIT
3-6

DRIVE WHEELS
4-4 6" TYPE
4-5 8" TYPE

BRAKE VALVE
MANIFOLD 3-4
(NOTE: NOT ON
222 SS & 222 CF)

HYDRAULIC
MOTORS
3-2 *

LIMIT RAMP
4-7

LIMIT SWITCH
WITH CORD
2-6

LIMIT SWITCH
2-5

UHMW
SKID BAR
4-8

MOTOR
MOUNT
PIN
4-1

HOSE
FITTING
3-1

HYDRAULIC
HOSES
3-3
(SET OF 3)

LOWER
MOTOR
MOUNT
4-3

TOGGLE ASSY
SEE DWG# S24
FOR DETAILS

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 I OF I

SEATTLE, WASHINGTON

MX000431

MX000248

MX000801

MX000432

MX000433

MX000805

MX000249

MX000436

2.00"
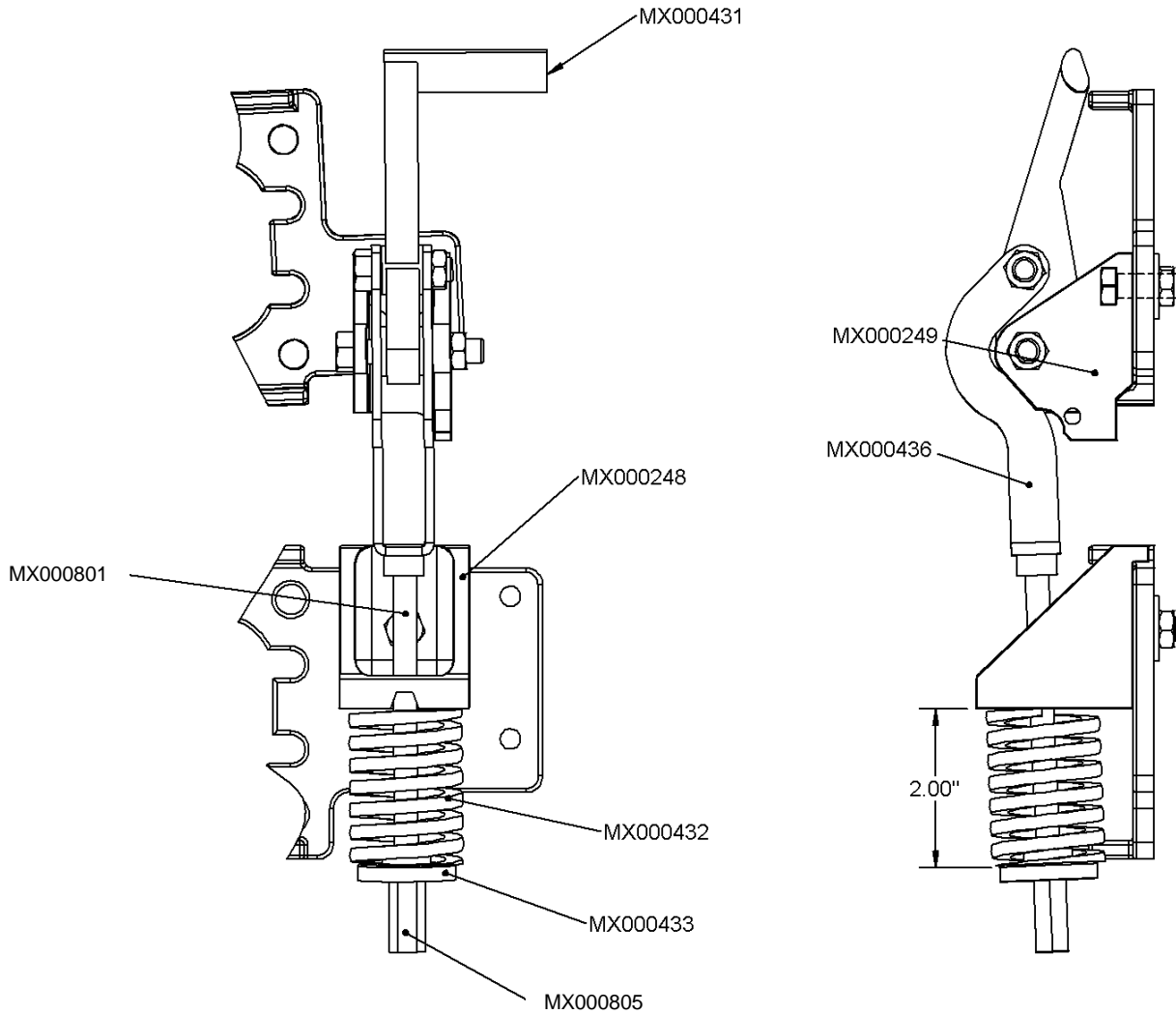
MX001103 - TOGGLE HANDLE ASSEMBLY

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

Appendix — Exploded Parts Breakout

Inherent Sensor
MX000091

DOWNWARD FACING AWOG (New standard design as of May 2008)

Power Units are Detailed by Operator Series on next two pages

UPWARD FACING AWOG (No longer in Production as of May 2008)

POWER SWITCH - MX000715

TRANSFORMER   60HZ - MX000486
50HZ - MX001249

Electric Motor

POWER SUPPLY BOARD
AC INPUT - MX000487
DC INPUT - MX000369

DISPLAY BOARD - MX000678
KEYPAD – MX000343

BUZZER - MX001036

"E" Manifold

MX000146

Pressure Gauge

CONTROLLER BOARD
NEW GEN –
MX000585-1AC, 2DC
or

CLASSIC
MX000342R SA or SD

Box Detector

"PLUG-IN" VEHICLE
