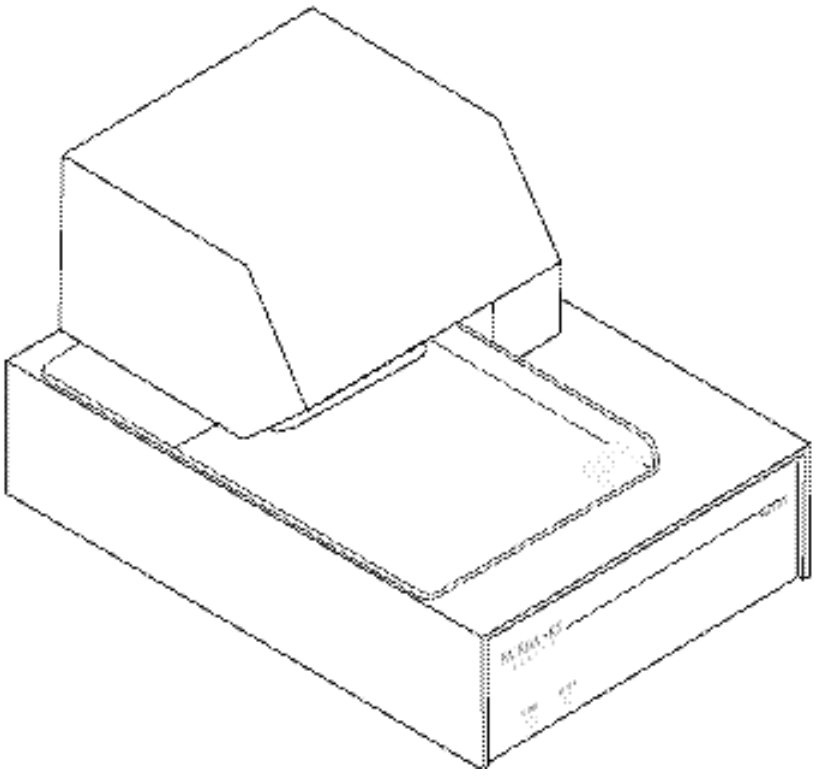
Instruction Manu

Ticket Printer

PTR-3950



50203 / SJ4780
Issue #3 12/06

Amendment Record

Ticket Printer
PTR-3950
50203

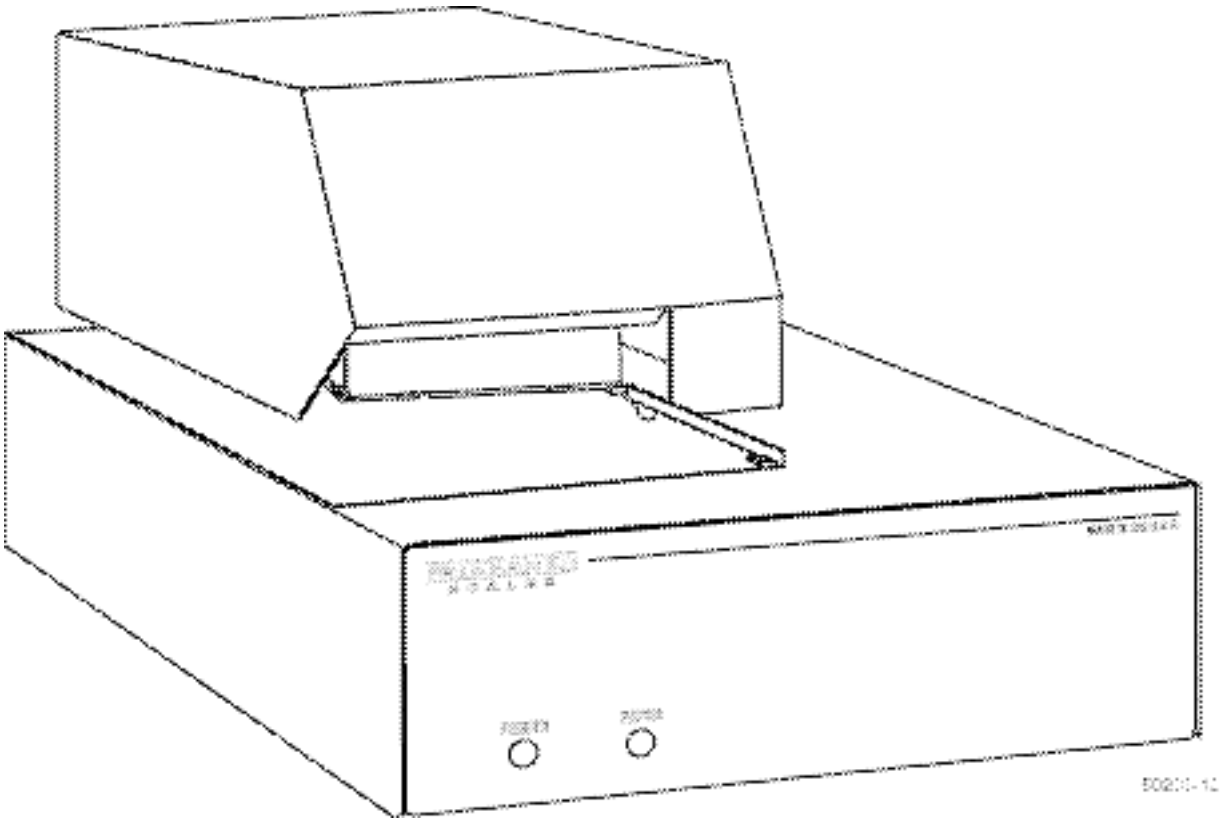
Manufactured by Fairbanks Scales Inc.
821 Locust
Kansas City, Missouri 64106

