HySecurity

Simple. Reliable. Secure.®

HSG 600

Relay Manual

DISCLAIMER

HySecurity relay-controlled hydraulic gate operators do not meet current UL 325 Safety Standards and that HySecurity recommends decommission and replacement of all manufacturers' relay-controlled operators with modern Smart Touch™ based operators, which fully comply with UL 325 safety standards. By downloading and using this document you acknowledge that HySecurity no longer provides parts or technical support for those older operators.

Note

HySecurity accepts no responsibility, implied or expressed, for claims arising from continued use of pre-2001 relay-controlled operators.

VS HSG 600 SLIDING GATE OPERATOR

(VARIABLE SPEED)

MANUFACTURED BY:

HY-SECURITY GATE OPERATORS

408 North 35th
P.O. Box 31532
Seattle, Washington 98103

FAX: 206-632-1314 1-800-321-9947 (206) 632-0538

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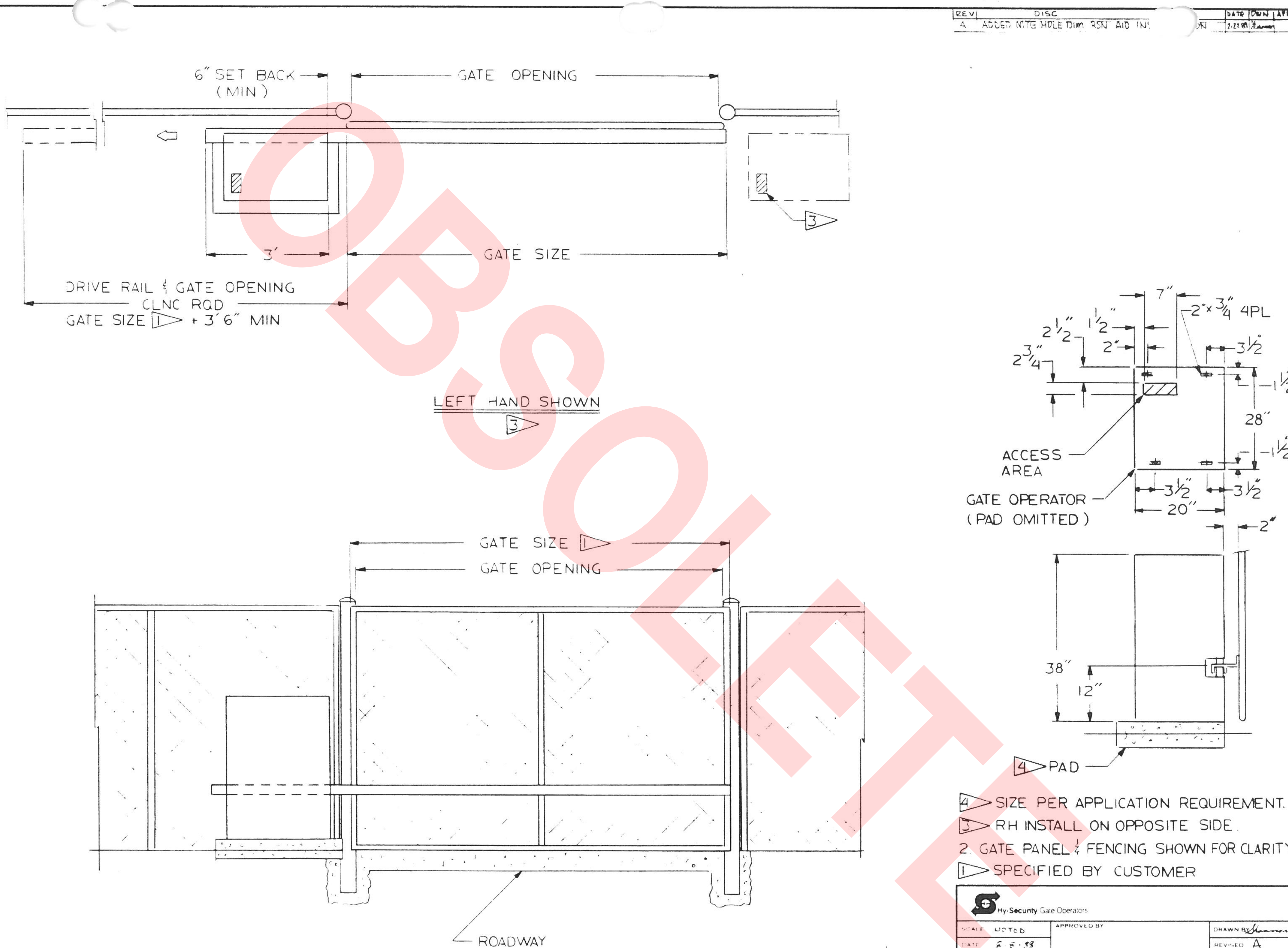