DETECTOR – HY5A
MX000041

Heater Location
(Optional)

MOTOR MOUNT ARM
MX000387 TOP
MX000386 B
MX001104 KIT

DRIVE WHEELS 8"
MX000690

DRIVE WHEELS 6"
MX000689

LIMIT SWITCHES
MX000672

MOTOR MOUNT PIN
MX001105

TOGGLE ASSEMBLY
MX001103

HYDRAULIC MOTOR
X1, 444: MX001143
SS, E, EX: MX001149

HYDRAULIC HOSE KIT (3)
MX001129

REPLACEMENT CHASSIS
MX000496

Transformer

HY-5A

HY-5A

Power Supply

HY-5A

Contactor

HY-5A

Smart Touch Controller

Reset switch

Power switch

Smart Touch Controller

Open
Previous

Reset

Close
Next

Power

Stop
Select

Program

New Membrane switch
(keypad)

Pump Pack: Diagram

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

Motor Starting Kit

Contactor, Mercury

Motor, Electric, AC

or

Motor, Electric, DC

Inherent Sensor

Valve, Relief

Coupler, Motor

Valve Coil, Quick Stop

Valve, Quick Stop

Breather Cap

Gauge, Pressure

Valve, Check, Endhead Main

Valve, Braking

Valve, 2 Position Directional

Valve Coil, Directional

Manifold, Braking Kit

Quick Disconnect, Plug
Quick Disconnect, Socket

Reservoir

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

Part Name	Part Number	SlideDriver Models (current)
Breather Cap	MX000686	all
Contactor, 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.		

