GUIDANT

Smith Meter Load Printer

Service

Issue/Rev. 0.1 (7/03)

Bulletin MN06011

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The Smith Meter™ Load Printer is an electromechanical ticket printer capable of accumulating and printing pulses received from a transmitting device. The Load Printer requires electrical power either at 110 Vac or 220 Vac ±15%. The ticket printer may be either accumulative or zero start. Further details are listed in the Specification Bulletin and Installation Manual.

The Load Printer is impervious to most environmental fluctuations and provides service over a wide range of operating conditions. The Load Printer is contained within an explosion-proof housing meeting the following requirements.

- UL Listed and CSA certified for use in Class I Groups C and D, Division 1 and 2.

The unit also meets NEMA IV weatherproofing. The Smith Meter Load Printer will perform at temperatures down to -40°F (-40°C) without the need for a supplementary heater/thermostat system.

This manual contains information for servicing a properly installed Load Printer. Read and understand the contents of this manual before attempting any service procedure.

This section contains instructions for the removal and installation of the Load Printer component parts.

Warning

Power must be removed before opening the unit in a hazardous area.

Note: *Before starting any service procedure, record the ticket reading and the Totalizer reading for purposes of accountability.*

Tools Required

6 mm Allen wrench
Medium blade screwdriver
7/16" Allen wrench
Thermal joint compound or equivalent
Thermalcote, Thermalloy Stock #249

Printer Head Assembly Removal

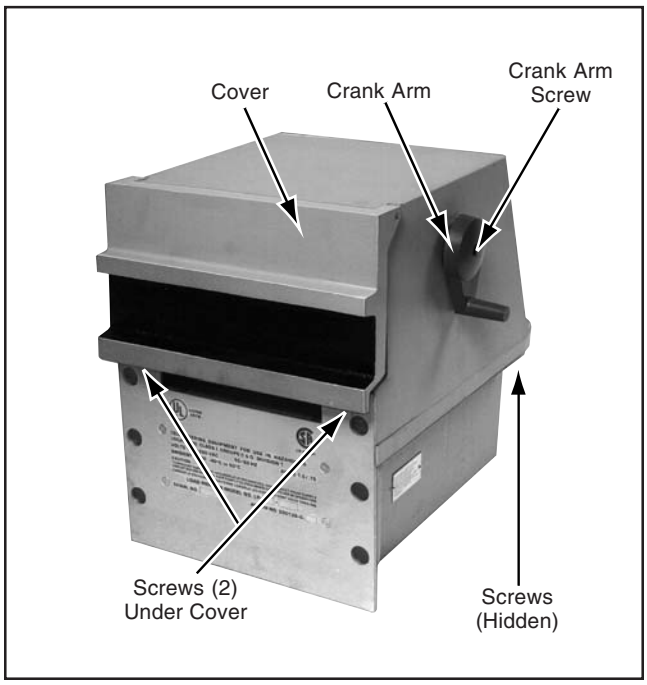

Figure 1 — Load Printer Cover Removal

1. Remove crank arm by removing screw in crank arm body (Figure 1).
2. Remove top cover by removing the four (4) slotted head screws located at the front and rear (Figure 1).
3. Remove printer head plate by removing the fourteen 6 mm Allen screws located around the perimeter of the plate (Figure 2).
4. Grasp the ticket printer head and plate and lift the front part carefully.

Caution

A wiring harness from the stepper motor to the ETP Board is plugged in at the front of the Load Printer. The wiring harness may be damaged if care is not used when lifting the front panel of the printer head plate (Figure 2).