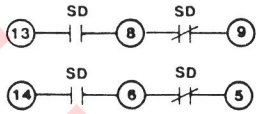
Hy-Security Gate Operators

SCALE: NOTED	APPROVED BY	DRAWN BY: [signature]
DATE: 6-6-88		REVISED: A
		TOL ± 1/4"
SLIDE GATE OPERATOR		DRAWING NUMBER: VS12A

A TIME DELAY TO CLOSE

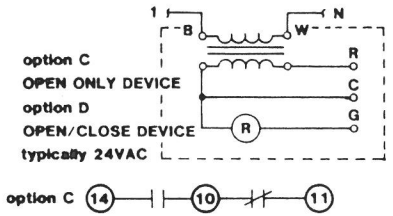
TO CLOSE GATE FROM ANY POSITION, TIMER BEGINS COUNT WHEN GATE STOPS MOVING OPEN. MOUNT MODULE ON THE LEFT SIDE OF RELAY RO AND CONNECT THE UNUSED WIRES LABELED #5 AND #8 TO THE TIMER. BE CERTAIN THAT THE JUMPER BETWEEN #5 AND #6 IS INSTALLED UNLESS IT IS REPLACED BY A SAFETY DEVICE, WHICH WE RECOMMEND FOR SAFE OPERATION. THE JUMPER BETWEEN #7 AND #8 MUST ALSO BE PRESENT FOR PROPER OPERATION.

B SAFETY DEVICE

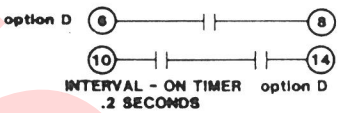


A SAFETY DEVICE SUCH AS A LOOP DETECTOR OR PHOTO EYE MAY BE USED TO CREATE SAFE GATE OPERATION. TWO CONNECTIONS ARE POSSIBLE. USE TERMINALS #8, #9 AND #13 FOR MAXIMUM SECURITY: TRIPPING SAFETY DEVICE WILL PREVENT CLOSURE OF GATE OR REVERSAL IF GATE IS CLOSING, BUT WILL NOT RENEW A TIMER COUNT WHILE GATE IS OPEN. USE TERMINALS #5, #6 AND #14 IF SAFEST OPERATION IS DESIRED. THE GATE WILL REVERSE DURING CLOSURE AND ADDITIONALLY THIS CONNECTION WILL ALLOW THE TIMER COUNT TO BE RESET EACH TIME SAFETY IS TRIPPED. BE CERTAIN THE JUMPER #5 TO #6 OR #8 TO #9 IS REMOVED ACCORDING TO WHICH CONNECTION IS USED.

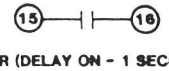
C/D OPEN & OPEN/CLOSE DEVICE



A LOW VOLTAGE INTERFACE FOR USE WITH A RADIO RECEIVER OR A CARD READER. AS OPTION C, CONTROL IS ONE BUTTON OPEN ONLY. AS OPTION D, CONTROL IS ONE BUTTON OPEN AND CLOSE, ONLY WHEN GATE IS FULLY OPEN. IF WIRING IS OPTION C, REMOVE JUMPER #10 TO #11. OPTION D MUST BE ORDERED FROM THE FACTORY.

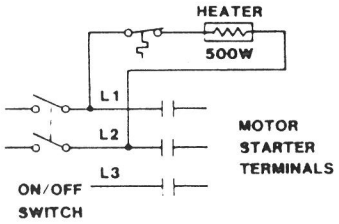


E 'E' TYPE OPERATOR



A TIMER MAY BE CONNECTED IN SERIES WITH THE OPEN VALVE AS PART OF SEVERAL FACTORY MODIFICATIONS NECESSARY TO CONVERT OPERATORS TO SUFFIX 'E' TYPE. THE JUMPER BETWEEN #15 AND #16 IS REMOVED FOR THIS PURPOSE.

F HEATER

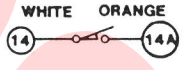


IN COLDER CLIMATES, WE RECOMMEND A HEATER BE INSTALLED TO KEEP THE HYDRAULIC COMPONENTS AT LEAST 0° F. USE A HEATER RATED FOR THE SUPPLIED VOLTAGE. CONNECT TO TERMINALS L1 AND L2 OF THE MOTOR STARTER. ON 480 VAC SYSTEMS, USE L1 AND A NEUTRAL WITH A 277 VAC HEATER OR A SEPARATE POWER SOURCE.

G FREE DETECTOR

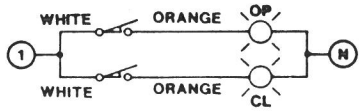
A DEVICE SUCH AS A LOOP DETECTOR MAY BE ADDED FOR FREE GATE OPENING, USUALLY FOR EXITING. WIRE AS SHOWN AND BE CERTAIN THAT THE JUMPER BETWEEN #14 AND #13 IS REMOVED FOR CORRECT OPERATION.