Created:	
Issue # 1	
Issue # 2	
Issue # 3	Added instructions for setup, version 2.00 software upgrade with double-strike capability. Added 5 digit part numbers.
Issue # 4	RS232C revisions. Minor formatting revisions.

Table of Contents

Ticket Printer
PTR-3950
50203

Section 1: Introduction



The PTR-3950 Ticket Printer is a bidirectional dot matrix printer. It can be used to print on plain or carbonless paper. Up to five layers of carbonless paper can be printed. The paper is automatically clamped when the motor is started. The print platen automatically adjusts to the thickness of the multi-part forms for consistent print quality. The paper is released when the printer receives a specific ASCII code. Auto Release is configurable using a DIP switch. The printer motor will automatically turn OFF should a jam occur. Version 2.00 software contains double-strike capability to darken and enhance the print. This feature, when turned "ON", will increase the print time by approximately 1/3 over non-double-strike print time.

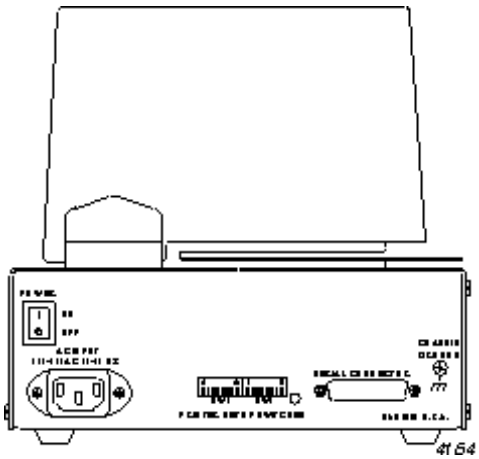
Section 2: Description

A. Specifications:

Dimensions, Printer,	12.25" long, 9" wide, and 8.5" high
Dimensions, Ticket Table,	10.25" long x 6.5" wide
Enclosure Material,	Steel
Weight,	17 lbs.
Power Requirements,	100 to 240 VAC, 50 to 60 Hz
Operating Temperature,	32° to 104° F (0° to 40° C)
Storage Temperature,	32° to 140° F (0° to 60° C)
Relative Humidity,	10 to 90%
Print Method,	9 wire, serial impact
Print Speed,	120 characters per second or three lines
Print Direction,	Bidirectional, single pass (Version 2.00 includes doublestrike capability)
Line Width,	3.3" printable area (84mm)
Line Spacing,	6 lines per inch, (4.2mm)
Columns,	40 characters per line, regular print 20 characters per line, enhanced print 2.7" line width (68.6mm)
Font	7 x 9 dot matrix
Font Width	0.052" (1.3mm)
Font Height	0.12" (3.12mm)
Pitch	.014" x .014" (0.353mm x 0.344mm)
Font Set,	96 character ASCII
Paper Sensing,	Photo-electrically senses top and bottom of the ticket
Ribbon,	Single color, purple
Ribbon Material,	Nylon

