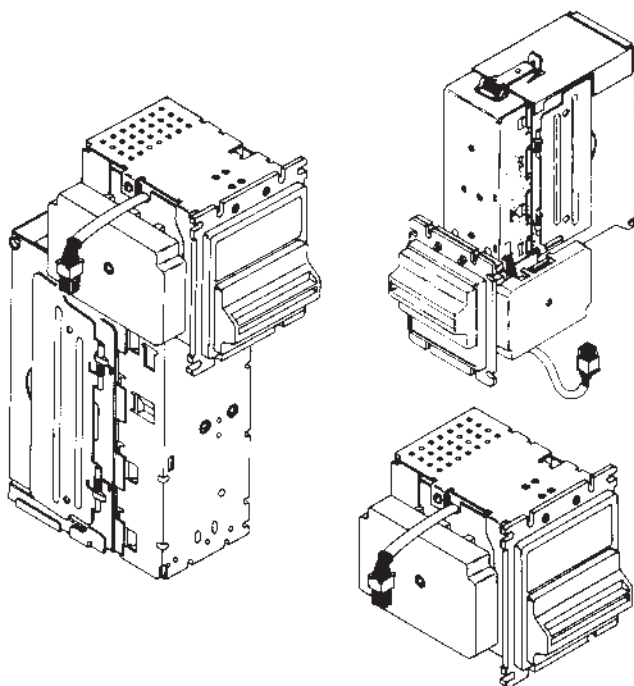




AL2/AL4 SERIES BILL ACCEPTORS

INSTALLATION GUIDE



GENERAL INFORMATION

The Mars Electronics AL2 and AL4 Series Bill Acceptors are designed for use in amusement and lottery applications. The AL2 Bill Acceptors are switch selectable for \$1 and \$5 bill acceptance. The AL4 Bill Acceptors are switch selectable for \$1, \$5, \$10 and \$20 bill acceptance. The AL2 or AL4 can be used with 200, 400, 600 and 1000 bill capacity magazines. They may be configured as an up or down stacker or as a stackerless unit.

Power Requirements

65 Watts at
24 VAC, 60 HZ or
115 VAC, 60 HZ

Features

- Good security against fraudulent bills.
- Lighted entry bezel.
- Operator may designate number of pulses per dollar.
- Optional pulse meter is available. (Mars Electronics P/N 91-16-279-4)
- Pulse and serial interfaces are available.
- Power supply is protected from rain and condensation.
- Optic components are sealed against contaminants.
- Gears are permanently lubricated and sealed from dirt and moisture.
- Fast transport of bill.

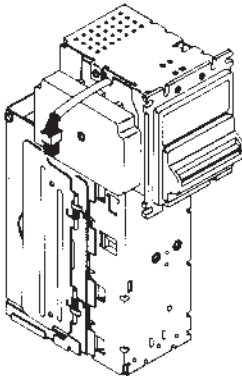
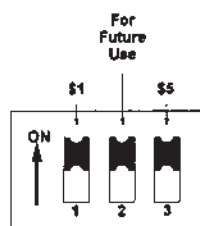


Figure 1. AL4 Bill Acceptor
(Downstacker Configuration
400 bill capacity magazine)

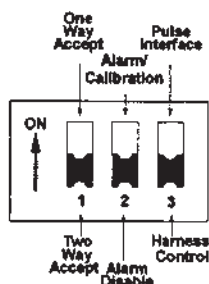
OPTION SWITCHES

The AL2 Bill Acceptor has three banks of switches and the AL4 has two banks of switches. Reference Figure 2 below for descriptions of switch settings for both the AL2 and the AL4. The settings as shown will put the unit in "serial mode" and will give one pulse per dollar.

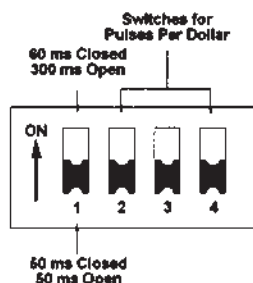
AL2 SERIES



**SWITCH
BANK 1**

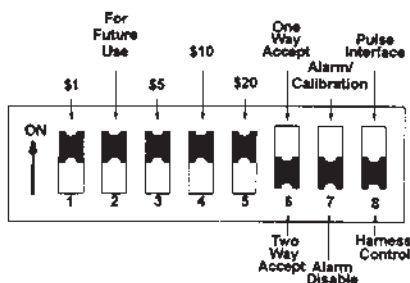


**SWITCH
BANK 2**

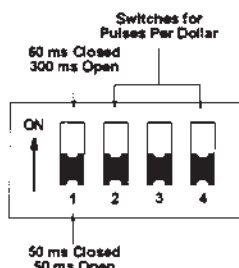


**SWITCH
BANK 3**

AL4 SERIES



SWITCH BANK 1



SWITCH BANK 2

Figure 2. AL2/AL4 Option Switches

INTERFACES

The number of pulses per dollar value is determined by the combined settings of switches 2, 3 and 4 in SWITCH BANK 3 (AL2) or SWITCH BANK 2 (AL4). A \$1 bill produces the set number of pulses. A \$5 bill produces five times that number of pulses, etc. Table 1. details the pulses per dollar settings.

