

DOCUMENT A2026.3 SG1420 INSTRUCTIONS



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Please note - careful consideration must be devoted to the selection, placement and design of a Barricade installation. Just as in the case of any Barricade system, perimeter security device or security gate that blocks a roadway or drive, care must be taken to ensure that approaching vehicles as well as pedestrians are fully aware of the Barricades and their operation. Proper illumination, clearly worded warning signs, auxiliary devices such as semaphore gates, stop-go signal lights, audible warning devices, speed bumps, flashing lights, beacons, etc. should be considered. Delta has information available on many such auxiliary safety equipment not specifically listed herein. It is strongly recommended that an architect and/or a traffic and/or safety engineer be consulted prior to installation of a Barricade system. Delta will offer all possible assistance in designing the operating equipment, controls and the overall system, but we are not qualified, nor do we purport to offer either traffic or safety engineering information.

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DELTA SCIENTIFIC CORPORATION
MODEL SG1420 SECURITY GATE

General

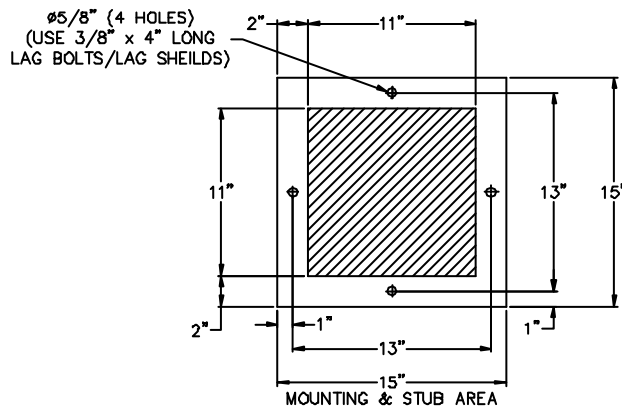
The Delta Scientific Corporation Model SG1420 Security Gate is a heavy-duty unit designed to meet the many needs of restricted traffic control. A large array of control modes are permitted, including auto/manual operation in conjunction with local or remote pushbutton stations, timers, radio controls, vehicle loop detectors, infra red detectors, ticket spitters, card readers, coin or token devices, and computerized electronic tag systems. These devices may be used independently or in combination. In short, any device which can provide a contact closure may be used to vend or reset the Gate.

Safety

The Model SG1420 Security Gate is equipped with an electric motor driving the gate arm through a vee-belt/gear box system. Keep hands and fingers away from the unit interior when power is on. Shut power off before adjusting limit switches or belt tension. Wiring to the terminal strip should be made by a competent electrician according to the NEC (NFPA 70) and applicable local codes.

Installation

The Model SG1420 is packed in a reinforced cardboard carton with an inner poly bog to guard against moisture. Do not stack cartons or leave out in the elements until ready to set. Gate model number and accessories are marked on carton top.



The SG1420 is to be located on a *solid, non-combustible surface*, such as concrete. Mark the Gate location from the architect's drawings. Conduit for the Gate motor and controls must be brought to the stub-up area within the Gate's bottom opening (shown above). Foundation bolt location can be marked from the Gate itself or from a template (Delta P/N D03180)

- 1) Use a masonry drill to provide the holes for the mounting bolts (4 – 3/8" X 4" long). If appropriate for your application use lag shields (not provided).
- 2) Relocate the Gate and install the lag bolts using a flat and lock washer on each.
- 3) Locate gear box breather vent and remove plug. Vent hole faces upwards when the box is in operation.
- 4) Install Gate Arm.

Wiring

As indicated above, the Gate will function using a wide variety of control inputs. Consult the architectural plans for the required control functions, then refer to the specific Delta Scientific Application Guide that covers that function. Common to all hookups:

- 1) Standard Power input is 120/1/60 VAC for Gate Motor and control power. The SG1420 may be ordered from the factory equipped to operate at 240/1/50 also. Conduit should be run from below grade to the center stub-up area as shown in the installation drawing. Field wiring connections are terminated at terminals *L1 (hot) and L2 (neutral)*. Other input voltages are available, and must be selected at time of order. The unit should be grounded at the provided terminal (green).
- 2) Switch function:
 - a) **Gate Auto-Manual:** With the Power 'On', switching the Auto-Manual switch to 'Manual' will vend (raise) the Gate. To reset the Gate, switch Auto-Manual to 'Reset' position momentarily.
 - b) **Heater On-Off –Auto:** Gate may be optionally supplied with a 60 watt heater to guard against condensation on the gate interior surfaces and to provide some heating to reduce gear box lube oil viscosity in extreme cold. We suggest that the heater switch be placed in the 'Auto' position at all times.

Limit Switch Adjustment

The Limit Switches are preset at the factory for standard operation across a level lane. The limit switches are adjustable to allow gate arm travel adjustments, where necessary.

CAUTION: Do NOT attempt to adjust the limit switches with the power on. Power switch must be placed in the 'Off' Position before adjustments are made. The directions indicated below are made when viewing the Gate from the gate arm side, Gate raise direction is clockwise (CW), Gate lower direction is counter-clockwise (CCW).

- 1) To adjust the gate arm for more downward travel, loosen the thumbscrew on the down limit switch cam and rotate slightly CW. Tighten screw, turn Power switch 'On' and check by operating the Auto-Manual switch. Turn Gate 'Off' and re-adjust as necessary.
- 2) To adjust the gate arm for less downward travel, loosen the thumbscrew on the down limit switch cam and rotate slightly CCW. Confirm as above.
- 3) To adjust the gate arm for more upward travel, loosen the thumbscrew on the up limit switch cam and rotate slightly CCW, Confirm as above.
- 4) To adjust the gate arm for less upward travel, loosen the thumbscrew on the up limit switch cam and rotate slightly CW. Confirm as above.

Manual Gate Arm Operation (Standard Feature)

NOTE: DO NOT MANUALLY OPERATE GATE UNLESS POWER HAS FIRST BEEN TURNED OFF! THERE IS POTENTIAL FOR SEVERE INJURY IF POWER IS RESTORED WHILE MANUALLY OPERATING GATE.