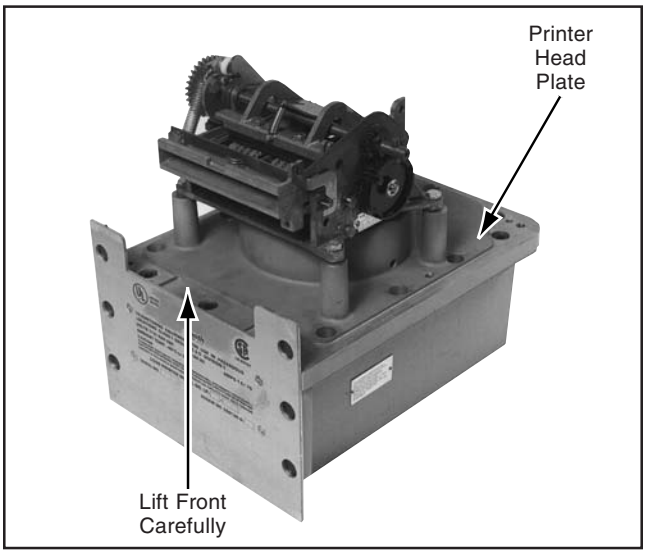

Figure 2 — Removing Printer Head Plate

5. Remove the stepper motor harness plug. The plug is located at the front, inside the housing on the ETP Board. Squeeze the locking tabs at the top and bottom and pull the plug away from the ETP Board.
6. Lift the printer head assembly to gain access to the tray switch (Figure 3).
7. Remove the two wires on the ticket tray switch and the tie wraps that secure the ticket tray switch wires to the stepper motor (Figure 3).
8. Remove the printer head plate and set it aside. Be careful that the unit does not tip or fall damaging the stepper motor or the printer head.

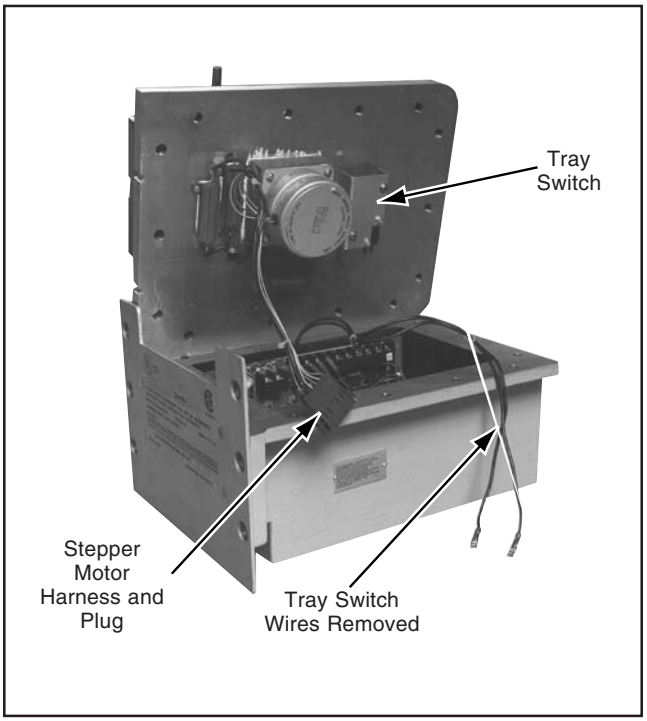

Figure 3 — Underside of Printer Head Plate

Electronic Ticket Printer (ETP) Board Removal

1. Record the wire numbers or the color code of the wire terminations on the terminal strip of the ETP Board. These wires must be removed before removing the ETP Board (Figure 4).