Pump Pack: Diagram

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

Motor Starting Kit
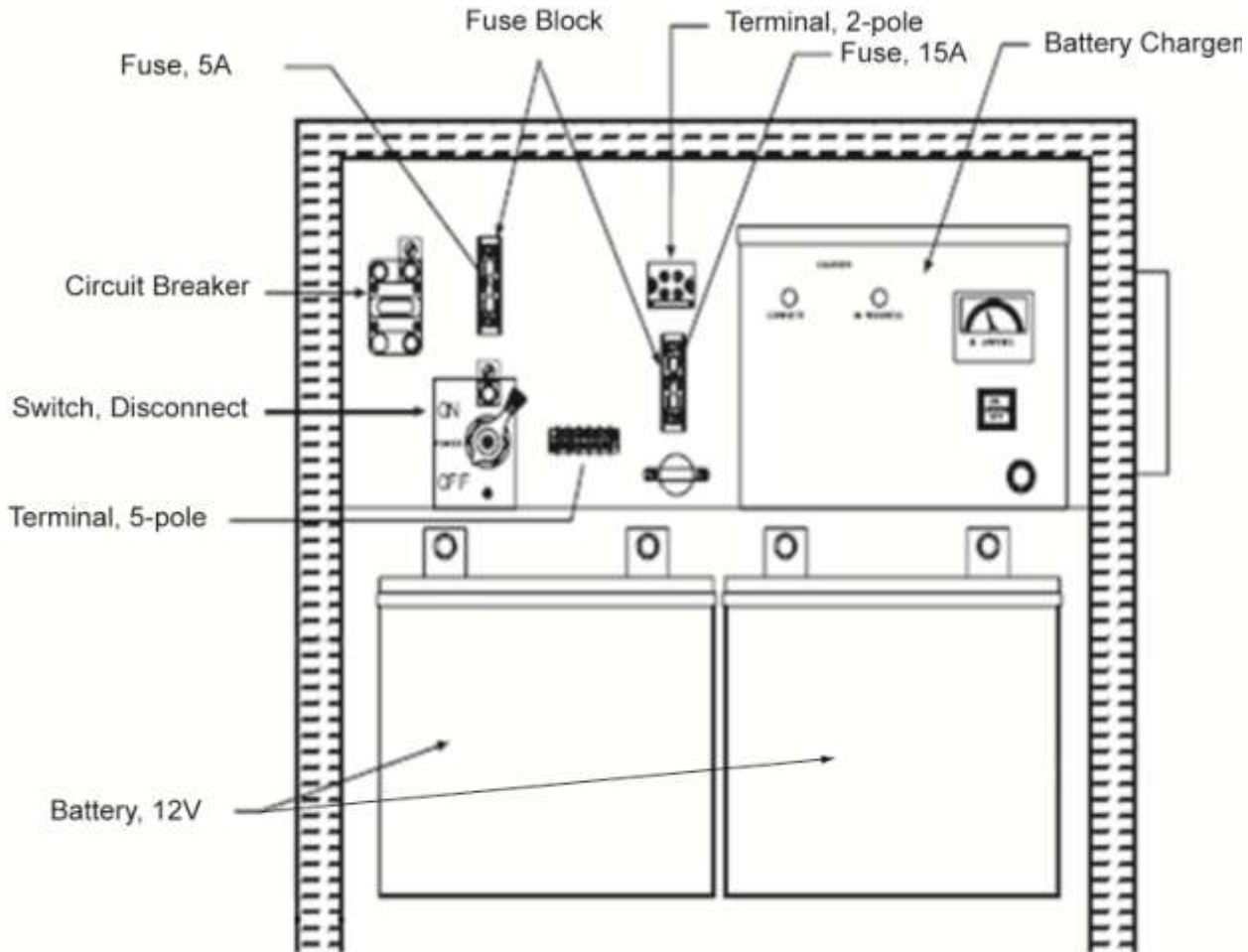
Contactor, Mercury

Motor, Electric 24 VDC

Motor, Electric, AC

or

Valve, Relief

Inherent Sensor

Manifold, Soft Start Kit

Coupler, Motor

Hose Assembly, AWOG

Valve Coil, Quick Stop

Valve, Quick Stop

Breather Cap

Gauge, Pressure

Valve, Braking

Valve, Check, Endhead Main

Manifold, Braking Kit

Valve, 2 Position Directional

Valve Coil, Directional

Quick Disconnect, Plug
Quick Disconnect, Socket

Reservoir

HySecurity
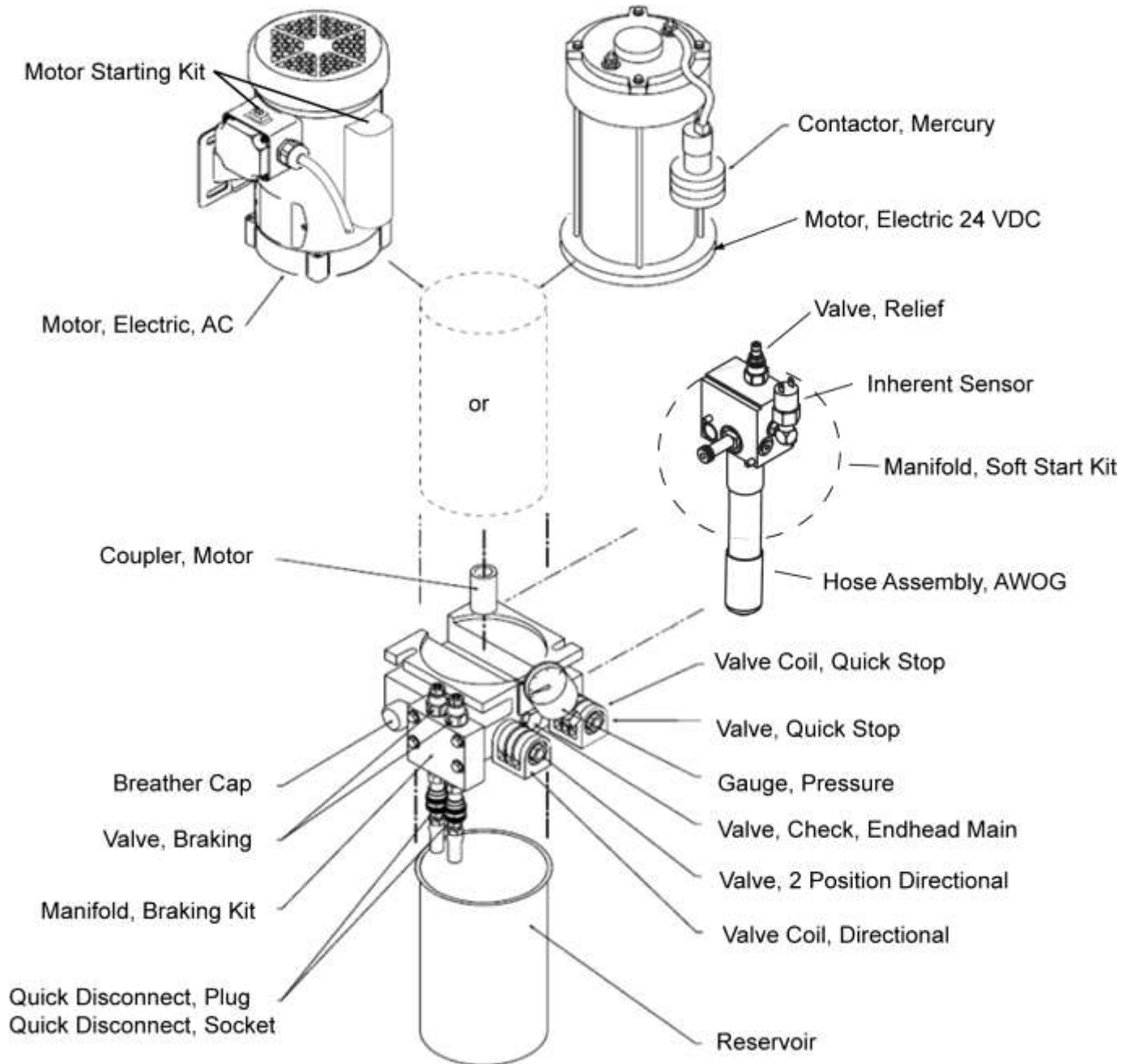
Appendix — Pump Pack: Parts Names and Numbers

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

Part Name	Part Number	SlideDriver Models (current)
Breather Cap	MX000686	all
Contactor, Mercury	MX001098	all DC
Coupler, Motor, 5/8" Shaft	MX001650	all
Gauge, Pressure, 2000 PSI, Kit	MX001106	all
Hose Assembly, Face Down AWOG	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 AWOG	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)

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)

Call for 50Hz motors and pump packs.

Appendix — 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.		