SWITCH BANK 2

INTERFACE	SWITCH #2	SWITCH #3	SWITCH #4
1 Pulse Per Dollar	OFF	OFF	OFF
2 Pulses Per Dollar	ON	OFF	OFF
3 Pulses Per Dollar	OFF	ON	OFF
4 Pulses Per Dollar	ON	ON	OFF
6 Pulses Per Dollar	OFF	OFF	ON
8 Pulses Per Dollar	ON	OFF	ON
*1 Pulse Per Dollar	OFF	ON	ON
*4 Pulses Per Dollar	ON	ON	ON

* A BILL THAT IS ACCEPTED FOR WHICH NO CREDIT IS GIVEN WILL NOT BE STACKED NOR WILL IT BE RETURNED. IT WILL BE HELD IN THE FRAME OF THE ELEVATOR ASSEMBLY UNTIL POWER TO THE BILL ACCEPTOR IS RESET.

Table 1. Pulses Per Dollar Settings

SET THE OPTION SWITCHES

Note: Disconnect AC power before setting the option switches.

- Loosen the captive screw in the center of the control board cover.
- Lift the control board/cover assembly as shown (Figure 3). Locate the option switches on the control board
- Set the switches with a retracted ball point pen or small screw driver. **DO NOT USE A GRAPHITE PENCIL POINT.**

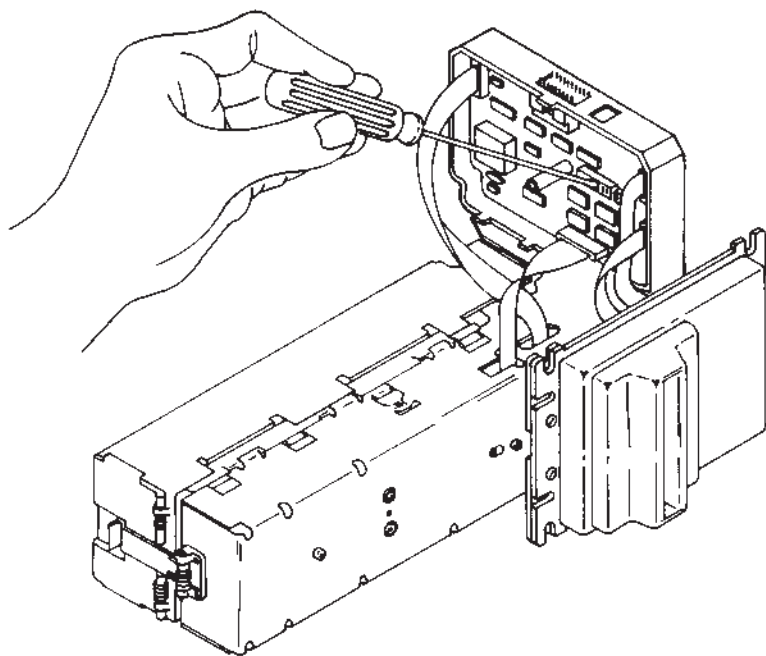


Figure 3. Setting The Option Switches

MOUNT THE BILL ACCEPTOR

Note: On some machines, a Mars Electronics mounting kit P/N 91-16-159 or P/N 111632001 may be used for installation.

- **CONNECT HARNESSES**

Connect the 9 pin connector of the power harness to the 9 pin connector of the Bill Acceptor (Figure 4.)

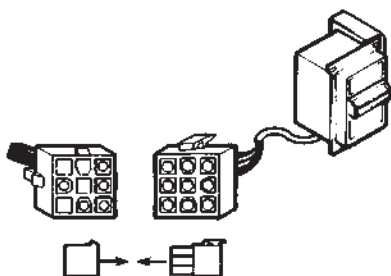


Figure 4. Connecting 9 Pin Harness

If the interface harness has an 18 pin connector, connect it to the 18 pin connector socket on the control board (Figure 5.)

- **MOUNT BILL ACCEPTOR**

With the AC power off, mount the Bill Acceptor. Allow room for the height and depth of the stacker/magazine assembly. (Figures 6. and 7.)