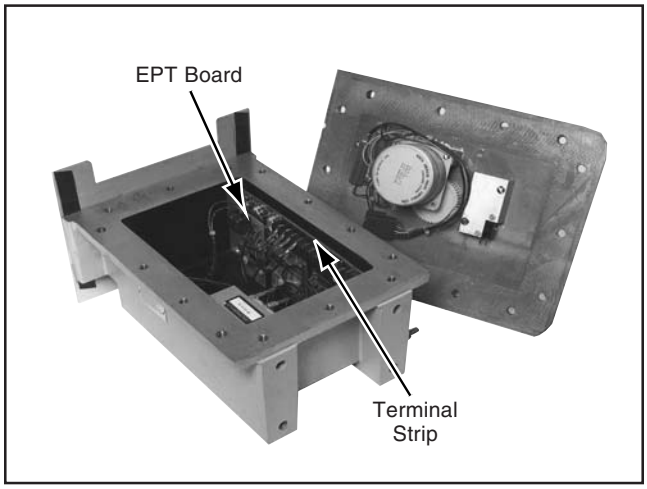

Figure 4 — ETP Board Removal

2. Remove the wires on the terminal strip.

Note: *It is easier to remove the ETP Board together with the bridge rectifier and transformer when replacing the ETP Board. The wires from the ETP Board to the other components are difficult to connect when all the components are inside the housing. The following steps enable you to unwire and rewire the components more easily and accurately.*

3. Remove the screws at the front and rear of the ETP Board (Figure 5).
4. Remove the screw securing the bridge rectifier (Figure 6).
5. Remove the two screws securing the transformer (Figure 6) to the housing floor.
6. Lift the ETP Board, rectifier, and transformer out of the housing.
7. Carefully remove the four wires at the bottom of the transformer.
8. Remove the two wires on the bridge rectifier that come from the upper two taps of the transformer.

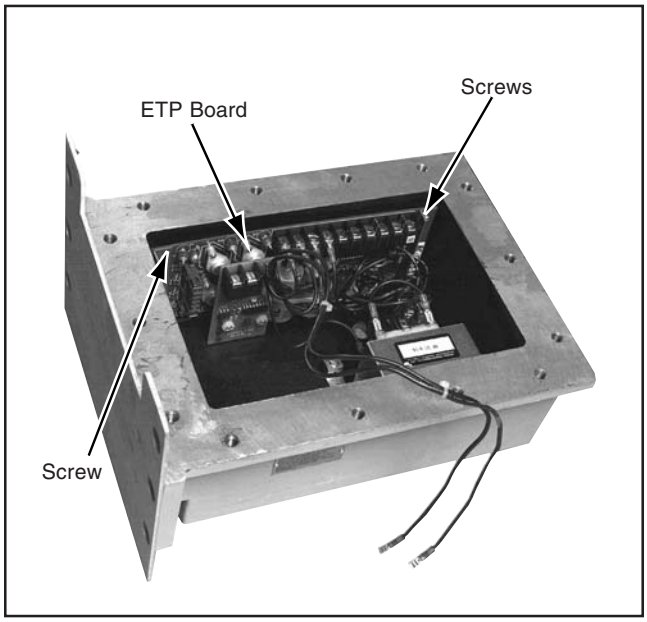

Figure 5 — ETP Board Removal

Electronic Ticket Printer Board Replacement

1. Unwrap replacement ETP Board.
2. ***Important:*** *Check that the jumper plugs on the ETP Board are installed in the same place on the new board as on the old board.*
3. Refer to Figure 6 and carefully connect the wires from the ETP Board to the bridge rectifier and transformer.

   Important: *When connecting the wires to the transformer, use care in sliding the connectors onto the transformer taps. The taps are easily broken if extreme force is used.*
4. Reverse the steps in Printer Head Assembly Removal and Electronic Ticket Printer Board Removal Sections, Pages 3 and 4.

Caution

When replacing the printer head assembly, be sure that the wires connecting the assembly and the ETP board are not pinched between the plate and the housing.