All SG1420 Gates have the capability to be manually raised or lowered. The normal method to manually raise or lower the gate arm's position is to:

- 1) Unlock the access cover.
- 2) Set the 'POWER' Toggle Switch to 'OFF'.
- 3) Move the drive belt around by hand, thereby moving the gate arm either up or down as desired. **Use care!** Having the hand caught between the pulley and belt is painful!

Manual Gate Arm Operation (Optional)

The SG1420 can be ordered with a manual crank to perform manual operation. The Gate's top cover is fitted with a plastic plug, which when removed will allow the crank assembly to be used to rotate the special sheave on the motor shaft.

Drive Belt Tension

The drive belt requires periodic tension checking. Improper tension of the drive belt can result in erratic gate arm motion. See Troubleshooting Section.

Maintenance

Good maintenance is essential to the long life of your Delta SG1420 Security Gate. Long, trouble free operation is obtained by adhering to the following suggestions:

- 1) Check belt tension every 60 days to control Gate over travel. Consistent tension will allow the gate to stop in the same position every time.
- 2) Adjust limit switches (See section above) for proper gate arm travel if extremes in temperature are encountered. In cold weather, gear box lubrication will stop arm travel in a shorter time. Lengthening the travel may be necessary. Conversely, in summer, hot temperatures may cause the gate arm to over travel the desired position. Shortening the travel can compensate.

CAUTION: Do NOT attempt to adjust the limit switches with the power on. Power switch must be placed in the 'Off' position before adjustments are made.

- 3) Service the gear box annually by draining old oil and refilling with clean Texaco Vanguard oil or equivalent.
- 4) Tighten all nuts, bolts, and screws on the Gate assembly every 60 days or as necessary.
- 5) Wash and wax the Gate cabinet exterior, once a quarter, or as necessary to maintain the bright gloss finish of your Delta Gate.

Troubleshooting

If Gate fails to move:

- 1) Check Gate 'Power' switch. Switch must be in the 'On' position.
- 2) Check thermal overload on motor. If overload is tripped, reset by pushing trip button. If motor is hot, let it cool before trying to reset.

CAUTION: Power switch should be in the 'Off' position when resetting the thermal trip to prevent hands from being caught in the drive belt pulleys if motor should happen to start on reset.

- 3) Check circuit breaker/disconnect switch feeding the Gate. Reset as necessary.
- 4) If there is power to the Gate (120/1/60 at terminal 1 and terminal 2):
 - a) Try switching the 'Auto-Manual' switch to 'Manual'. The gate arm should go up. If not, turn Power switch 'Off' and disconnect Gate at the Main. Check all electrical connections (terminals and screws) for tightness. If Gate still will not function when power is restored, call factory for assistance.
 - i) If Gate functions on 'Manual' but does not respond to vend or reset signals; check control devices and detectors. When possible, exchange known good components for suspected ones.
 - ii) If control devices and detectors are proved OK, the field wiring or harnesses are to be suspected. Call factory for help.
 - b) If Gate runs but cycles up and down without stopping:
 - i) Check limit switch adjustment per the above instructions.
 - ii) If the limit switches are in their proper location, at least one switch is likely failed. If the Gate runs on with the Auto-Manual switch in the 'Manual' position the UP limit switch has failed. If the Gate runs on in the 'Auto' position the DOWN limit switch is failed.

If gate moves erratically:

Erratic gate motion requires the drive belt tension to be checked. Open the SG1420'S's door and inspect the drive belt for looseness or excessive wear. If the belt appears worn or frayed, or if the belt appears loose, first: remove Electrical Power to the gate and second, tighten or replace the belt with a new one. To remove or tighten the belt, first loosen the Electrical Motor mounting nuts slightly and pull the motor away from the Gear Reducer, then tighten the Electrical, motor mounting nuts, thus tightening the drive belt.

Power Loss

The Delta SG1420 can be opened or closed in the event of a power outage by the following:

CAUTION: *Power switch should be in the 'Off' position when manually operating the gate to prevent hands from being caught in the drive belt pulleys if motor should happen to start if power is restored.*

- 1) Manually pull the drive belt around until the gate is in the desired position. Use Care! Drive belt-pulley is a pinch point!
- 2) Turn Auto-Manual switch to 'Auto' and the Power switch to 'On'. On power resumption, the Gate will automatically resume powered operation.