H ELECTRICAL INTERLOCK



IF TWO HY-SECURITY MACHINES ARE TO BE INTERLOCKED, REMOVE THE JUMPER BETWEEN #14 AND #14A AND CONNECT THE CLOSE LIMIT SWITCH NORMALLY OPEN PAIR OF WIRES (ORANGE AND WHITE) IN SECOND OPERATOR TO THESE TERMINALS. SEE NOTE #7 ON ELECTRICAL CIRCUIT. ON HVG GATES, THE NORMALLY OPEN CONTACT IS NOT AVAILABLE AND WILL REQUIRE A SECOND STACKED LIMIT SWITCH TO ACHIEVE THIS FUNCTION.

POSITION INDICATOR LIGHT

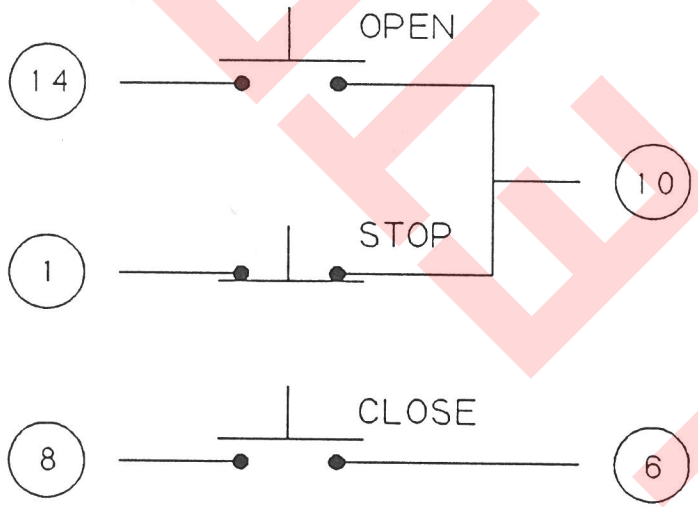


SWITCHING FOR FULL OPEN OR CLOSE INDICATION LIGHTS IS AVAILABLE BY USING THE NORMALLY OPEN CONTACTS OF THE OPEN AND CLOSE LIMIT SWITCHES. SEE NOTE #7 ON THE ELECTRICAL CIRCUIT. FOR 120VAC INDICATOR LIGHTS CONNECT THE WHITE WIRES TO TERMINAL #1. CONNECT THE ORANGE WIRE FROM EACH LIMIT SWITCH TO THE CORRESPONDING INDICATOR LIGHT. WIRE THE NEUTRAL TO POSITION 'N' ON THE TERMINAL STRIP.

ELECTRICAL CIRCUIT OPTIONS

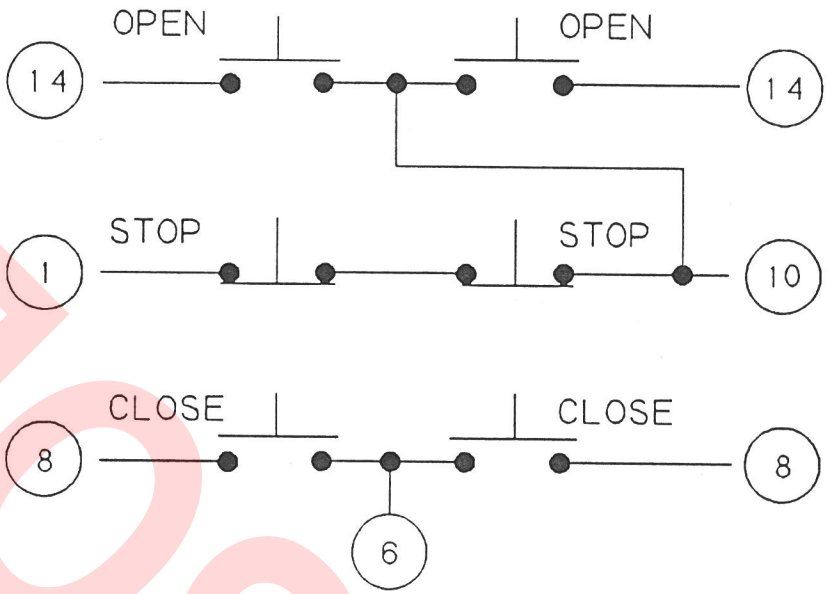
(NOTED AS DASHED WIRING ON THE ELECTRICAL CIRCUIT SCHEMATIC)

Hy-Security Gate Operators
Manufacturers and Designers of Hydraulic Systems
P.O. Box 31532 408 N. 35th, Seattle, WA 98103 Phone (206) 632-0538



Single Pushbutton Station

A



Multiple Pushbutton Stations

B

NOTE:

SINGLE BUTTON STATIONS REQUIRE FIVE CONDUCTORS.