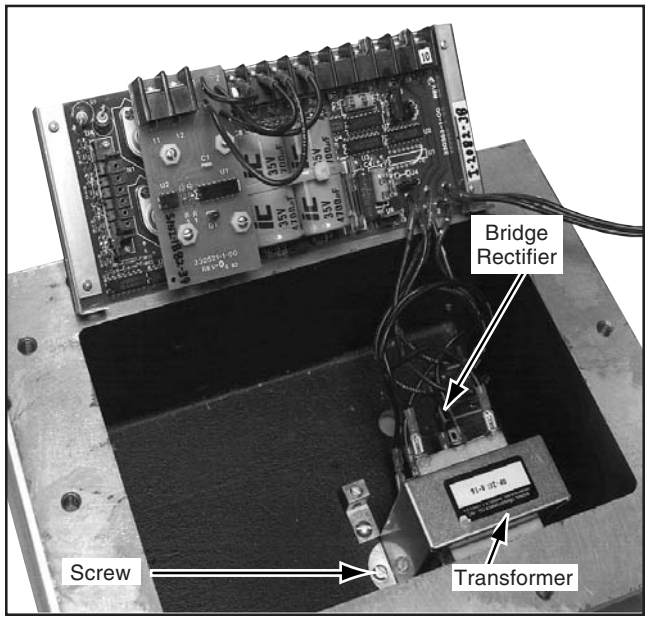

Figure 6 — Transformer Removal

Stepper Motor Removal

1. Remove the printer head assembly according to the instructions on Page 3. The stepper motor is located on the underside of the assembly.
2. Remove the four slot head screws retaining the resistors (Figure 7).
3. Remove the three slot head screws retaining the stepper motor (Figure 7).
4. Remove the pin and gear from the stepper motor shaft (Figure 7).

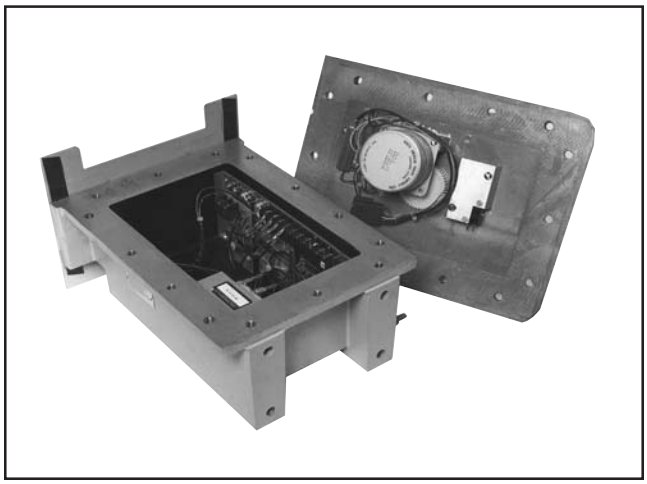

Figure 7 — Stepper Motor Removal Removal

Stepper Motor Replacement

1. Install the gear and pin to the stepper motor shaft.
2. Before tightening the screws that retain the stepper motor, be sure the teeth on the gears are not bottomed. When the screws are tight, the large gear should move a fraction of an inch before engaging the stepper motor gear.
3. Heat sink compound must be applied to the flat side of the resistors before mounting them to the plate.
4. Reverse the steps in Printer Head Assembly Removal Section to reassemble.

Caution

When replacing the printer head assembly, be sure that the wires connecting the assembly and the ETP Board are not pinched between the plate and the housing.

Printer Head Removal

1. Remove the crank arm by removing the screw in the crank arm body (Figure 6).
2. Remove the top cover by removing the four slotted head screws located in the front and in the rear of the unit (Figure 6).