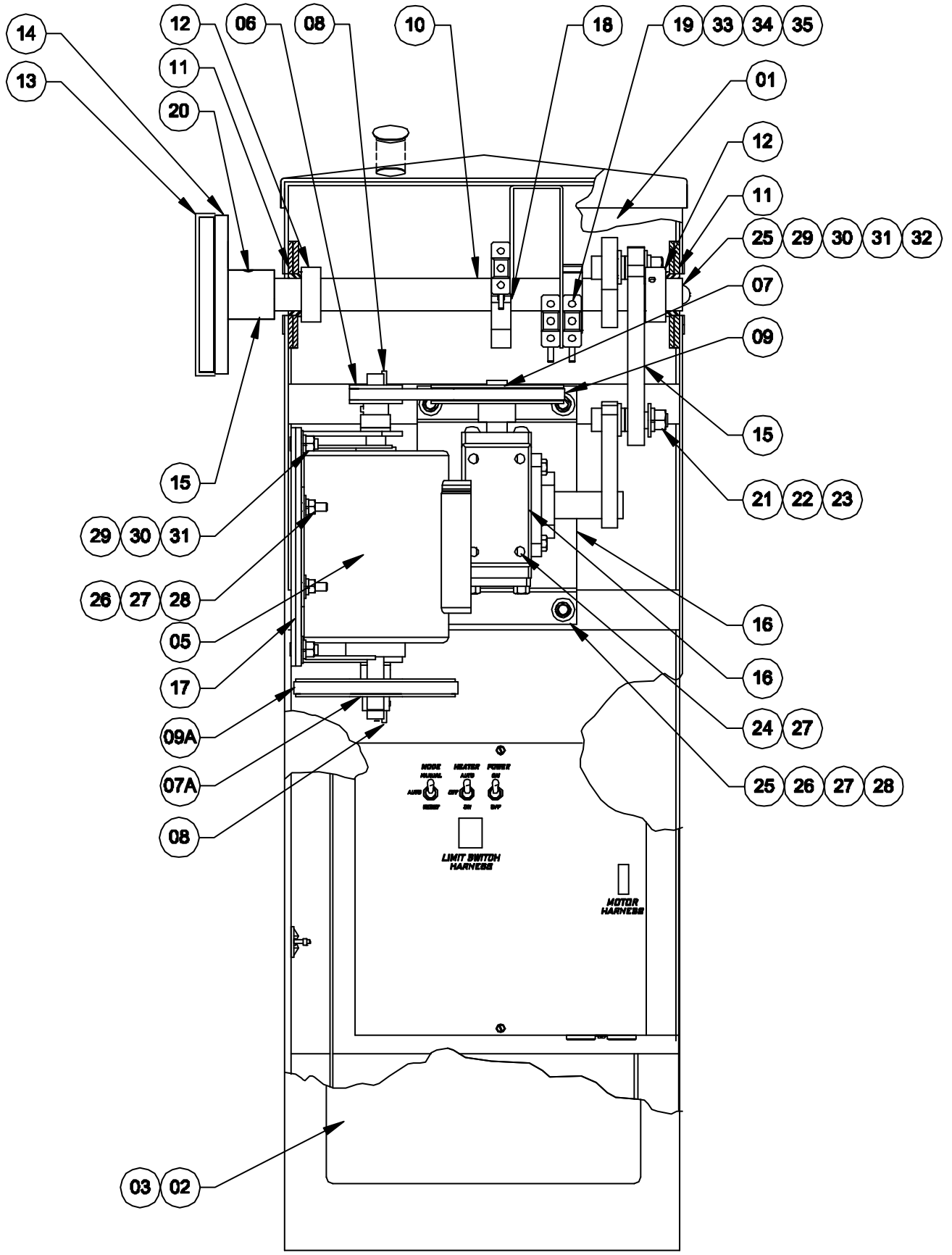
Spare Parts Order Data

Parts for your Delta SG1420 Gate may be purchased from your installer/dealer or the factory. Please call your dealer first, as he is most familiar with your application. Required replacement parts can be located from the attached Spare Parts List.

Try to supply as much data about the part as possible, i.e. dimensional size, threads, voltage, nameplate data, etc. For control circuits: list model number, serial number (S/N), drawing no. and customer no. taken from the nameplate on the controller.

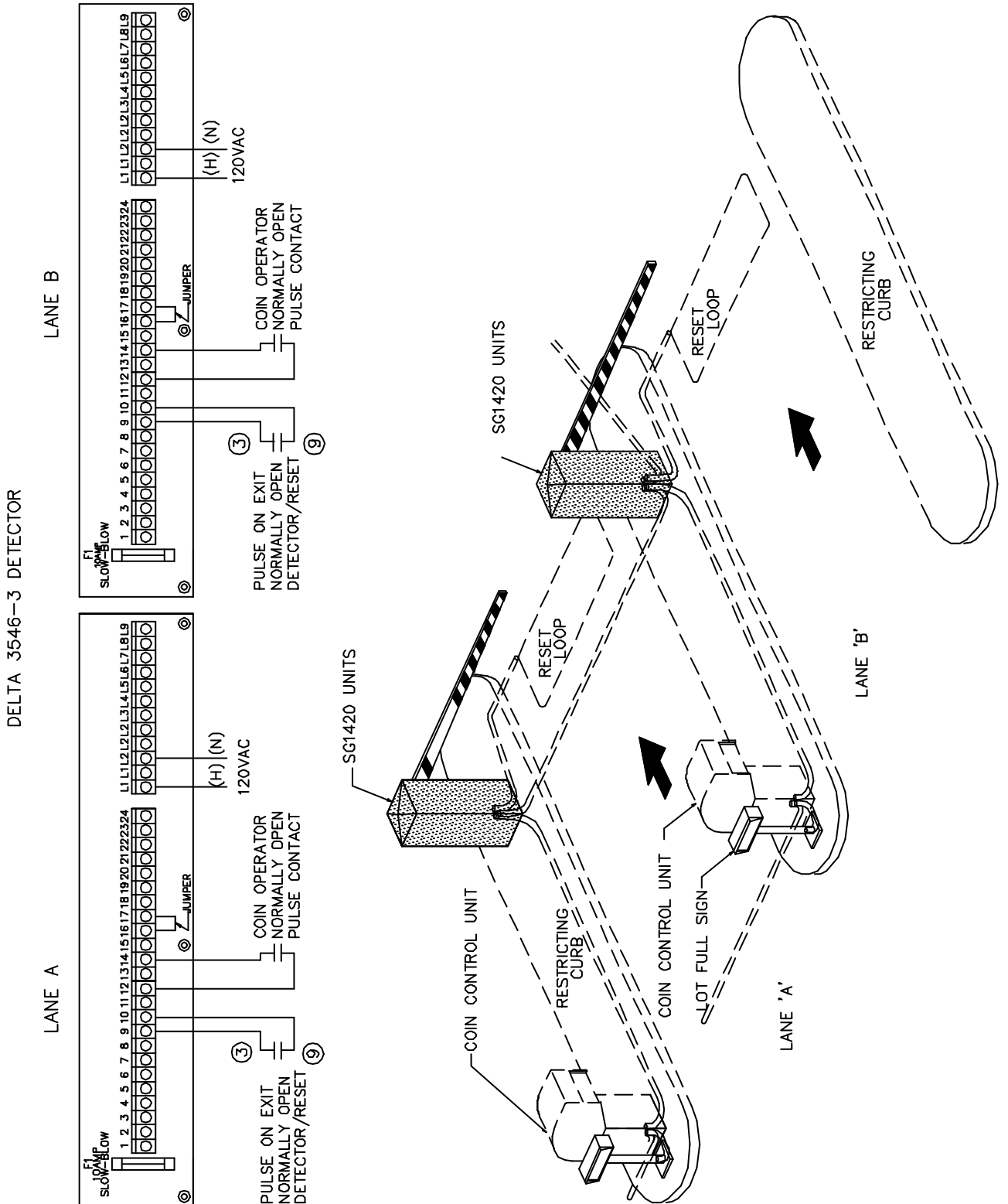
Spare Parts List for SG1420 Security Gate (120/1/60 VOLT)