- **INSTALL HARNESS**

With one end of the harness connected to the Bill Acceptor, route the harness through the machine and make the necessary connections. Dress all harness wires to avoid interference with machine operation.

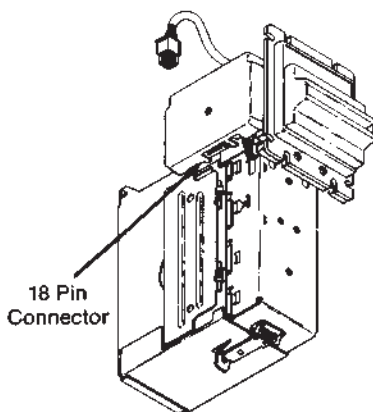


Figure 5. Interface Connection

BILL ACCEPTOR DIMENSIONS

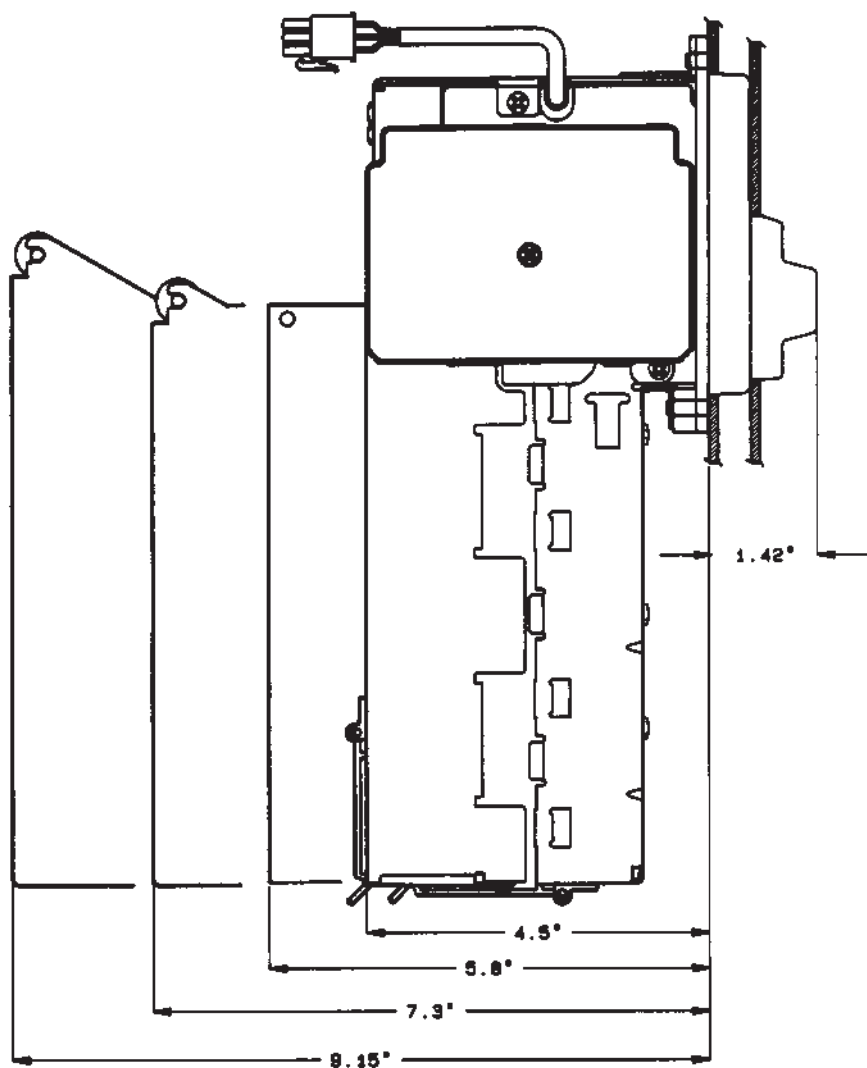


Figure 6. Dimensions, Side View

BILL ACCEPTOR DIMENSIONS

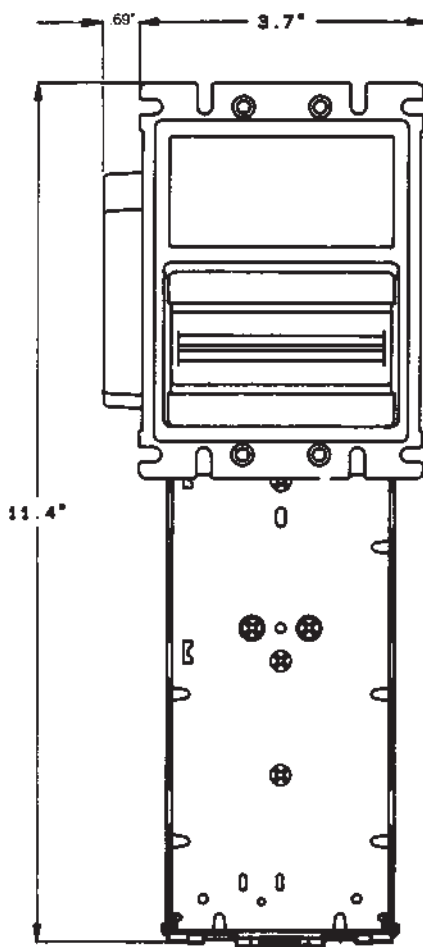


Figure 7. Dimensions, Front View

CHECK OPERATION

- **Checkout Procedure**

Apply power and test operation:

Insert several bills of each accepted denomination. Bills should be accepted and the correct number of pulses should be produced. (Remember that a \$5 bill produces 5 times the pulses than a \$1 bill.)

Insert bills portrait side up. Bills should be accepted in one or both directions as selected on Switch Bank 2, Switch 1 (AL2) or Switch Bank 1, Switch 6 (AL4). When bills are inserted green side up, they should be rejected. Refer to Page 4 for Option Switch descriptions.

Some machines can not accept the number of pulses produced by \$5, \$10 or \$20 bills. Test by inserting a bill of each acceptable denomination and observe that the correct number of credits are displayed. If not, set Switch Bank 1, Switch 3 **OFF** (AL2) or set Switch Bank 1, Switches 3, 4, and 5 **OFF** (AL4) to reject these bills. Refer to Page 4 for Option Switch descriptions.

Some machines can accept pulses at a faster rate than others. If the unit is missing pulses, the pulse setting may be too fast for that particular machine. Set Switch Bank 3, Switch 1 **ON** (AL2) or Switch Bank 2, Switch 1 (AL4) **ON** to send a slower pulse that is 60 ms On and 300 ms Off. Refer to Page 4 for Option Switch descriptions.

- **Removing Bills**

To remove bills from the magazine, open the side door and remove bills.

LOCKOUT (INHIBITING ACCEPTANCE)

Certain games do not allow for accumulation of credits for continued plays. Lockout is an optional inhibit procedure that prevents insertion of bills while a game is in play. The following lockout instructions refer to an 18 pin connector (P/N 01-12-140) the use of which is optional.

To enable the lockout option, cut the wire to Pin 12 on the 18 pin connector, if it has not previously been cut.

- Connect the wire half from the connector to the machine lockout signal (Figure 8.)
- Connect the remaining half to machine logic ground.
- Leave Pin 3 connected to Pin 4 at wire nut.
- Leave Pin 4 connected to wire nut.
- Leave Pin 14 connected to Pin 4 at wire nut.

