

WEIGH-TRONIX



WP-250 Ticket Printer Service Manual

TABLE OF CONTENTS

WP-250 Service Manual	1
General Maintenance	1
Ribbon Replacement	1
Removing Old Ribbon	1
Installing New Ribbon	1
Description and Location of Major Components	2
Time and Date Option	2
Installing Time and Date Option	2
BCD Interface Option	3
Installing BCD Interface Option	4
Serial Interfacing	5
Current Loop	5
Pulse Input	6
Trouble-Shooting	6
Missing Dot Troubleshooting	7
Circuit Operation and Test Points	7
Print Head Mechanism Replacement/Alignment Procedure	8
Removal of Print Head Carrier Assembly	8
Replacement of Assembly	9
Time and Date PC Board	10
BCD PC Board	10
Main PC Board	11

WP-250 Service Manual

General Maintenance

The WP-250 Ticket Printer is designed to operate with a minimal amount of regular maintenance. However, it is important that the printer remain clean during operation.

The most critical part to be kept clean is the head shaft. The shaft should be cleaned and fresh lubricant lightly applied two or three times a year. (LUBRI-PLATE or IBM #23 are recommended lubricants.) The nylon gears used in the printer do not require any lubrication.

Ribbon Replacement

Removing Old Ribbon

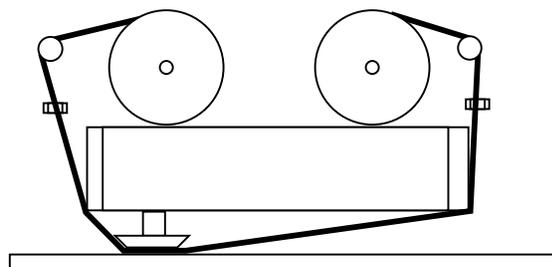
IMPORTANT: When removing and installing the ribbon, take care not to stain the printer parts with ink contained in the ribbon.

Installing New Ribbon

The ribbon can be changed at the user's discretion. The ribbons supplied by Weigh-Tronix are rated for 1,000,000 characters of standard text. Ribbon life will vary depending on usage.

1. Pull the two ribbon spools forward to separate them from the spool drive pins.
2. Take the old ribbon off the ribbon guide of the ribbon frame.

1. Position the ribbon along the ribbon guide as shown in the illustration below.
2. Make sure the ribbon spools have been properly seated on the spool drive pins.



Description & Location Of Major Components

1. Main PC Board

There is one main circuit board which is mounted in the bottom of the WP-250 Ticket Printer cabinet. It contains all of the power supply circuitry except the transformer. It also contains all of the logic circuitry except the BCD input which is an external, optional BCD board.

2. BCD Option

The BCD option is composed of an additional circuit board that attaches to the rear of the printer. This board is attached by a cable.

Major Components	
Description	W-T Part #
Ticket Print Mechanism	45009-1020
Paper Feed Solenoid	45009-1061
Paper Hold Solenoid	45009-1079
Time and Date Ass'y (w/ battery)	45009-1004
Time and Date Battery Only	45009-1095
Main PC Board	45009-1087
BCD Adapter with EPROM	45009-1012
Print Switch	45009-1129
Power Transformer	45009-1095

Time And Date Option

The time and date option provides the current time and date in both a 12 hour and 24 hour version. For systems that involve an intelligent host device that can provide the time and date, this option is not needed.

Installing Time and Date Option

If you planned to use the Time and Date Option at the time you ordered the WP-250, the option was probably purchased and installed before the unit was shipped. If you purchased the WP-250 without the options, it can be easily installed:

1. Unplug the printer from the wall outlet.
2. Remove 4 screws on the print mechanism cover and remove the cover by lifting up.
3. Connectors J5 and J6 will be empty if the printer does not have the Time and Date Option installed.
4. Install the Time and Date Option board with the battery close to the front of the printer.
5. Replace the print mechanism cover to its original location. Hold the cover in place with the four screws, which should be snug but not too tight.
6. Perform a self-test to verify printer operation.
7. Refer to User's Manual to set the Time and Date.