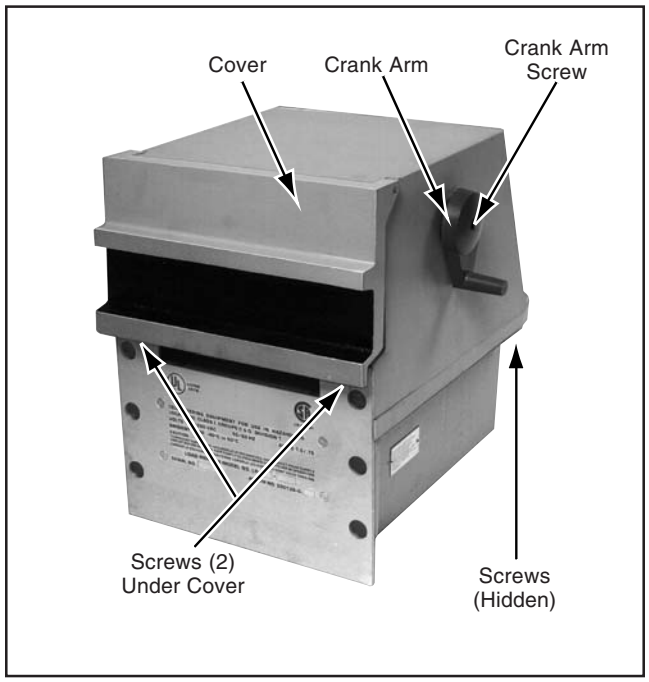

Figure 8 — Load Printer Cover Removal

3. Remove the printer head by first removing the four 7/16" hex head bolts (Figure 9).
4. Lift the printer head straight up.

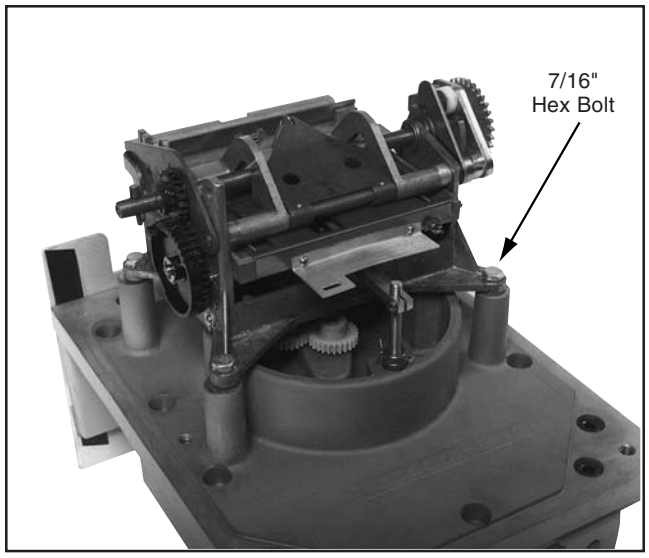

Figure 9 — Printer Head Removal

Printer Head Replacement

1. Set the identifier code wheels to the desired designation (Figure 10). See Installation Manual.
2. Remove the drive gear from the defective unit by removing the pin retaining the gear to the shaft (Figure 11). Reinstall gear on replacement unit.

Note: *This task is only required if the replacement printer head does not have a plastic drive gear.*