HySecurity
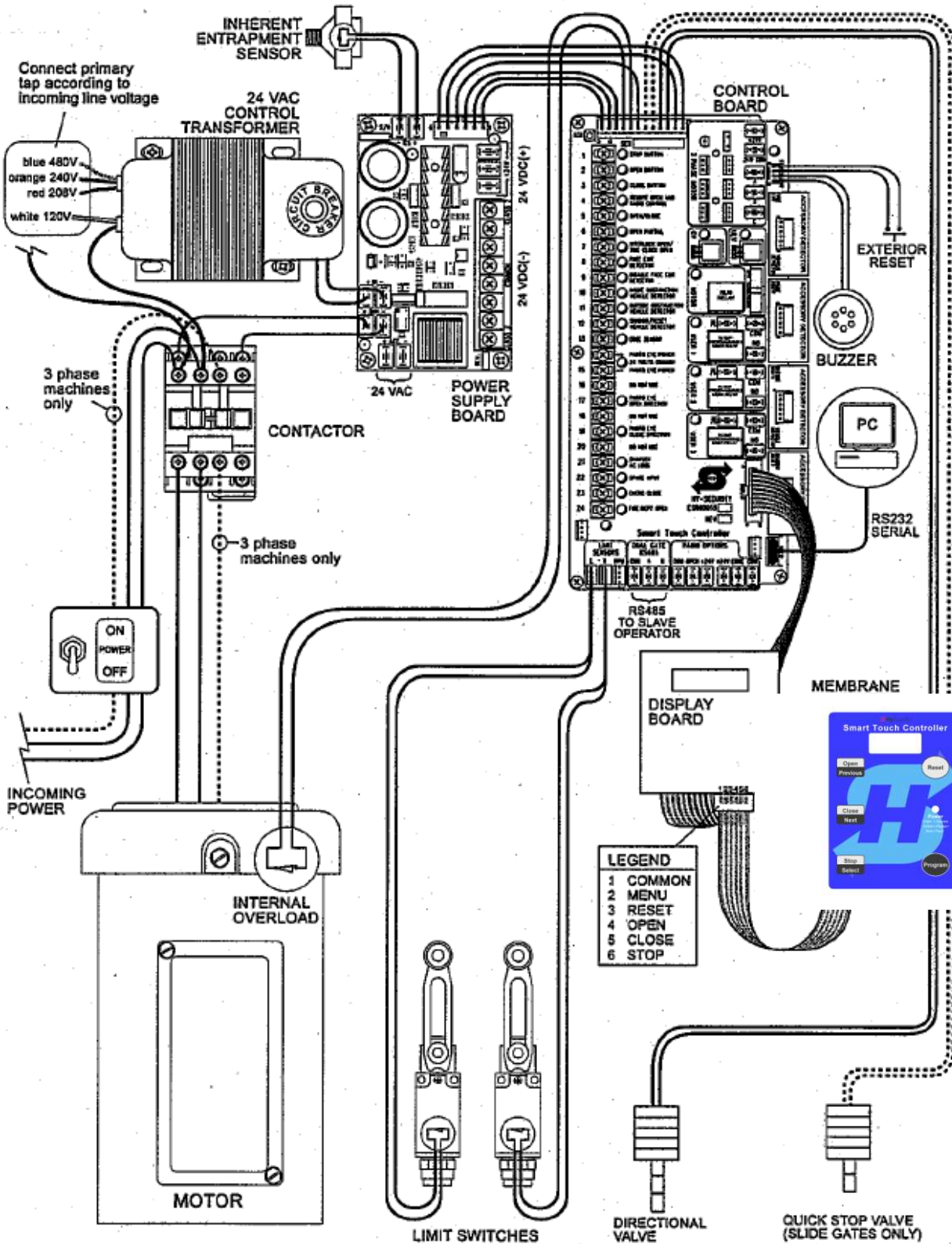
New Membrane switch

NOTE: Instructions written for installing wheels with retaining collars. For wheels without collars skip steps 2, 6, 7 and 12. These instructions are relevant for both the standard wheels and the optional traction "ice" wheels.

1. Remove drive wheel assembly from SlideDriver.

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

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

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

HySecurity

5. Locate the 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. Make 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 a mallet.


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

9. TIGHTEN BOLT TO APPROXIMATELY 35 – 50*lb.

10. Use a 3/16-inch Allen wrench to tighten the two bolts securely. Be sure the collar is seated against the back of the wheel hub, with the collar splits between the wheel hub splits.