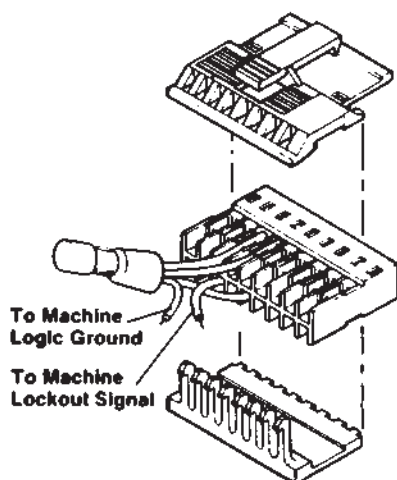


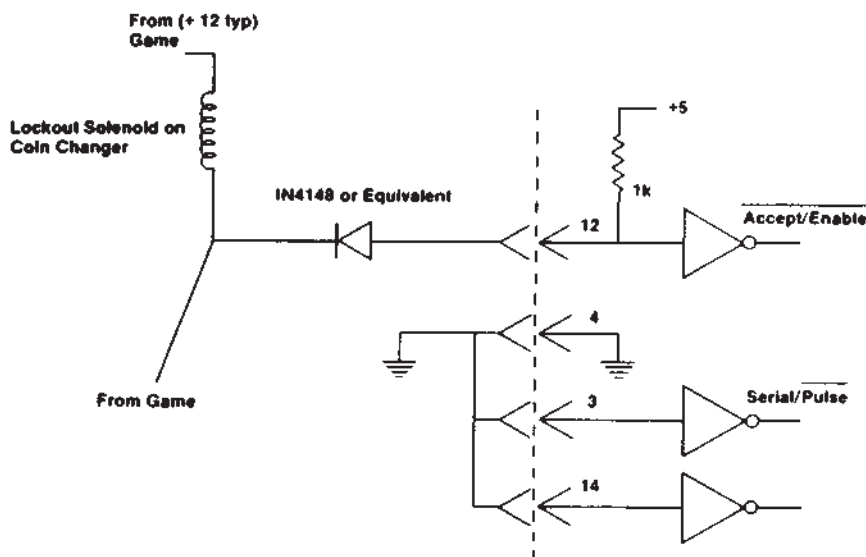
Figure 8. Lockout

Note: To enable the lockout option on the AL2, option switch 3 of Switch Bank 2 should be OFF; on the AL4, option switch 8 of Switch Bank 1 should be OFF.

LOCKOUT (INHIBITING ACCEPTANCE)

Lockout is achieved by controlling the voltage on Pin 12 of the 18-pin connector. To enable lockout, tie the system logic ground* to Pin 4 of the 18-pin connector by way of the wire nut. Connect the machine lockout signal to Pin 12. When Pin 12 is low, the Bill Acceptor will accept monies. If Pin 12 is high, or open, acceptance is inhibited.

If the source of voltage to Pin 12 can exceed +5 volts DC, the Bill Acceptor draws current from the source as limited by the 1k pullup to 5v and the internal breakdown diode of the integrated circuit (IC). To prevent damage to the IC, a series diode (IN4148 or equivalent) may be connected (Figure 9.) with its anode to Pin 12. This prevents current from flowing into the Bill Acceptor. The input IC is a CMOS/TTL compatible device.



NOTE: Logic ground and power ground must NOT be connected.

Figure 9. Lockout Diagram

CONNECTOR INFORMATION

Pulse Interface

NOTE: Bold type indicates those connections required for Pulse Interface to operate.

Pinout of AL2/4 18-pin Connector (Figure 10.)

Pin 1	Credit Pulse	Pin 10	Out-of-Service
Pin 2	Interrupt	Pin 11	Debug Data Output
Pin 3	Serial/Pulse Select	Pin 12	Accept Enable
Pin 4	Ground	Pin 13	Out-of-Service LED Power Source (200 ohm to 5VDC)
Pin 5	Data Output	Pin 14	Send
Pin 6	\$1 External Enable	Pin 15	Reserved
Pin 7	Reserved	Pin 16	Reserved
Pin 8	\$5 External Enable	Pin 17	Reserved
Pin 9	\$10 External Enable (AL4 only)	Pin 18	\$20 External Enable (AL4 only)

Pinout of AL2/4 9-pin Connector (Figure 11.)

	115VAC Model	24VAC Model
Pin 1	Reserved	Reserved
Pin 2	Reserved	Reserved
Pin 3	Reserved	Reserved
Pin 4	115VAC HOT (Power)	Reserved
Pin 5	Reserved	24VAC HOT (Power)
Pin 6	115VAC Neutral (Power)	24VAC Neutral (Power)
Pin 7	Credit Relay, Normally Open	Credit Relay, Normally Open
Pin 8	Credit Relay, Common	Credit Relay, Common
Pin 9	Reserved	Reserved

CONNECTOR INFORMATION

18-Pin Mating Connector

AMP "MODU" (18) pin MT Receptacle

AMP Part #102398-7 IDC Connector Housing

AMP Part #102536-7 Back Cover

AMP Part #102681-4 Latching Front Cover

#22 or 24 Gauge wire recommended

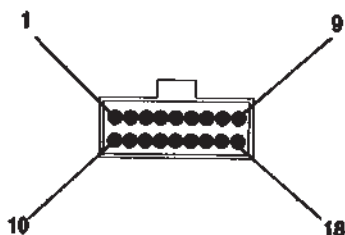


Fig. 10. 18-Pin Connector

9-Pin Mating Connector

AMP "MATE-N-LOCK" (9) pin

AMP Part #172161-1 Shell

AMP Part #170364-1 Male Pin

#22 Gauge wire recommended

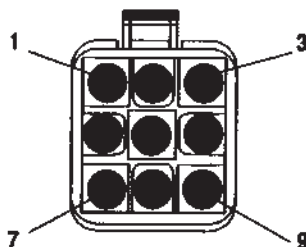


Fig. 11. 9-Pin Connector

CALIBRATION PROCEDURE

The AL2 and AL4 Bill Acceptor may be calibrated using the Mars Electronics Calibration Kit P/N 111636021. Refer to the Calibration Procedure, Mars Electronics P/N 119083001 contained in the kit for specific instructions.

Calibration is generally required after the Bill Acceptor has been disassembled for service or cleaning.