ITEM	QTY	OPTIONS/DESCRIPTION	DELTA PART #
01	1	CABINET (OPTIONS)	
01A		CABINET, ALUMINUM, LESS DOOR	4369-01A
01B		CABINET, STEEL, LESS DOOR	4369-01S
02	1	DOOR (OPTIONS)	
02A		DOOR, ALUMINUM	4369-02A
02B		DOOR, STEEL	4369-02S
03	1	LOCK, T-HANDLE, CHICAGO BLANK #4260-6T W/ 6-1088Z KEY MECHANICAL ASSEMBLY	4369-03
04	1	GEAR REDUCER WINSMITH MODEL 917DTN-60:1-L	4369-04
05	1	MOTOR (OPTIONS)	
05UK		MOTOR, UK, 1/2 HP, 240V, 1 PHASE, 50/60 HZ	4369-05 UK
05US		MOTOR, US, 1/2 HP, 115V, 1 PHASE, 50/60 HZ	4369-05 US
06	1	SHEAVE, FHP FOR 4L BELT, 2.00 OD, 1/2" WIDE	4369-06
07	1	SHEAVE, FHP FOR 4L BELT, 6.00 OD, 1/2" WIDE	8730-07
07A	1	SHEAVE, FHP FOR 4L BELT, 7.00 OD, 1/2" WIDE	8730-08
08	2	KEY SQUARE, 3/16" X 1-3/8"	4369-08
09	1	DRIVE BELT, ,V , 8-1/2" DIA X 1/2" WIDE (4L230)	4369-09
09A		DRIVE BELT, ,V , 12-1/2" DIA X 1/2" WIDE (4L255)	8730-09A
10	1	SHAFT ASSEMBLY, MAIN ARM	4369-10
11	1	BEARING PLATE	4369-11
12	1	COLLAR, SHAFT, W/SET SCREW, 1.25 DIA	4369-12
13	1	ARM HOLDER	4369-13
14	1	ARM HOLDER RETAINING PLATE	4369-14
15	1	CONNECTINE ARM LINKAGE WITH BUSHING	4369-15
16	1	GEAR REDUCER MOUNTING PLATE	4369-16
17	1	MOTOR MOUNTING PLATE	4369-17
18	2	CAM, ACTUATOR FOR LIMIT SWITCH	4369-18
19	2	LIMIT SWITCH,	4369-19
20	1	PIN, SPIROL 3/8 DIA X 2.00 LONG	4369-20
21	2	BOLT, SHOLDER, 5/8 X 1.75	4369-21
22	2	NUT, NYLOCK 1/2-13 UNC	4369-22
23	2	WASHER, FLAT 5/8	4369-23
24	4	BOLT, GRADE 5 HEX, 3/8-16 X 3/4"	4369-24
25	4	BOLT, GRADE 5 HEX, 3/8-16 X 1"	4369-25
26	8	NUT, 3/8-16 UNC	4369-26
27	12	WASHER, FLAT 3/8	4369-27
28	16	WASHER, SPLIT LOCK, 3/8"	4369-28
29	4	BOLT, CARRIAGE, 5/16-18 X 1"	4369-29
30	10	NUT, 5/16-18 UNC	4369-30
31	8	WASHER, FLAT 5/16	4369-31
32	8	WASHER, SPLIT LOCK, 5/16	4369-32
33	4	SCREW, ROUND HD, SLOTTED, MACHINE, 6-32 X 1.25	4369-33
34	4	NUT, 6-32 UNC	4369-34
35	8	WASHER, FLAT NO. 6	4369-35