MULTIPLE BUTTON STATIONS REQUIRE SIX CONDUCTORS EACH.

HY-SECURITY GATE OPERATORS	
STANDARD PUSHBUTTON WIRING	
DATE 8/2/89	DWG # E 15

VSHSG 600 HIGH SPEED GATE OPERATOR OPERATION SEQUENCE

OPENING

The gate may be started open from any position in its travel, other than full open. Upon initiation, (closure of a contact capable of switching 120 volts, or alternatly a 24 volt circuit is available) the operator will start the gate in the open direction. If the starting position of the gate was other than fully closed, the operator will limit travel to a slow rate of speed. If the gate was fully closed, the operator will rapidly accelerate the gate up to the preset speed, six feet per second maximum. Approximatly three feet from full open the gate will begin rapid deceleration, then stop when the open limit switch is tripped. Any number of opening devices may be wired in parallel to operate the gate. Common open devices include: Push Buttons, Card Readers, Vehicle Detectors and Radio Receivers.

STOP

The gate can be stopped at any time during its travel by depressing the Stop Button. After the gate has stopped, either at full open or at some point in transit, the time delay to close begins its count. The timer will be renewed if a vehicle enters on to any of the detector loops or if the photo eye is tripped. A contact closure to the 24 volt interface (option C, open device) will also renew the timer count. When the preset time count is reached the gate will start closed.

CLOSING

The operator may be actuated to close the gate, by the Close Button, at any time the gate is stopped in a position other than fully closed. Also, a timer can be set to initiate closure after a specified delay. If the gate was fully open, when signaled to close, the operator will rapidly accelerate the gate to the preset speed. Approximatly three feet from fully closed, the gate will begin rapid deceleration, then stop when the close limit is tripped. If the gate was not fully open, when signalled to close, the speed will be limited to approximatly one foot per second.

VS14a,b

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408 North 35th Street P. O. Box 31532 Seattle, Washington 98103 (206) 632-0538

VSHSG 600 HIGH SPEED GATE OPERATOR OPERATION SEQUENCE CONT.

SAFETY

The circuits that allow for safe operation at high speed have been carefully considered to balance adequate safety coverage against security requirements. There is some flexibility in the circuit setup during installation, but our specified minimum safety requirements must be met. Review the section of the VSHSG 600 specifications sheet titled MANDATORY SAFETY DEVICES. The minimum safety circuits function as follows:

1. The gate will not be allowed to accelerate to its maximum speed unless it is started from the full open or fully closed position.

2. The timer to close the gate will be reset each time that a safety device (detector or photo eye) is tripped, thus the delay before closure begins when the area protected is clear of vehicles or personnel.

3. When the gate is closing, the Open push button, photo eye and free exit loop detector must have the ability to stop and reverse the gate to the full open position. The gate will travel between two and three feet, to decelerate, before reversing to the open direction.

4. When the gate is closing, the Stop button and the outside safety loop detector must have the ability to stop the gate. The safety loop detector is usually connected to also reverse the gate to full open, but sometimes this feature is omitted because of security requirements.

5. The gate operator will not accept a Close command, when it is opening, without first pressing the Stop button.

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INSTALLATION INSTRUCTIONS FOR HIGH SPEED GATE OPERATOR

1. PERMANENT WIRING shall be employed. Run wire in conduit and connect to power disconnect switch through bottom knock-out access. Disconnect switch is located on the outside of the electrical J.I.C. box.

   NOTE 1: Proper grounding is required and grounding point is located in disconnect switch enclosure.

   NOTE 2: Before servicing or opening J.I.C. box, turn off power by pushing switch to "off".

2. AUTOMATIC OPERATION: Reversing device shall be used. One photo eye and 2 detector loops, minimum.

3. Locate operator on pad with clearance of 2-1/4" to gate.

4. Mount operator to concrete pad with at least 3 anchor bolts.

5. Connect appropriate power and control wiring. 10 gauge power wires minimum.

6. If three button push button station is not used, install jumper #1 to #10 or operator will not function.

7. Remove shipping plug in pump tank by unbolting filler cap, removing barrier and refitting filler.

8. Run operator and verify correct functioning. Be certain that the operator is not connected to the gate before performing this test.

9. If motor runs, but nothing moves, close by-pass valve located near the electric directional valve or reverse two poles of a three phase power source. Check to be sure that there is control circuit power and that no fuses are blown. Remember also that detectors are "tripped" when they are not connected to a loop or properly tuned, therefore the close direction may not function.