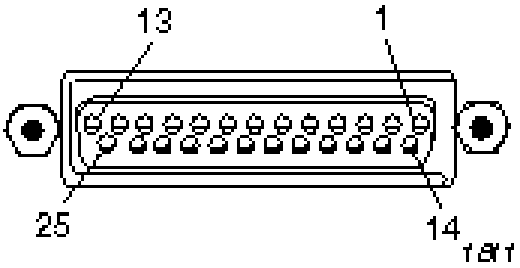
B. Interface Cables

The communications interfaces available on the PTR-3950 are a Serial RS232C or a 20 mA Current Loop. A communications cable is plugged into the 25 pin serial connector on the back of the printer. The input to the printer is selected by correctly wiring the connector for either the RS232C or the 20 mA Current Loop. The connector is a 25 pin "D" type, male solder cup, which accepts standard 36 AWG to 22 AWG.



Typically, Fairbanks indicators and printers will use RS232C communications. Use the following cables as required:

ACC#	Part #	Instrument:
ACC-1254	3-56343-1	90-9201, 9210, IND-R2500
ACC-1265	3-92411-1	IND-HR2500, 5200, 5200-A, 5150
ACC-1296	3-61706-1	IND-R2400, H2500Q, IND-HR2300



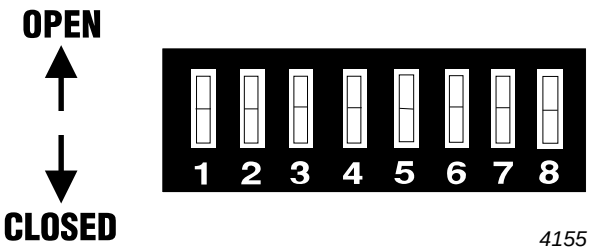
RS232C, 20mA Current Loop, 25 pin "D" connector

The 20 mA Current Loop is not normally used with Fairbanks printers.
If this configuration is needed, it can be wired as follows:

Pin 1	Chassis Ground
Pin 3	RX
Pin 7	Signal Ground (Common Return)
Pin 20	Data Terminal Ready
Pin 23	-20mA RXD
Pin 24	+20mA current source for connecting to passive indicators
Pin 25	+20mA RXD for connecting to active indicators

C. Interface Protocol, Dip Switch Settings, SW1

With all of the DIP switches, as viewed from the back, UP is OPEN ("0" or OFF) and DOWN is CLOSED ("1" or ON). There are eight DIP switches on SW1 and eight more on SW2 located on the back of the printer. Bolded print indicates the factory setting. These settings are for normal print and are applicable to Fairbanks indicators using standard Fairbanks tickets.



4155

1. Baud Rate, SW1, Switches 1, 2 and 3

The baud rate is selected by setting the DIP switches on SW1, positions 1, 2, and 3. The baud rate of the printer and the baud rate of the sending device MUST BE THE SAME or the printer will not respond correctly. The baud rate is defined as the number of "bits per second" that are sent through the communications interface. The baud rates available in the printer are from 110 to 9600.

The selections are:

Baud Rate	Switch 1	Switch 2	Switch 3
110	Closed	Closed	Closed
300	Closed	Closed	Open
600	Closed	Open	Closed
1200	Closed	Open	Open
2400	**Open**	**Closed**	**Closed**
4800	Open	Closed	Open
9600	Open	Open	Open

NOTE: The printer supports the following data and parity.
(The parity bit is ignored by the printer).
Use one of the following settings:

8, None
7, Odd
7, Even

2. SW1, Switches 4 and 5

Not used. Leave in **OPEN** position.

3. Automatic Line Feed, SW1, Switch 6

Position	**Meaning**	**Comment**
Open	Add a LF to CR	The printer will advance the paper one line when a CR character is received.
Closed	Do not add a LF	The printer prints a line without advancing the paper when a CR character is received.

The automatic line feed is controlled by DIP switch 6. The "CR" code is a non-printable control that causes a line to be printed without advancing the paper.