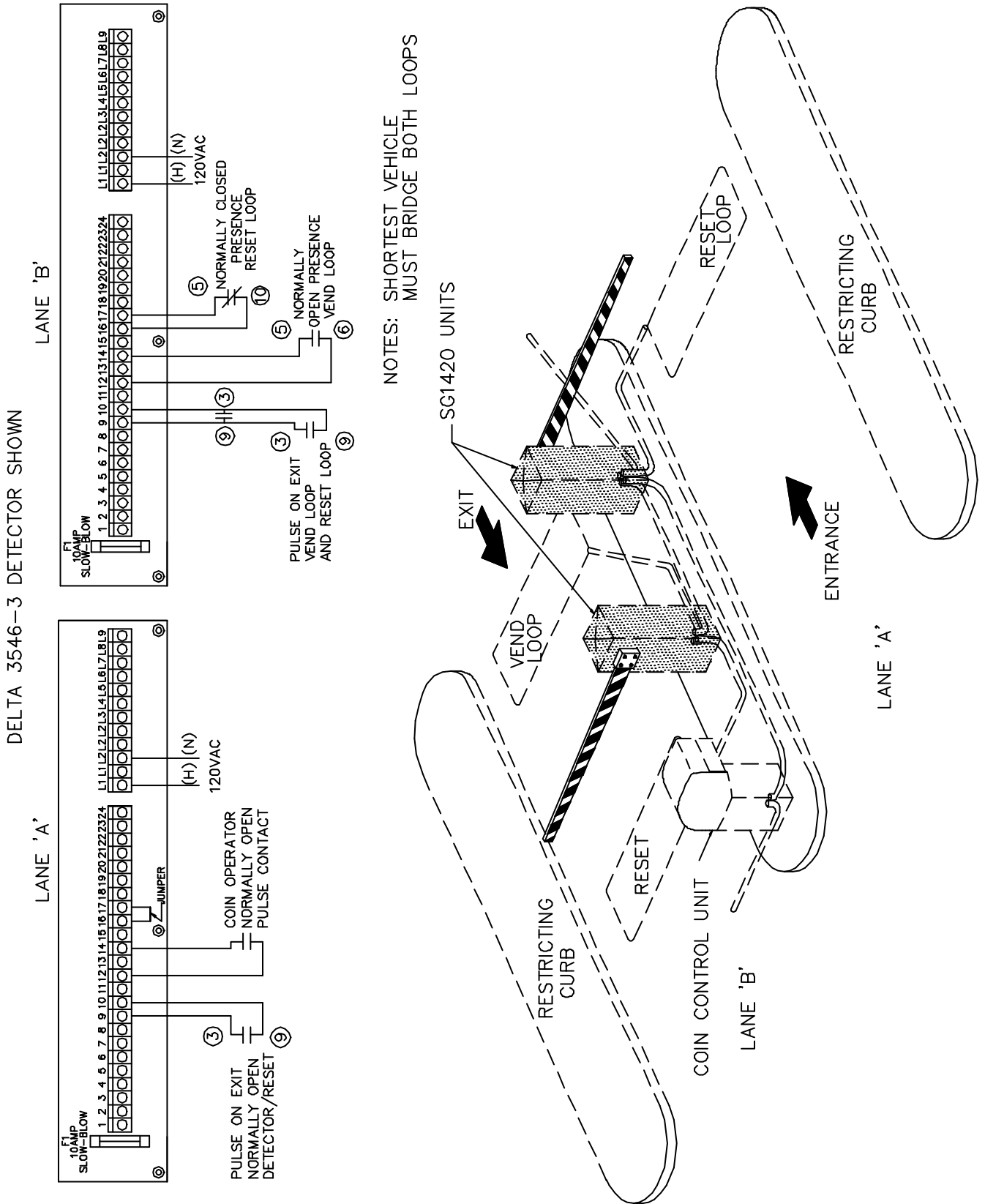
HOOK-UP SCHEMATIC DIAGRAM

- 2-Lane, Single Direction, Cash In –or– Cash Out Operation



HOOK-UP SCHEMATIC DIAGRAM

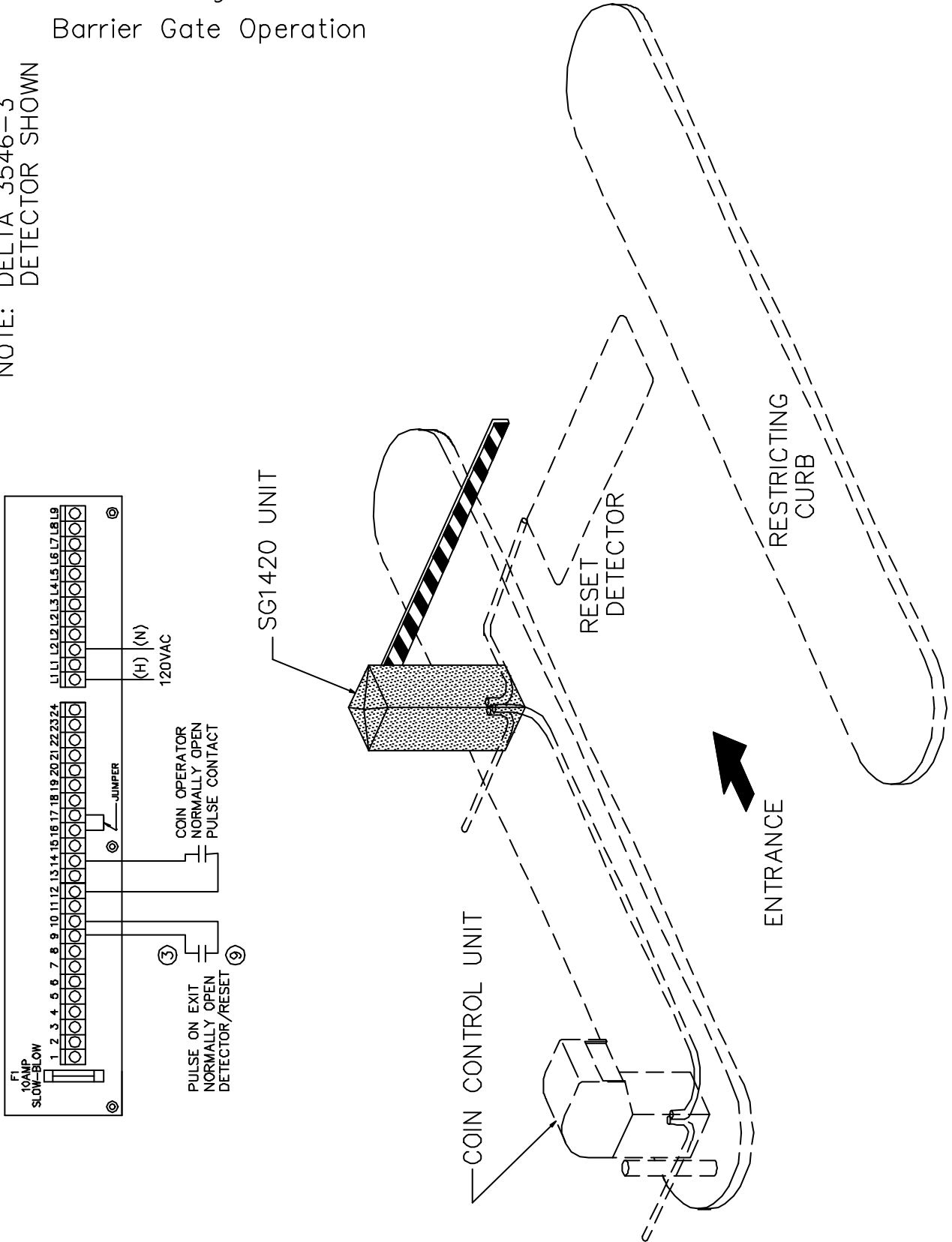
2. 2-Lane Cash Entry, Free Exit Operation:



HOOK-UP SCHEMATIC DIAGRAM

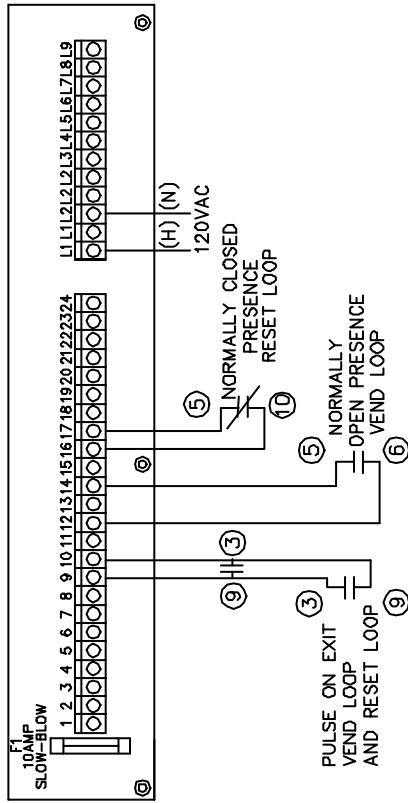
3. 1-Lane Single Direction, Coin Unit-Barrier Gate Operation

NOTE: DELTA 3546-3
DETECTOR SHOWN

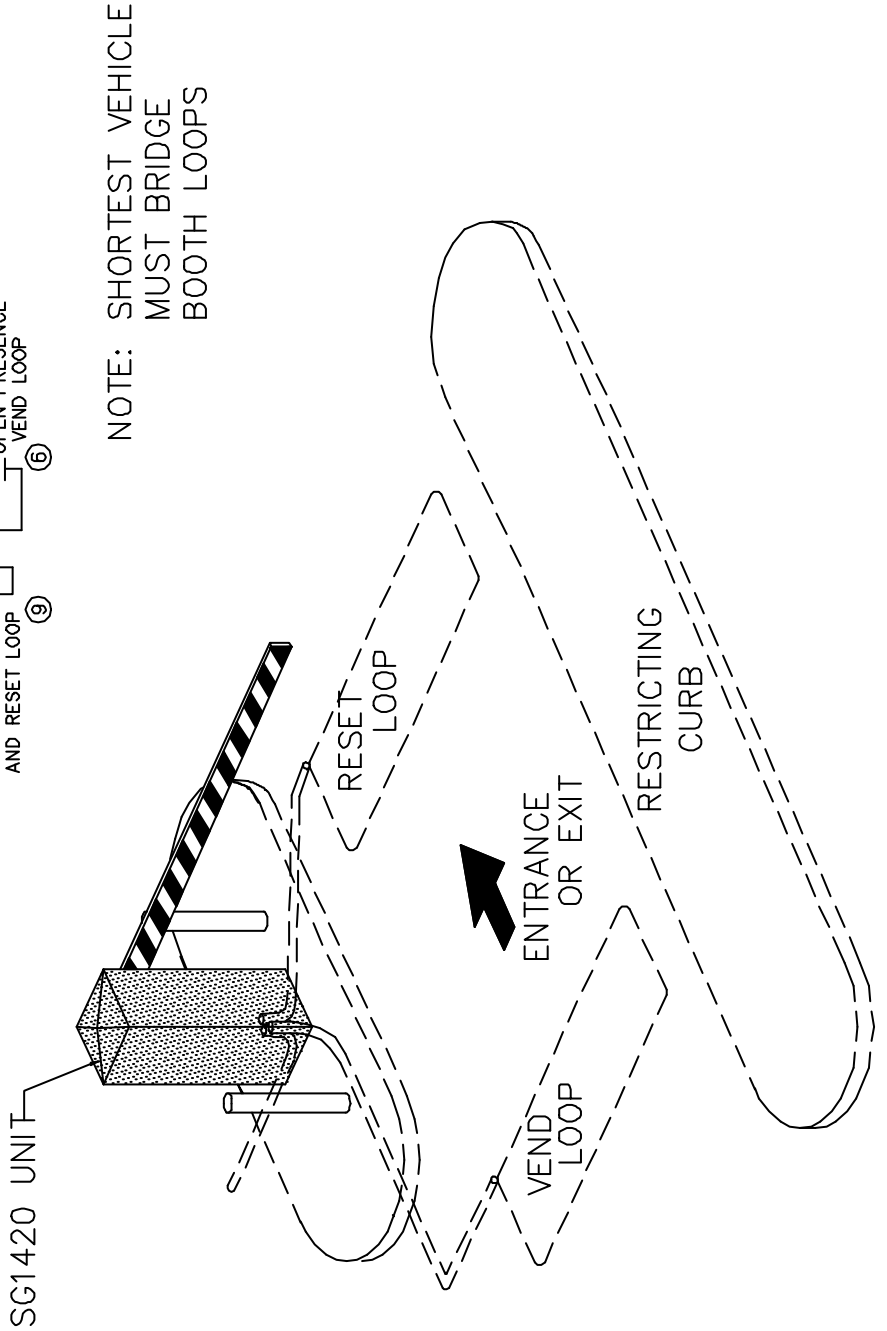


HOOK-UP SCHEMATIC DIAGRAM