BCD Interface Option

The BCD Option is used to interface electronic weigh scales that have only a BCD type interface. Parallel BCD is not a general data interface and does not use the ASCII control codes. It is a numeric interface meant to obtain the weight, units, and motion indication from electronic weigh scales.

BCD stands for Binary Coded Decimal. It was one of the first interfaces made available for electronic weigh scales when the big push for electronic conversion of mechanical scales began in the 1970's. The interface basically began as a latched TTL (transistor transistor logic) output of the seven segment scale display.

The BCD Option converts a 5 1/2 active digit BCD input into a 20 mA current loop output. The interface cable is a 29 wire conductor cable. For each of the five digits transferred the cable contains four wires. Digit six is a single wire that is the 100,000 input. The other wires include the PRINT input, the SIGN input, PRINT INHIBIT or MOTION input and LOGIC ground. In addition, a bank of switches controls the assumed decimal place setting, the imposing of a trailing dumb zero, and kg/lb unit printing.

Parallel BCD Interface		
PIN	PARALLEL MODE	DESCRIPTION
1	Digit 3, Bit 8	800
2	Input	+/- Sign
3	Digit 4, Bit 8	8000
4	Digit 3, Bit 4	400
5	Ground	
6	Input	Motion Inhibit
7	Digit 3, Bit 2	200
8	Digit 4, Bit 2	2000
10	Input	Print Request
11	Input	Gross/Net
12	Digit 1, Bit 8	8
13	Digit 2, Bit 8	80
14	Digit 5, Bit 2	20,000
15	Digit 1, Bit 2	2
16	Digit 2, Bit 2	20
17	Digit 6, Bit 1	100,000
20	Input	Valid Data
21	Output	Busy
25	Digit 4, Bit 4	4000
26	Input	Lb/Kg Units
27	Digit 3, Bit 1	100
28	Digit 4, Bit 1	1000
30	Digit 5, Bit 8	80,000
31	Digit 5, Bit 4	40,000
32	Digit 1, Bit 4	4
33	Digit 2, Bit 4	40
34	Digit 5, Bit 1	10,000
35	Digit 1, Bit 1	1
36	Digit 2, Bit 1	10

Installing The BCD Interface Option

If you planned to use the Parallel BCD Interfacing at the time you ordered the WP-250, the option was probably purchased and installed at the factory. If you purchased the WP-250 without the option, it can be easily installed.

1. Unplug the printer from the wall outlet.
2. Program the 8 Position DIP Switch in the BCD Module.
3. Connect the cable from the BCD interface board to the indicator.
4. Connect the cable from the BCD interface board to the printer.
5. Configure the printer for current loop 1200 baud, 8 data bits, no parity.
6. Perform a self-test to verify printer configuration and operation.

For the WI-110/120 Switch 6 must be on. Switches 1, 2, 3 & 8 must be set to match your indicator's display mode.

8 Position DIP Switch								1 = ON # - number 0-9
1	2	3	4	5	6	7	8	
								Dec. Point ##### LB
								Dec. Point ####.### LB
								Dec. Point ##.#### LB
								Dumb Zero #####0 LB
								Gross/Net Bit Inverted
								Valid Data Bit Inverted
								Printed Pos. Data Only
								Motion Inhibit Bit Inverted
								Prints Data with KG

Serial Interfacing

The RS-232C, Current Loop, RS-485, and Pulse Input are standard in every WP-250 Ticket Printer.

The WP-250 serial input port is connector J1. It has an industry standard DB-25 female connector wired

as a DTE device. The WP-250 has a 4000 character input buffer and unless you plan to send more characters than this per ticket, you will not overflow the input buffer. If you will be sending a large amount of data

or sending data continuously, as with some electronic weigh scales, you may want to implement some type of handshaking.

The printer supports XON/XOFF handshaking. The XON/XOFF handshaking requires no additional wiring to implement. The host device only needs to support the XON/XOFF protocol.