4. Printing Mode, SW1, Switch 7

Position	Meaning
Open	Invert print is enabled
Closed	Normal print is enabled

The printer can be programmed for NORMAL or INVERT printing mode. In the NORMAL mode, the ticket feeds toward the rear of the printer, is LEFT justified, and is right-side-up. In INVERT mode, the ticket is inserted in the printer up-side-down, the ticket feeds toward the front of the printer and is LEFT justified.

5. Busy Signal Polarity, SW1, Switch 8

Position	Meaning
Open	Low true
Closed	High true

The printer gives a BUSY signal whenever one or more of the following conditions exist:

a. The buffer is full.
b. The carriage is stalled.
c. A self-test is in process.
d. Ticket not in place over sensors

The position of switch 8 controls the polarity of the busy signal line for the serial communications.

D. Interface Protocol, Dip Switch Settings, SW2

1. Top Of Ticket Busy Signal, SW2, Switch 1

Position	Meaning
Open	No busy signal is sent when the "top-of-form" sensor is OFF
Closed	A busy signal is sent until the "top-of-form" sensor is covered

When this switch is closed, the printer checks to make sure there is a ticket installed before a print cycle begins.

2. SW2, Switch 2

Version 1.00 software: Not used, leave in the OPEN position.
Version 2.00 software: Double-strike print.

Position	Meaning
Open	Disabled, regular print
Closed	Enabled, print pins will "double-strike" to enhance print quality.

NOTE: If enabled, printing time will increase slightly.

3. Top or Bottom Seek, SW2, Switch 3

Position	**Meaning**
Open	Disabled. Used for normal print.
Closed	Enabled. Used for invert print.

This option allows the selection of which end of the ticket the Auto-Seek will locate. TOP is used in NORMAL print, BOTTOM is used with INVERT print. This feature is only used when Auto-Seek is enabled.

4. Auto Advance, SW2, Position 4

Position	**Meaning**
Open	Auto advance disabled
Closed	Auto advance enabled

When this switch is closed, the Auto advance feature is enabled (ON). When the print sequence starts, the ticket will advance 4 lines before the first line is printed. This feature is used for "backward compatibility" with 50-3925 in the normal print mode. If this feature is used, the Auto Seek feature should be enabled.

5. Auto Release, SW2, Position 5

Position	**Meaning**
Open	Auto Release disabled
Closed	Auto Release enabled

When this switch is closed, the Auto Release feature is enabled. In the print cycle, if no data is received after a .5 second time-out, the printer will release the paper clamp and the ticket can be removed.

NOTE Must be enabled when interfaced to H90-5200, H90-5200A or H90-3051.

6. Enhanced Print, SW2, Position 6

Position	**Meaning**
Open	Enhanced print disabled, print 40 characters per line
Closed	Enhanced print enabled, print 20 characters per line.

When the enhanced print is enabled, the characters are printed double width. This may improve the legibility of copies on multi-part tickets.

7. Auto Seek, SW2, Position 7

Position	**Meaning**
Open	Auto seek disabled
Closed	Auto seek enabled

This option allows the printer to find the top of the ticket before it begins to print. When the ticket covers both sensors, the printer will seek the top of the form and then index to the first print line.

8. Self Test, SW2, Position 8

Position	**Meaning**
Open	Self-test is disabled
Closed	Self-test is enabled, a self-test is printed when paper is in the printer at the time of power up

The self test provides information about the program version installed in the printer and the set-up as determined by the DIP switch settings.

E. Quick Set-up

The following switch settings are factory set:

Normal Print

	1	2	3	4	5	6	7	8
SW1	O	C	C	O	O	O	C	C
SW2	C	O	O	C	O	O	C	O

Inverted Print

	1	2	3	4	5	6	7	8
SW1	O	C	C	O	O	O	O	C
SW2	C	O	C	C	O	O	C	O

NOTE: Set BUSY POLARITY as follows:

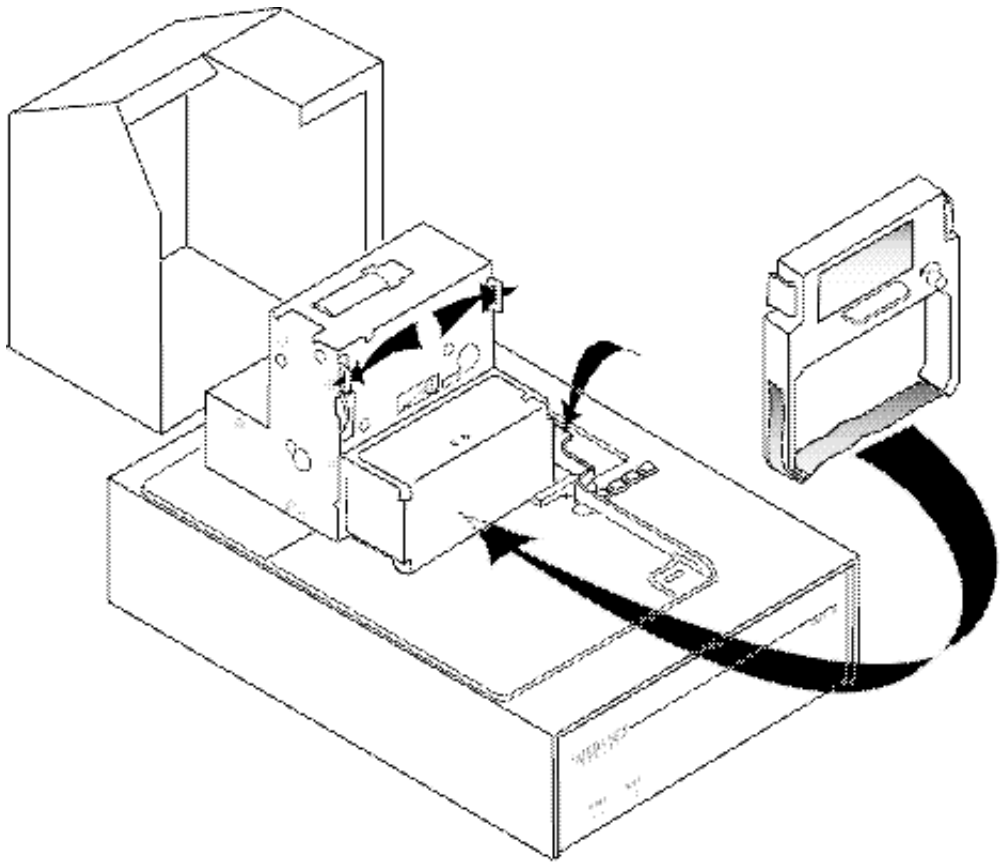
Busy Polarity: SW1-8

Cable ACC	Instrument(s)	Setting
ACC-1254	9201, 9210, IND-2500	LOW (Open)
ACC-372	CTG-9850	LOW (Open)
ACC-5808	H90-3051	HIGH (On)
ACC-1265	HR2500, HR2500Q, 5200, 5200A, 5150	HIGH (On)

F. Installing The Ribbon Cartridge

Before the printer can be operated using regular paper, the ribbon cartridge shipped with the unit must be installed. To install the ribbon cartridge:

- Turn the printer power to OFF.
- Lift the cover of the printer to expose the print mechanism.
- Hold the cartridge in a vertical position, with the ribbon at the bottom.
- Turn the knob (1) on the front of the cartridge to take up any slack in the ribbon.
- Hold the cartridge at an angle. Press down on the manual paper release lever (2) and slide the ribbon into the opening (3) between the printhead and the platen.
- Tilt the cartridge upright and snap the top of the cartridge into place.
- Check to be sure the ribbon is under the printhead and aligned with the platen. Turn the knob (1) to take up any slack in the ribbon.
- Close the cover and restore power to the printer.