3. Reverse the above steps to reassemble.

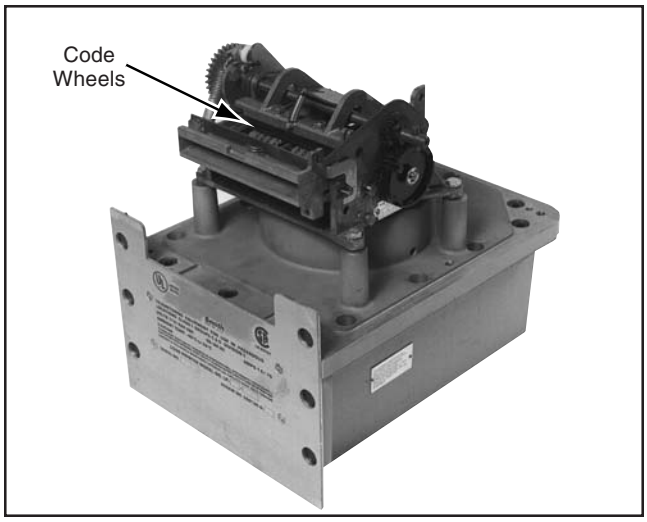

Figure 10 — Set Code Wheels

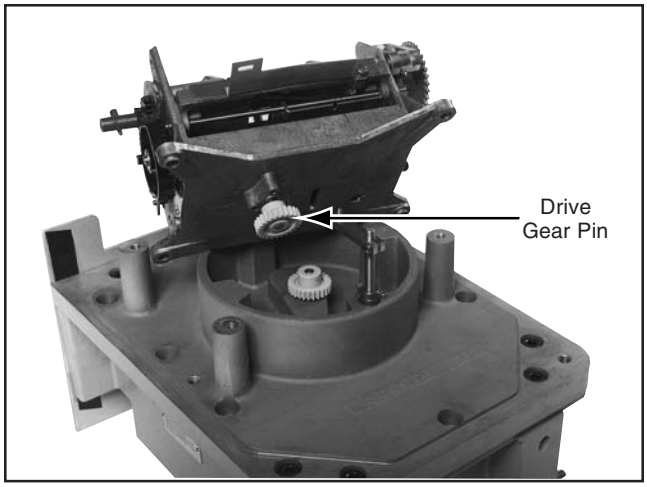

Figure 11 — Drive Gear Removal

Tray Switch Removal

1. Remove printer head assembly according to the instructions under Printer Head Removal Section, Page 5.
2. The switch is on the underside of the assembly plate.
3. Remove the two bracket screws.
4. Remove the switch from the bracket.

Tray Switch Replacement

1. When reassembling the switch and bracket to the plate, be sure the switch actuator arm is inside the switch actuator.
2. Reverse the steps in Printer Head Removal Section, Page 5 to reassemble.

OPV Option Removal

1. Remove the cover and printer head assembly (Figure 12) according to the instructions under Printer Head Assembly Removal Section, Page 5, Steps 1-8.
2. For easy access to the OPV Board remove the ETP Board according to the instructions under Electronic Ticket Printer Board Removal Section, Page 4, Steps 1-3.
3. Remove the wires connecting the ETP and the OPV Boards from Terminals 1, 2, 3, and 4 (Figure 13).
4. Remove the wires from 11 and 12.
5. Remove the four screws connecting the ETP and the OPV Boards (Figure 13).

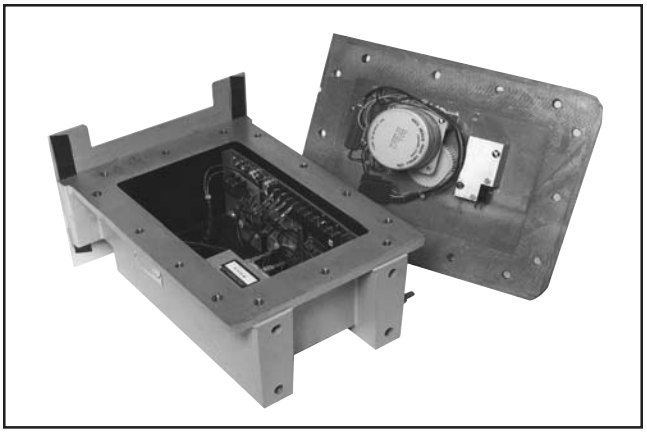

Figure 12 — Cover and Printer Head Removed

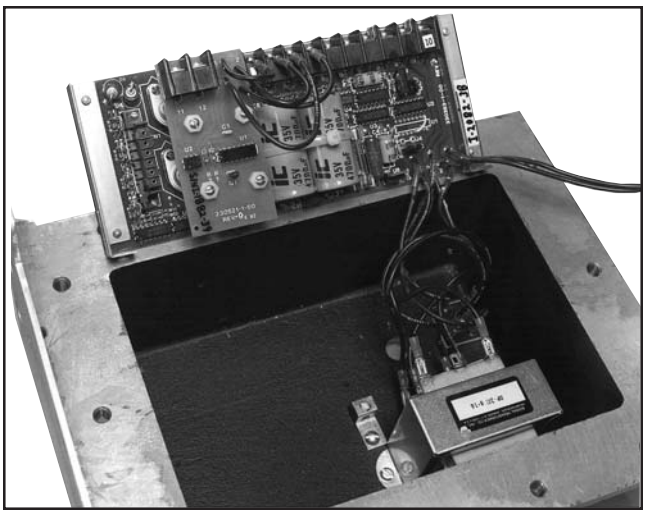

Figure 13 — OPV Removal

OPV Option Replacement

1. Before replacing the OPV Board, be sure the thumbwheel switch is set to the option required by the system. Reference the board that was just removed. The thumbwheel is numbered from one (1) to zero (0). Each number designates a specific divide circuit. Zero (0) means being divided by ten (10).
2. Install the components in the reverse order.