   NOTE: If the collar is not fully seated against the wheel, it may contact the motor mounting bolts during operation.)
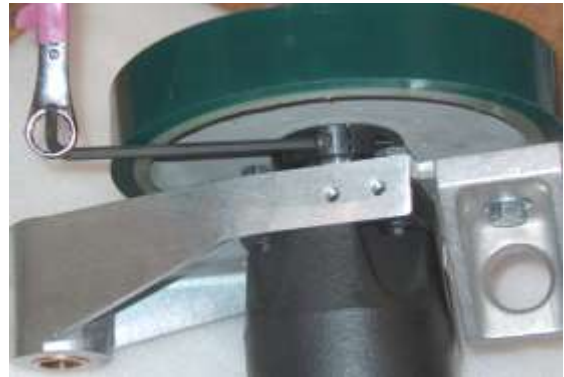
11. Re-install the drive wheel assembly in the operator.

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 the extent that such rights are assignable—to Buyer.

The following additional durational warranties apply to HySecurity's products. *The term of these additional warranties is determined by whether (1) the product is purchased through an authorized HySecurity distributor and (2) whether a timely and complete warranty registration is submitted to HySecurity.* **It is therefore important that you register your product with HySecurity within the 60 day period described below.**

1(a) Five Year / Seven Year Warranty Items (Registered Gate Operators Purchased from Authorized Distributors)

For any gate operator product that is purchased from an authorized HySecurity distributor (this excludes product purchased through internet resellers or any distributor not authorized by HySecurity), if the online Warranty registration is completed at www.hysecurity.com/warranty within 60 days of the date of purchase by the dealer/installer or if the warranty registration form sent with every HySecurity gate operator is completely filled out and returned to HySecurity within the same 60-day period, the following Warranty terms will apply: HySecurity will warrant that the product will remain serviceable for the following periods:

a. Hydraulic Gate Operators: Five Years or 500,000 gate cycles (whichever occurs first) after the date of installation, or
b. Electromechanical operators: Five Years after the date of installation—unless installed in a single family residential application, in which case the warranty term shall be Seven Years after the date the product is shipped from HySecurity; *provided that* the Five Year warranty period will not extend beyond Seven Years from the date that the product was shipped from HySecurity. This warranty does not apply to the components described below, which have the shorter warranty period indicated:
c. Hydraulic Gate Operator Drive Wheels: Two Years from date of installation.
d. Batteries used in all D.C. operators: One Year from date of shipment from HySecurity.
e. Items subject to normal wear including, but not limited to, chains, belts, idler wheels, sprockets, fuses and motor brushes: One Year from date of installation.

1(b) One Year Warranty Items (Operators Not Purchased from an Authorized Distributor or Registered within 60 Days)

For any gate operator product that is not purchased from an authorized HySecurity distributor or for which the online Warranty registration or warranty registration form sent with every HySecurity operator was not filled out completely or not returned to HySecurity within 60 days of the date of purchase by the dealer/installer, the following One-Year Warranty will apply to that product: HySecurity warrants that the product will remain serviceable for the following periods, which begin on the date that the product was shipped from HySecurity:

a. All Gate Operators: One Year or 100,000 gate cycles whichever comes first.
b. Hydraulic Gate Operator Drive Wheels: One Year

1(c)   Replacement Parts

HySecurity warrants that replacement parts (whether new or reconditioned) will remain serviceable for One Year from the date that the product was shipped from HySecurity.

1(d) Limitations and Exclusions Applicable to Each of the Preceding Warranties

The preceding warranties shall not apply to equipment that has been (1) installed or maintained improperly or 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 or extraordinary use or abuse. 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 protective devices or sensors).

THESE ARE THE ONLY WARRANTIES GIVEN BY HYSECURITY AND ARE IN PLACE OF ALL OTHERS.

These warranties extend to HySecurity's Distributors, to the Dealer/Installer, and to the First User of the product following installation. They do not extend to subsequent purchasers. Dealer/Installers or First Users may receive a replacement HySecurity Warranty form by calling HySecurity at 800-321-9947.

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, COURSE OF PERFORMANCE, 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 and order replacement parts from the Distributor through which the product was purchased 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, 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 price upon return of the nonconforming items. Replacement goods will conform to this warranty for the unexpired duration of the warranty period for the original, nonconforming product. HySecurity reserves the right to supply used or reconditioned 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. IN NO EVENT SHALL HYSECURITY BE OBLIGATED TO INDEMNIFY 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.

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. This exclusion does not apply to claims for bodily injury or death.

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.