10. Install rail on fence to specified height. Be sure that rail maintains consistant height in relation to the operator wheels throughout the travel of the gate (This is not necessarily level or parallel with bottom frame of gate because of levelness of roadway or gate track).

11. Adjust scissors mechanism of operator to properly match with the drive rail height. Adjust first using lowest nut to raise or lower scissors mechanism, then lock in place with double nut. It is imperative to tighten the lower wheel firmly against the drive rail. Adjust until either the gate begins to lift slightly, or on heavier gates, until the drive rail deflects.

HIGH SPEED HYDRAULIC GATE OPERATOR MAINTENANCE

1. HYDRAULIC SYSTEM:

FLUID LEVEL. Under normal conditions, hydraulic systems do not consume oil. Before adding any oil, check the system throughly for leaks. The minimum oil level is three fourth's full. Do not fill more than one inch from top of the tank. WE RECOMMEND FORD TYPE F TRANSMISSION FLUID Most petroleum based hydraulic oil, or 5W30 non-detergent motor oil may be used. DO NOT USE BRAKE FLUID! The oil must be finely filtered, any particles larger than five microns could cause problems.

In severe cold weather, operation may be slow; this can be corrected by one or more of the following: 1. Maintain some heat in the pump cabinet. 2. Wrap hydraulic lines and motors with heat tape. 3. Call factory about alternate oils or additives.

OIL CHANGE. Unlike gasoline engines, hydraulic systems do not foul oil with combustion products; thus oil changes do not need to be frequent. Heat is the main concern. If the unit is subjected to high use, especially those in warm climates, consider changing the oil more frequently. In general, we recommend draining the reservior and replacing the oil at five or ten year intervals. Your pump incorporates a spin on filter, replace it with each oil change.

To drain the old oil, close the hand valve at the top of the large hose joining the pump and reservoir. Disconnect the hose from the pump and direct it into your waste reciptacle, then open the valve. If this proceedure is not clear, please contact the factory. Refill with new type F transmission oil from a clean container. Fill to within one inch from the top of the reservoir maximum.

Operate system ten times after each fluid refill. Air may be whipped into the fluid if run too low. Operating the system will expel the air and also establish a true fluid level.

LOOK FOR LEAKS. Occasionally there may be slight seeping at the fittings after some usage. Moderate tightening of the fittings will usually correct the problem. If leaking persists, replace fittings or hoses as required. No further leaks should occur.

VS16a,b*9/20/88

HIGH SPEED HYDRAULIC GATE OPERATOR MAINTENANCE (PAGE 2)

DIRECTIONAL VALVE: Your system employs a sophisticated proportional double solenoid directional valve. Without power, this valve is at rest with flow blocked both directions. When the gate operates, the power level is regulated, by the electronic controls, to achieve smooth fcceleration or deceleration. There is no routine maintenance to Yerform, and field service is not recommended, call the factory if you have any questions regarding valve performance.

2. ELECTRIC CONTROLS: BEFORE SERVICING TURN OFF ELECTRIC POWER

There is no required maintenance involved. If malfunction occurs, check out by the logic of the schematic drawing, or call the factory.

VS16a,b*9/20/88

FAX: 206-632-1314 1-800-321-9947
408 North 35th Street P. O. Box 31532 Seattle, Washington 98103 (206) 632-0538