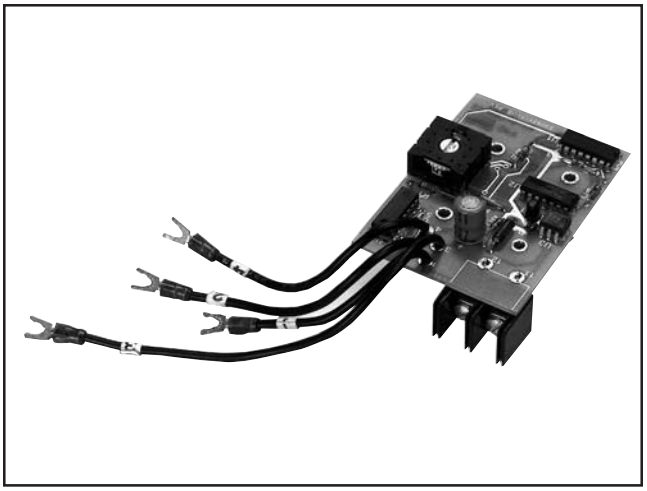

Figure 14 — OPV Board

Warning

Voltage checks must be done in a non-hazardous environment. Remove all electrical power before servicing.

This section contains a listing of fault symptoms, possible causes, and corrective actions. Removal and replacement procedures for a particular assembly will be found in the preceding section of this manual.

Fault Symptom	Possible Cause	Corrective Action
Printer not counting.	A. No flow in system.	A. Verify flow.
	B. No power to unit.	B. Check circuit breaker.
	C. Wiring incorrect or open.	C. Check wiring.
	D. Fuse F1 open.	D. Replace.
	E. Signal wiring incorrect or open.	E. Check wiring between transmitting device and Load Printer Terminals 1 and 2.
	F. Ticket printer board inoperative.	F. Replace ETP Board.
	G. Transformer and or bridge rectifier inoperative.	G. Gheck/replace either or both items.
	H. Stepper motor inoperative.	H. Be sure CN1 between motor and ETP Board is connected properly. Replace stepper motor.
	I. Transmitting device inoperative.	I. Reference Service Manual for that device.
	J. OPV Board inoperative.	J. Replace OPV Board.
Motor chattering.	A. Improper jumper.	A. Be sure jumper is in proper position. See Page 4.
Volume on printer incorrect.	A. Wiring loose.	A. Check wire crimps and screw connections.
	B. Jumpers set incorrectly on ETP Board.	B. Check plugs on ETP Board. See Page 4.
	C. Printer board not operating correctly.	C. Replace ETP Board.
	D. Incorrect pulse count received from transmitting device.	D. Reference Service Manual for that device.
	E. OPV Board not operating correctly.	E. Replace OPV Board.
	F. Wheels on mechanical counter binding or other mechanical failure in printing mechanism.	F. Reference Service Manual for the mechanical printer.
No signal from ticket tray switch.	A. Actuation arm out of adjustment.	A. With the tray cranked in, adjust arm so that switch is closed.
	B. Switch defective.	B. Replace switch.
	C. Incorrect or defective wiring.	C. Check and correct wiring.
	D. ETP Board defective.	D. Replace board.

Note: *When removing a component from the Load Printer, be sure the wires are marked for the proper replacement.*

Load Printer

Specifications ..... Bulletin SS06004
Installation/Operation ..... Bulletin MN06010

Veeder Root

Meter Register with Ticket Printer 8-012

Revisions included in MN06011 Issue/Rev. 0.1 (7/03):

Eliminated CENELEC certification information on Page 2.

Technical Support

Contact Information:
Field Service Response Center
24/7 Technical Support/Schedule a Technician: 1-844-203-4014
System Installation Supervision, Start-Up, Commissioning Services, and Training Available

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

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