4. 1-Lane Single Direction, Free in – or – Free Out Operation

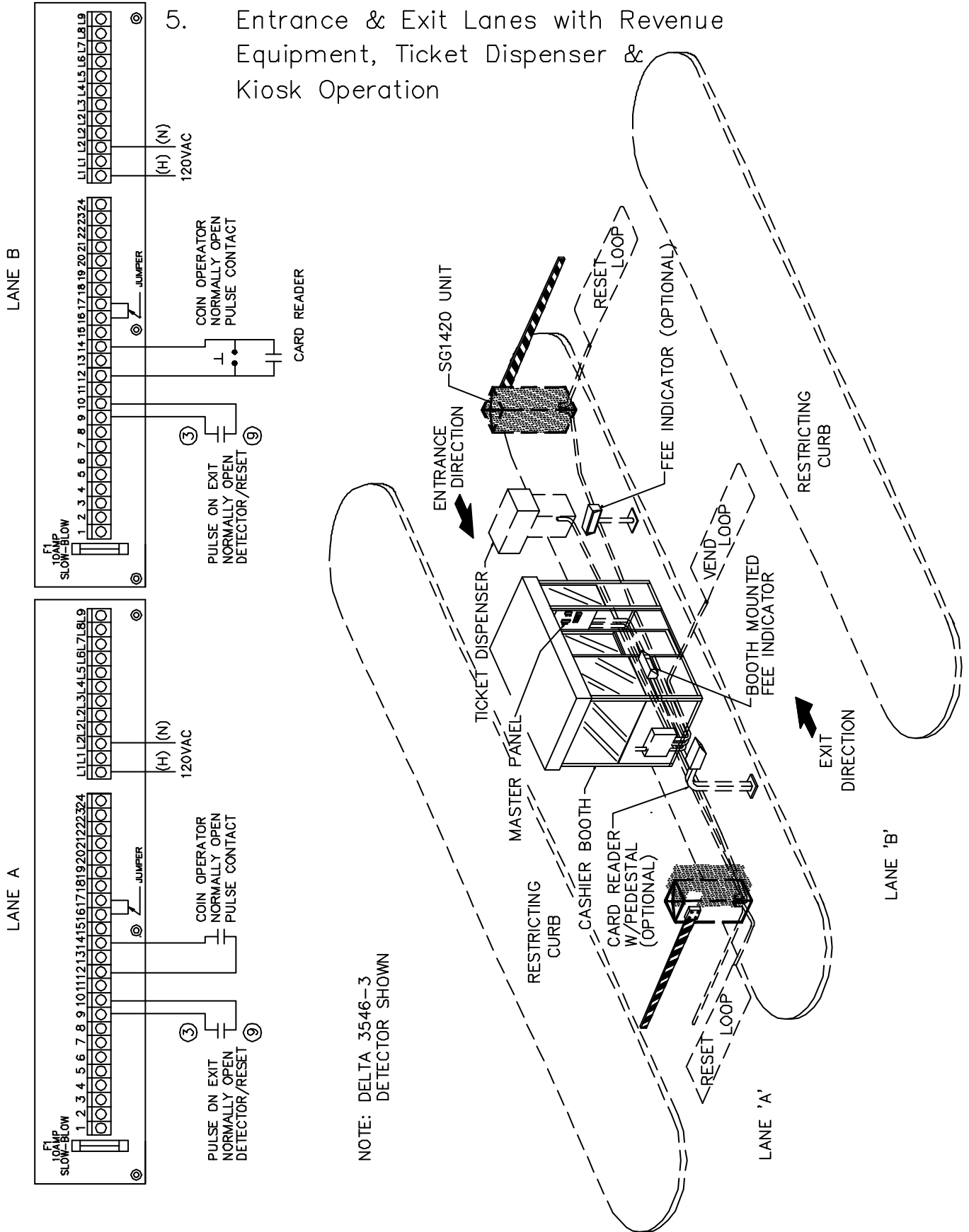


NOTE: DELTA 3546-3 DETECTOR SHOWN



HOOK-UP SCHEMATIC DIAGRAM

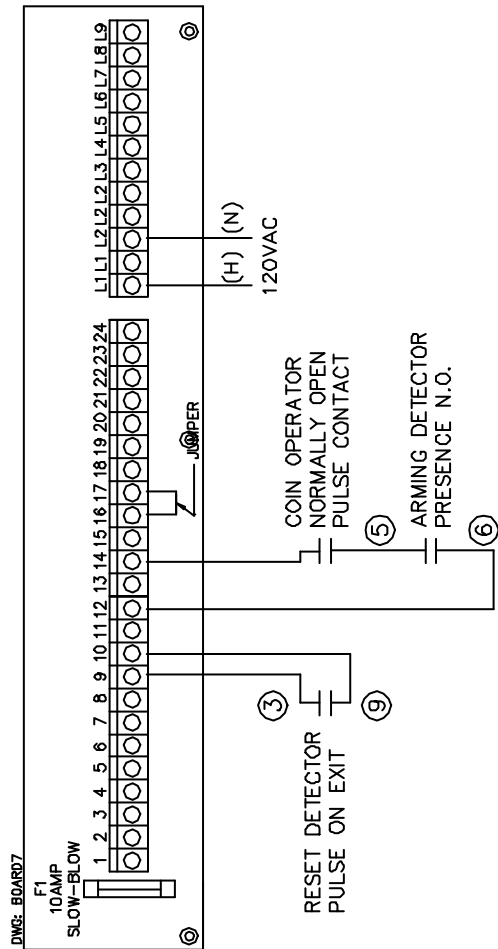
5. Entrance & Exit Lanes with Revenue Equipment, Ticket Dispenser & Kiosk Operation