VSHSG SLIDING GATE OPERATOR PARTS/PRICE LIST

JOB # 0899

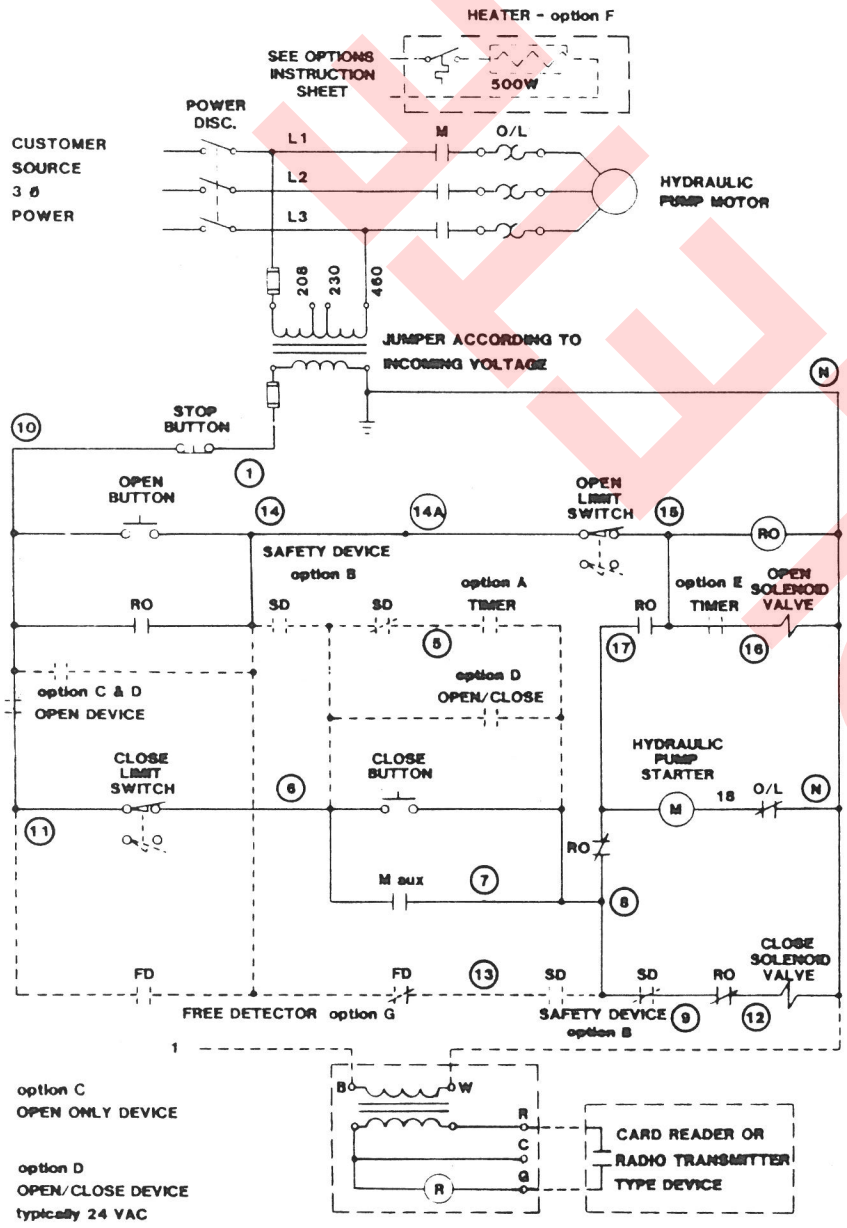
QTY	PART NUMBER		RETAIL PRICE
		HYDRAULIC	
1	B 156	CONTINENTAL, PUMP,	1135.00
1	H 399	CONTINENTAL, VALVE,	716.00
2	H 931	WHITE, MOTOR,	308.00
1	H 328	SUN, RELIEF VALVE CARTRIDGE,	68.00
1	H 330	WCD, SUBBASE,	116.00
1	H 050	LEGRIS, BALL VALVE,	39.00
1	H 009	FLOW EZY, STRAINER,	25.00
1	H 016	CROSS, RETURN FILTER,	35.00
1	H 012	UNITED, GAUGE,	63.00
1	H 013	LUCAS HYDR., SIGHT GLASS,	46.00
1	H 335	BRADY, FOOT/CHECK VALVE,	16.00
1	HW 1090	NO BRAND, SUCTION HOSE, 1" SAE 100R4 X 18"	14.00
2	H 003	ZINGA, CLAMP,	8.00
		ELECTRICAL	
1	A 310	HOFFMAN, ENCLOSURE,	239.00
1	B 099	LINCOLN, 5HP. MOTOR,	502.00
2	B 1701	OHMITE, POTENTIOMETER,	16.00
2	B 1710	BREL OR RF ELEC., RESISTOR,	0.10
1	B 1750	CONTINENTAL, PC BOARD,	570.00
1	B 407	MICRON, TRANSFORMER,	69.00
3	B 452	IDEC, RELAY,	40.00
3	B 453	IDEC, BASE,	12.00
3	B 620	ALLEN BRADLEY, RELAY,	54.00
3	B 621	ALLEN BRADLEY, BASE,	22.00
1	B 610	ALLEN BRADLEY, CONTACTOR,	150.00
1	B 650	ALLEN BRADLEY, OVERLOAD,	62.00
1	B 698	ALLEN BRADLEY, TIMER,	124.00
1	B 019	ANACONDA, SEALTIGHT, 1/2" U.A. X 13"	3.40
		POWER TRANSMISSION	
1	L 060	McMILLAN, C FACE ADAPT.,	139.00
1	L 062	MAURY, COUPLER,	24.00
1	L 064	MAURY, COUPLER,	24.00
1	L 066	MAURY, SPIDER,	13.00
		MECHANICAL	
1	AW 450	NO BRAND, CHASSIS, VSHSG	585.00
1	AW 452	NO BRAND, TANK, VSHSG ~15 GAL.	238.00
1	AW 454	NO BRAND, HOOD, VSHSG	338.00

VS17/DEC. 8, 1989

JOB # 0899

ACCESSORIES
(factory installed)