Serial Interface Connections	
PIN	Signal Description
1	Chassis Ground
2	TXD Transmit data
3	RXD Receive data
4	RTS
5	CTS Clear to send
6	+5R
7	Ground
8	+20 mA in
22	-20 mA in
15	+ Pulse Input
22	- Pulse Input
16	Remote Print (active low)
13	Ground
20	DTR +8V
11	+ RS-485
12	- RS-485

Current Loop

The 20 mA Current Loop, which is standard in the WP-250, is a good interface for systems that will require long distances between the host device and the printer.

Data is sent between the transmitter and receiver as a series of pulses. The set-up of a 20 mA serial connection is much like an RS-232C interface. The number of data bits, parity, stop bits, and baud rate must match at both the transmitting and receiving ends.

The only real difference between the two is that RS-232C serial is a voltage based interface while 20 mA serial is a current based interface.

The current for the interface is provided by one of the two devices in the interface. The device that supplies the current is called the active side and the device on the other end is called the passive side. It does not matter which side is passive and which is active as long as there is only one of each. The WP-250 has the hardware needed to be the passive side of the 20 mA interface for the receive loop.

20 mA Current Loop is frequently run on a twisted pair of wires. There is no busy line or reverse channel for XON/XOFF for the 20 mA interface.

The connections for the 20 mA interface are on connector J1 on the back of the WP-250 printer.

Pins 8 and 22 are the 20 mA Current Loop receiver connections.

Pulse Input:

Pulse input must be 0 - 24 VDC. A current leakage resistor may be necessary for proper switching. The printer must be set for Current Loop and the Intelligent Printer Mode for Pulse Input must be enabled. Be sure to select the correct division size, decimal point place, and unit of measure to match your indicator.

Troubleshooting

Problem

1. Head will not cycle smoothly
2. Dots missing in print
3. Printing darker on one side
4. Prints time and date but no weight information
5. Print isn't dark enough regardless of head gap
6. Printer locks up when PRINT button is depressed
7. Paper feed is inconsistent

Solution

- 1a. Defective drive transistors or motor, possibly 24V supply is gone
- 1b. Mechanical problem. For example: gears are binding
2. Defective drive transistors or printhead
3. Adjust head gap (platen adjust)
4. Wrong baud rate, data bits, stop bits, or parity
5. Replace ribbon
6. Thumbwheel switch is in wrong position
7. Feed roller is worn

Missing Dot Troubleshooting

Missing dots are caused by 1 or more of the following:

1. Broken needle
2. Blown transistor
3. Blown drive diode
4. Blown fuse

The table below lists the dot driver components in order of dot position.

If a dot is missing, check ALL of the dot driver components for the missing dot.

WP-255 Dot Driver Components				
Dot Position	Fuse	Transistor	Drive Diode	Snubber Diode
7	F7	Q7	CR17	CR28
6	F6	Q6	CR16	CR27
5	F5	Q5	CR15	CR26
4	F4	Q4	CR14	CR25
3	F3	Q3	CR13	CR24
2	F2	Q2	CR12	CR23
1	F1	Q1	CR11	CR22

Circuit Operation And Test Points

This table contains test points found on the main board and the voltage that is associated with each test point. All voltage measurements are taken utilizing signal ground located at pin 1 of U13.

Power Supplies	
Test Point	Voltage
Anode CR 31	-8 vdc
Cathode CR9	+5 vdc
Pin 3 of U13	+24 vdc
Pin 2 of U13	+8 vdc

Print Head Mechanism Replacement/Alignment Procedure

Removal of Print Head Carrier Assembly

1. Remove power from the printer, then remove the ribbon.
2. While looking at the printer from the front, loosen the two screws on the left side of the print head assembly, then remove the two screws on the right side. (8-32 x 3/8", 4 pieces UNC) See Figure 1 below.
3. Slide the print head assembly to the right and lift up. Carefully unplug the print head assembly.
4. Remove the four screws that hold the paper guide in place. (CS: M4 x 6, 4 pieces metric)
5. Carefully remove the two plastic pins that hold the ribbon guide shield in place.
6. Carefully remove the ribbon guide shield.