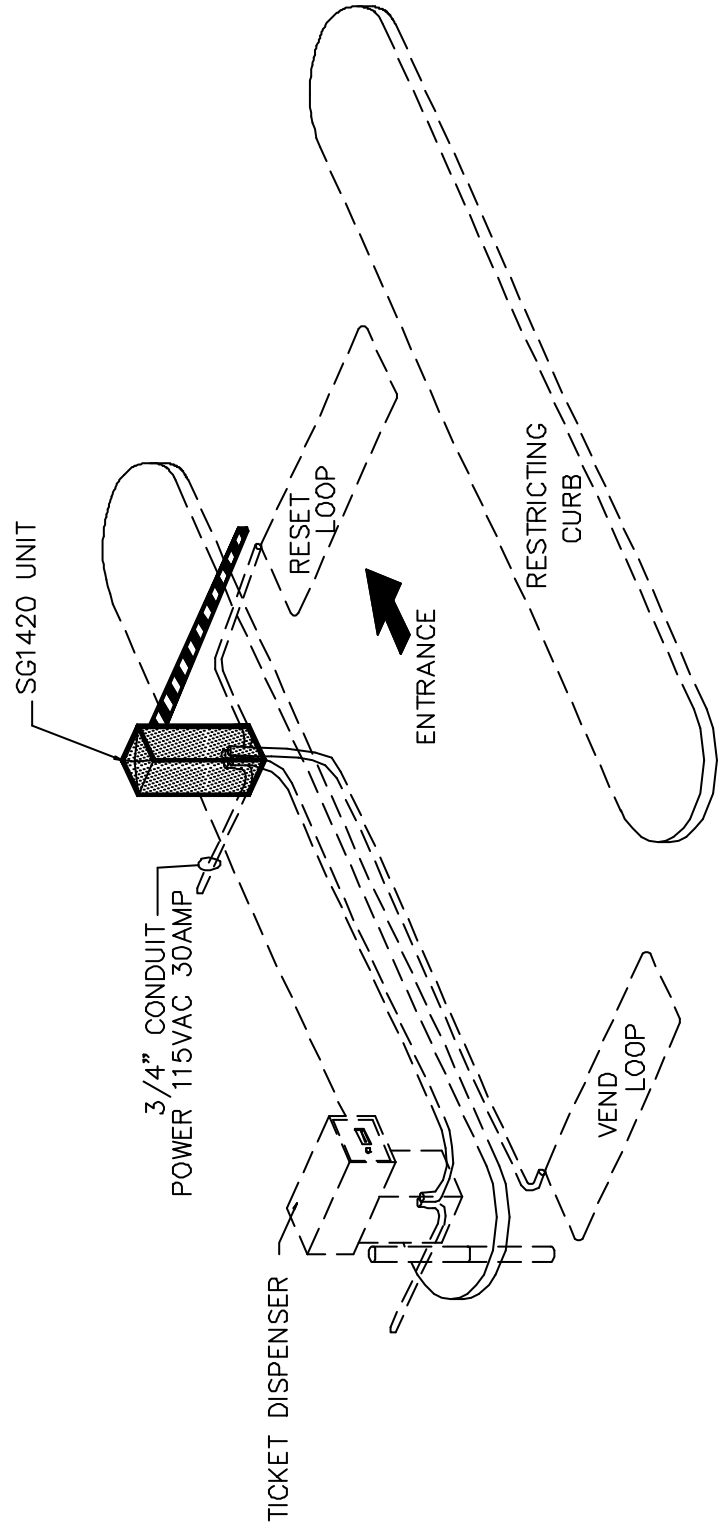
HOOK-UP SCHEMATIC DIAGRAM

6. Typical Ticket Dispenser/Gate Operator

3546-3 Detector Connections Shown



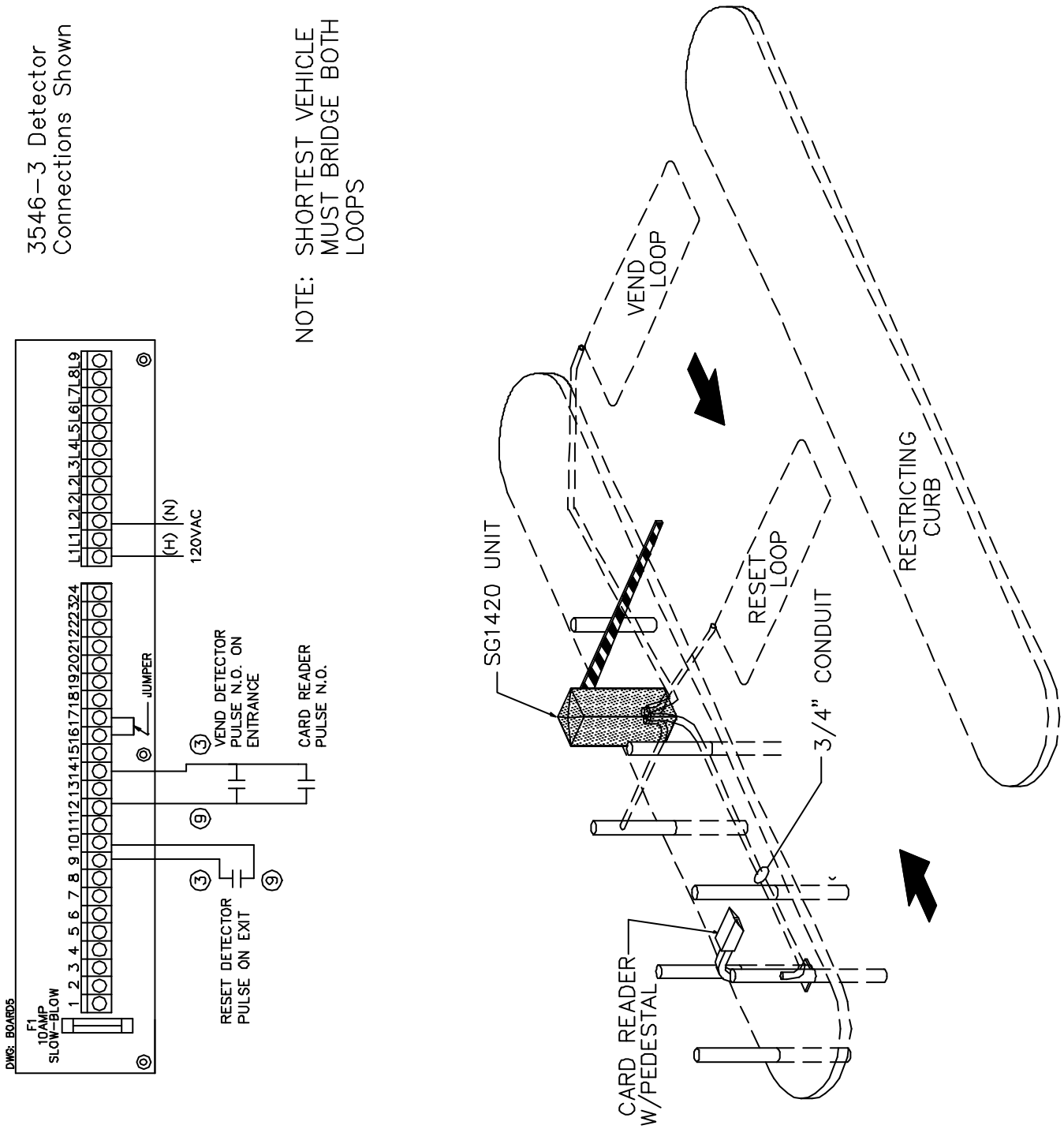
NOTE: SHORTEST VEHICLE MUST BRIDGE BOTH LOOPS



HOOK-UP SCHEMATIC DIAGRAM

7. Card In - Free Out Operation

3546-3 Detector
Connections Shown



NOTE: SHORTEST VEHICLE
MUST BRIDGE BOTH
LOOPS

HOOK-UP SCHEMATIC DIAGRAM

8. Dual Direction Manual Push Button Control