			RETAIL
____	AW050	Electric/Pump Pack Control Box Stand	240.00
____	AW050G	Stand (Galvanized with lifting eye)	290.00
____	AW430	Insulated Wood Enclosure with Weatherseal	1100.00
____	AW432	Insulation Brushes Only	110.00
____	B210	Additional limit switch for intermediate stop	210.00
____	B306	24 Hr./7 Day Timer (Electronic)	400.00
____	B330	Timer, On Delay Adjustable	70.00
____	B334	Maximum Run Timer (MRT)	70.00
____	B339	Battery Back-up for H388	200.00
____	B450	Idec Relay	50.00
____	B710	Detector w/ Harness, (max-2 per op.)	242.00
____	B711	Harness, prewired (detector by others)	138.00
____	B750	Photo Electric Eye (25' Range)	515.00
____	B1225TR	Radio Control Set (1 Receiver, 2 Trans.) 4 Wire	183.00
1	B1501	Thermostatically Controlled Heater (120/240vac)	258.00
X	H004	Exxon Univis J26 Hydraulic Oil/Gallon	13.85
____	H388	Electric By-Pass Manifold Valve (for Manual Open)	465.00
____	H501	Hand Pump (2-Way) Open and Close	1,000.00
____	H804S	Accumulator System (Standard 4 Gal. Capacity)	4,715.00
____	SS-"E"	For Heavy Service Operators on Gates over 1000 lb.	260.00



NOTES:

1. CIRCUIT PROTECTION AND SWITCHING BY OTHERS.
2. LIMIT SWITCHES SHOWN WITH GATE IN TRANSIT.
3. NUMBERS IN CIRCLES INDICATE TERMINAL NUMBERS.
4. DASHED LINES INDICATE OPTIONAL WIRING.
5. WHEN USING A THREE BUTTON STATION AND CONSTANT HOLD CLOSE IS DESIRED, REMOVE TERMINAL JUMPER 7-8.
6. IF THE THREE BUTTON STATION IS NOT USED, JUMPER 1 TO 10 TO REPLACE STOP BUTTON.
7. ON HSG AND HTG OPERATORS, THE OPEN AND CLOSE LIMIT SWITCH NORMALLY OPEN CONTACTS ARE AVAILABLE FOR CUSTOMER USE. CONNECT TO THE UNUSED ORANGE/WHITE PAIRS ON THE LEFT SIDE OF THE CONTROL PANEL.
8. ON HRG OPERATORS, THE CLOSE LIMIT SWITCH NORMALLY OPEN CONTACTS ARE AVAILABLE ONLY. CONNECT TO THE UNUSED ORANGE AND WHITE WIRES OF THE OPERATORS SIX WIRE LIMIT BUNDLE.

OPTIONS:

A. TIME DELAY TO CLOSE — THIS OPTION WILL CLOSE YOUR GATE FROM THE FULL OPEN POSITION.

B. SAFETY DEVICE — A SAFETY DEVICE, SUCH AS A PHOTO EYE OR LOOP DETECTOR, WILL REVERSE YOUR GATE TO THE FULLY OPEN POSITION OR PREVENT CLOSING IF THE GATE IS FULLY OPEN. TWO CONNECTIONS ARE POSSIBLE; USE CONNECTIONS 5, 6 AND 14, IF TIMER RESET IS DESIRED, USE CONNECTIONS 13, 17 and 9 TO PERMIT CLOSURE IMMEDIATELY AFTER SAFETY DEVICE IS CLEARED.

C. OPEN DEVICE — A LOW VOLTAGE INTERFACE FROM A SINGLE BUTTON 2 WAY CONTROL (TYPICALLY A RADIO TRANSMITTER OR CARD READER) WILL OPEN THE GATE. THIS OPTION IS COMMONLY USED IN CONJUNCTION WITH OPTION A, TIME DELAY TO CLOSE THE GATE.

D. OPEN CLOSE DEVICE — A LOW VOLTAGE INTERFACE FROM A SINGLE BUTTON 2 WAY CONTROL (TYPICALLY A RADIO TRANSITTER) WILL OPEN, CLOSE OR REVERSE THE GATE IF IT IS CLOSING.

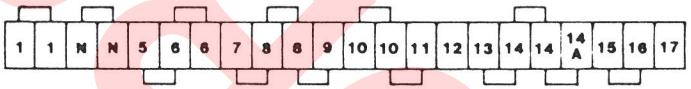
E. 'E' TYPE — A TIMER IS ADDED BY THE FACTORY AS PART OF THE MODIFICATION TO CONVERT AN OPERATOR TO THIS TYPE.