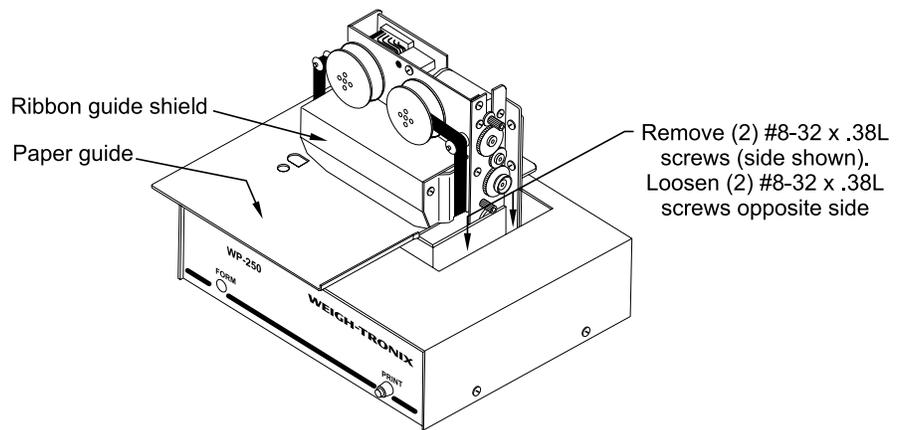
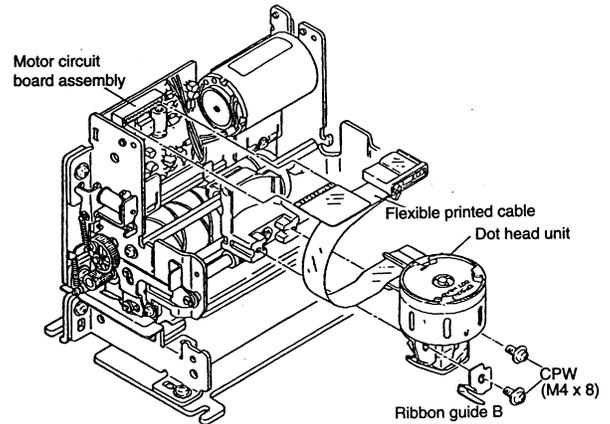


Figure 1

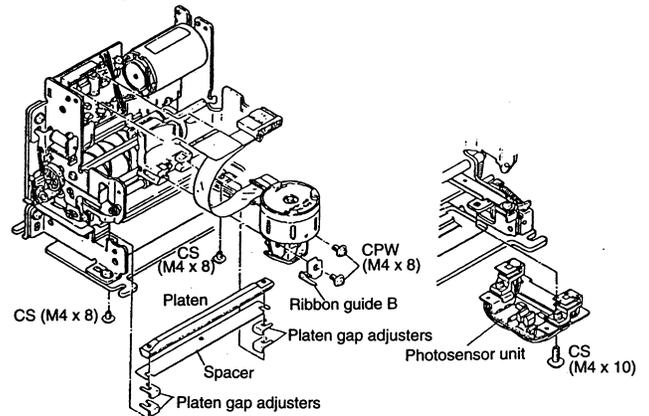
Replacement of Assembly

1. Replace the dot head unit on the print head carrier assembly as follows:
 - 1a. Screw the dot head unit together with the ribbon guide assembly (B) to the print head carrier assembly. Tighten the screws.
CPW: M4 x 8 (2 pieces metric)
 - 1b. Plug the terminal end of the flexible cable into the connector on the motor circuit board.



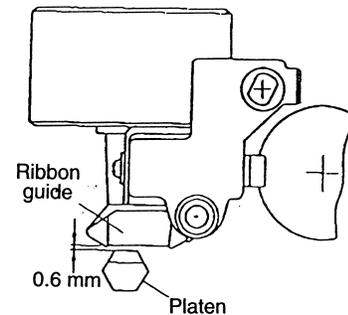
2. Install the platen as follows:
 - 2a. Screw the spacer and platen to the frames. Install the photosensor unit. Tighten the screws. (CS of M4 x 10, 2 pieces metric)

If the total thickness of the sheets of paper to be used is 0.25--0.45mm, it is not necessary to use the spacer.
 - 2b. By moving the print head carrier assembly from end to end, check if the dot head unit and the platen are parallel to each other (check if the dot head/platen gap is of the same amount at both ends of the print head carrier assembly).