F. HEATER — A HEATER MAY BE ADDED FOR COLDER CLIMATES TO MAINTAIN THE HYDRAULIC OIL OPERATING TEMPERATURE.

G. FREE DETECTOR — A LOOP DETECTOR MAY BE USED TO OPEN THE GATE.

H. ELECTRICAL INTERLOCK — TWO HY-SECURITY OPERATORS MAY BE INTERLOCKED, SEE OPTIONS SHEET.

TERMINAL BLOCK:



Hy-Security Gate Operators

Manufacturers and Designers of Hydraulic Systems
P.O. Box 31532 408 N. 35th, Seattle, WA 98103 Phone: (206) 632-0538

WARRANTY

A comprehensive five year warranty for all HY-SECURITY GATE OPERATORS, becomes effective January 1, 1989. All materials and workmanship shall be guarantied for a period of five years after initial installation. Labor and other incidental costs are not covered by this guaranty but may be covered by a separate service agreement with local dealer. Drive wheels on the HSG operator are limited to the two year warranty because of the subjectivity of gate alignment and spring tension adjustment. Credit for defective parts will not be issued until they are received at the factory.

SPECIAL NOTE ON WARRANTY

The five year warranty will only be effective if a fully executed warranty confirmation form is returned to the factory. This form is shipped with each operator that leaves the factory and is placed in the envelope containing the electrical diagrams and installation instructions. If the form is not completed and returned, the standard two year warranty will apply.

M12/JULY 19, 1989

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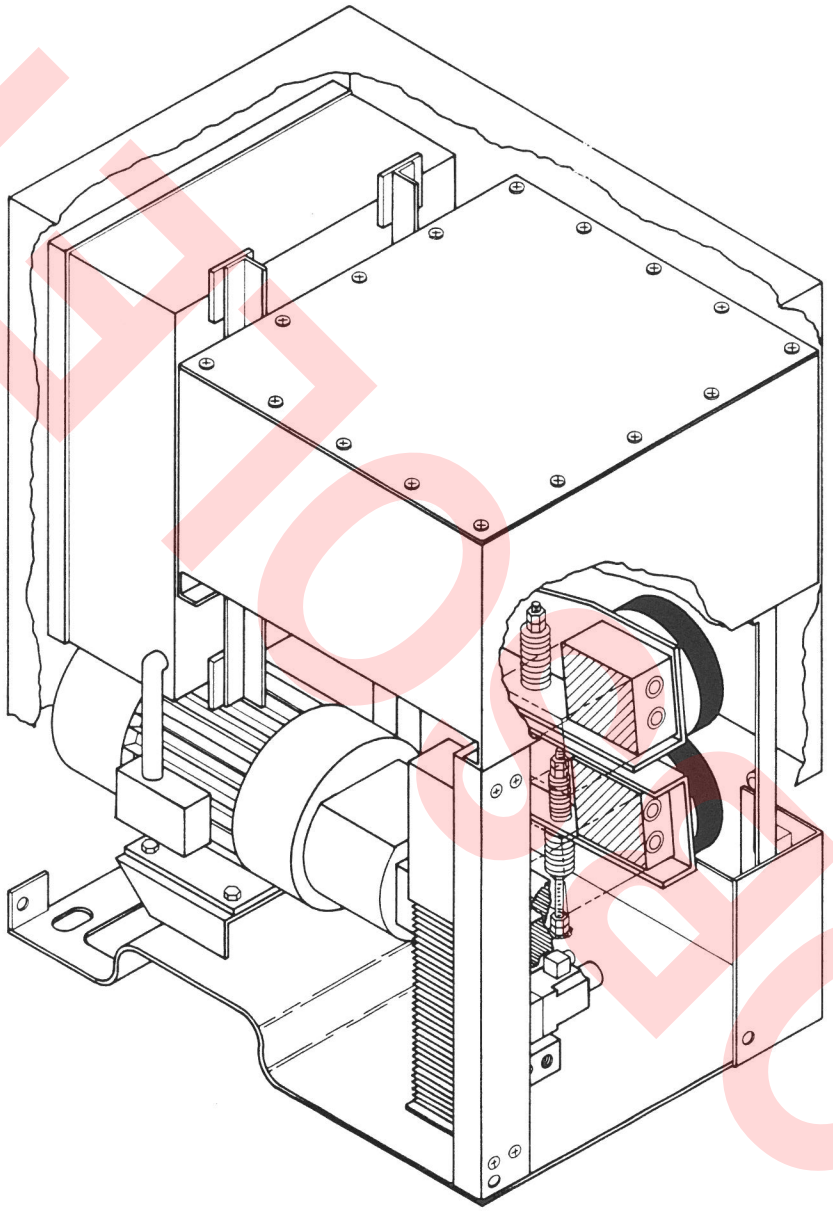

Hy-Security Gate Operators		PO Box 31531 Seattle, Washington 98103 Phone: 1 (800) 321-9447
VSHSG 600	SCALE	DRAWN BY REVISED
DATE	APPROVED BY	DRAWING NUMBER VS 13