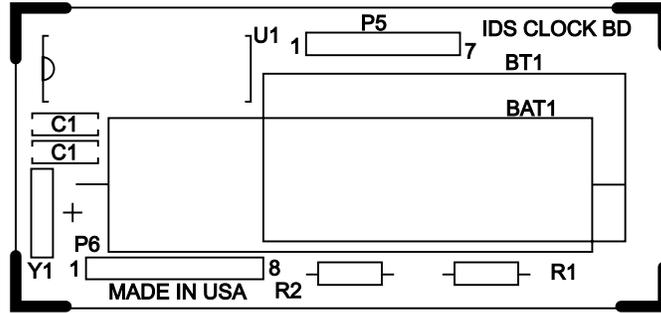
The print head carrier should move freely from end to end. Do not force.

3. Adjust the dot head/platen gap as follows:
 - 3a. If the gap is appreciably different from end to end, make adjustment by increasing or decreasing the number of platen gap adjusters on one end.
 - 3b. Move the print head carrier assembly to one end of its stroke and make positional adjustment so that the gap between the ribbon guide face and the platen is 0.6mm.
 - 3c. Move the print head carrier assembly to the opposite end of its stroke and check the above-mentioned gap.

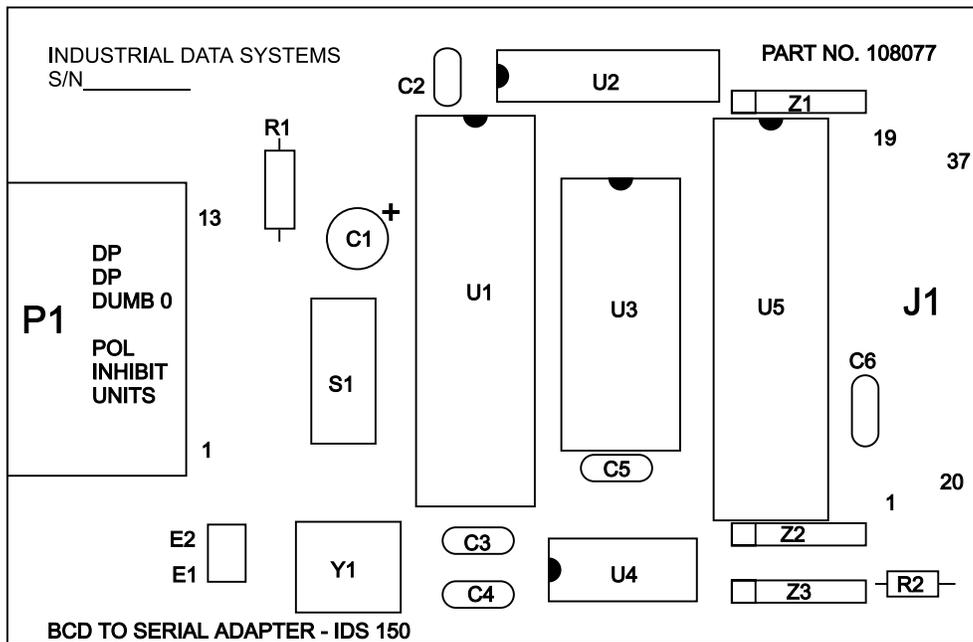


Time and Date Board

W-T P/N 45009-1004

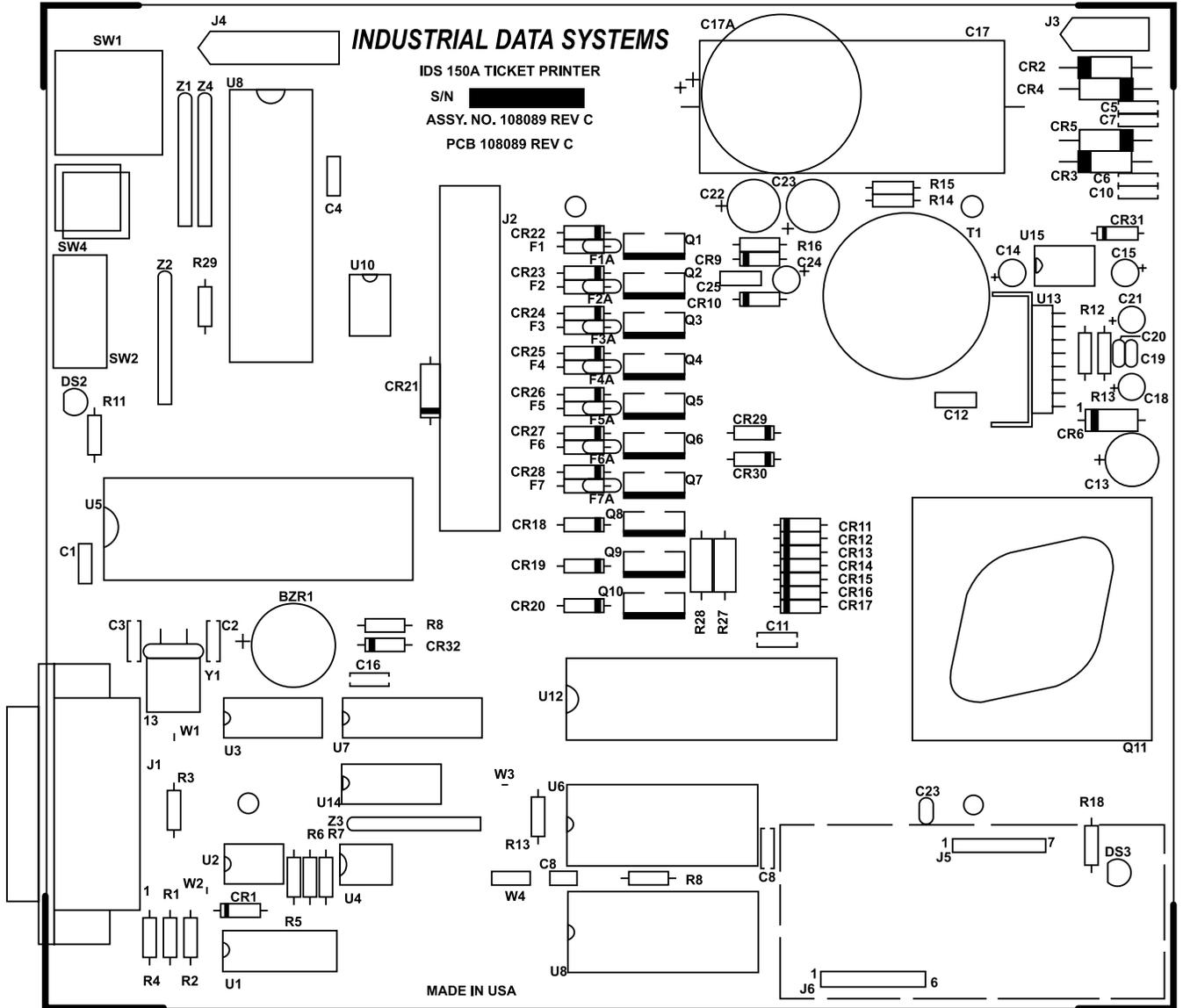


BCD Board



Main PC Board

W-T P/N 45009-1087



Weigh-Tronix

1000 Armstrong Dr.
Fairmont, MN 56031 USA
Telephone: 507-238-4461
Facsimile: 507-238-4195
e-mail: industrial@weigh-tronix.com
www.weigh-tronix.com

Weigh-Tronix Canada, ULC

217 Brunswick Blvd.
Pointe Claire, QC H9R 4R7 Canada
Telephone: 514-695-0380
Facsimile: 514-695-6820

WEIGH-TRONIX

Weighing Products & Systems