G. To Remove the Ribbon Cassette

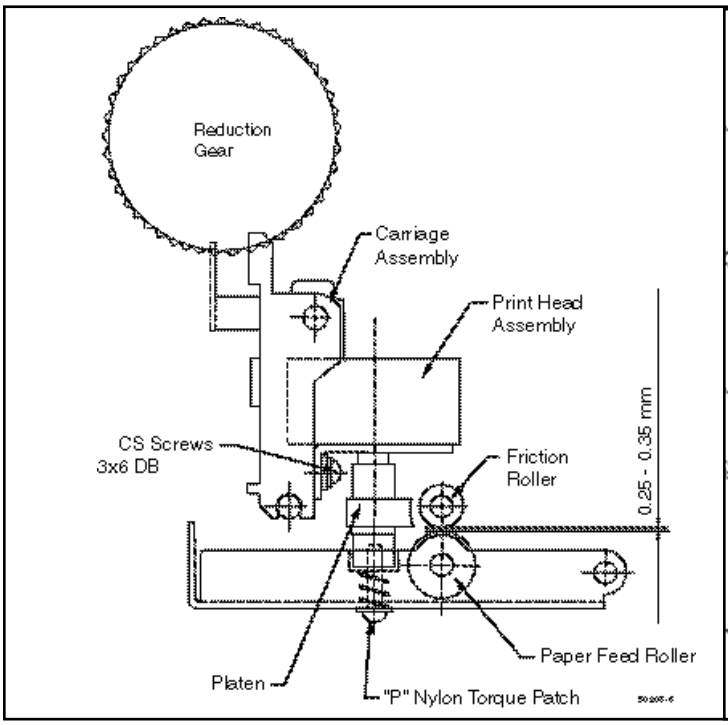
- Turn the printer OFF and lift the cover to expose the print mechanism.
- Press down on the manual paper release lever (2) and hold the finger tab near the top of the cassette.
- Pull the cassette forward, being careful that the ribbon does not catch on the form sensor.
- lInstall a new ribbon.

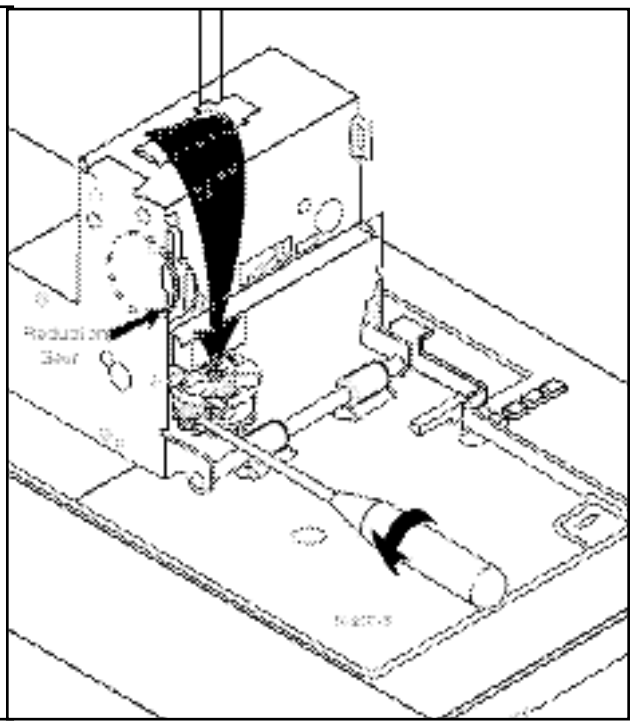
H. Print Density Adjustments

There are two ways to darken the print on multiple copy tickets. You can adjust the gap between the print head and the platen and/or increase the key strike time. The procedures for both adjustments are listed below. These features can be used in addition to the double-strike option on version 2.00 software.

Print Gap Adjustment:

1. Remove the ribbon cassette if installed.
2. Remove the screw from the head cover, then remove the head cover.
3. Turn the reduction gear by hand to move the carriage to the center of the platen.
4. Loosen the two screws on the print head. (see diagram below, right)
5. Insert a thickness gauge (approx.. 14/1000") into the gap between the print wire end of the head and the platen. Then, lightly pressing down on the print head, tighten the two screws.
6. Turn the reduction gear by hand to move the carriage to the right most position.
7. Turn the friction roller by hand. Check every quarter turn of 360 degrees that the platen-head gap is within 10/1000 - 14/1000" at each side of the friction roller using 10/1000" and 14/1000" friction gauges as shown in diagram below, left. (The 10/1000" gauge will insert easily into the gap; the 14/1000" gauge will be a little tight.) If the platen-head gap is not within the specified value, rotate the corresponding nylon torque patch "p" to provide the specified value. (see diagram below, left)
8. Turn the reduction gear by hand to move the carriage to the leftmost position, then perform step 7.
9. Turn the reduction gear by hand to move the carriage to the center of the platen, then perform step 7.



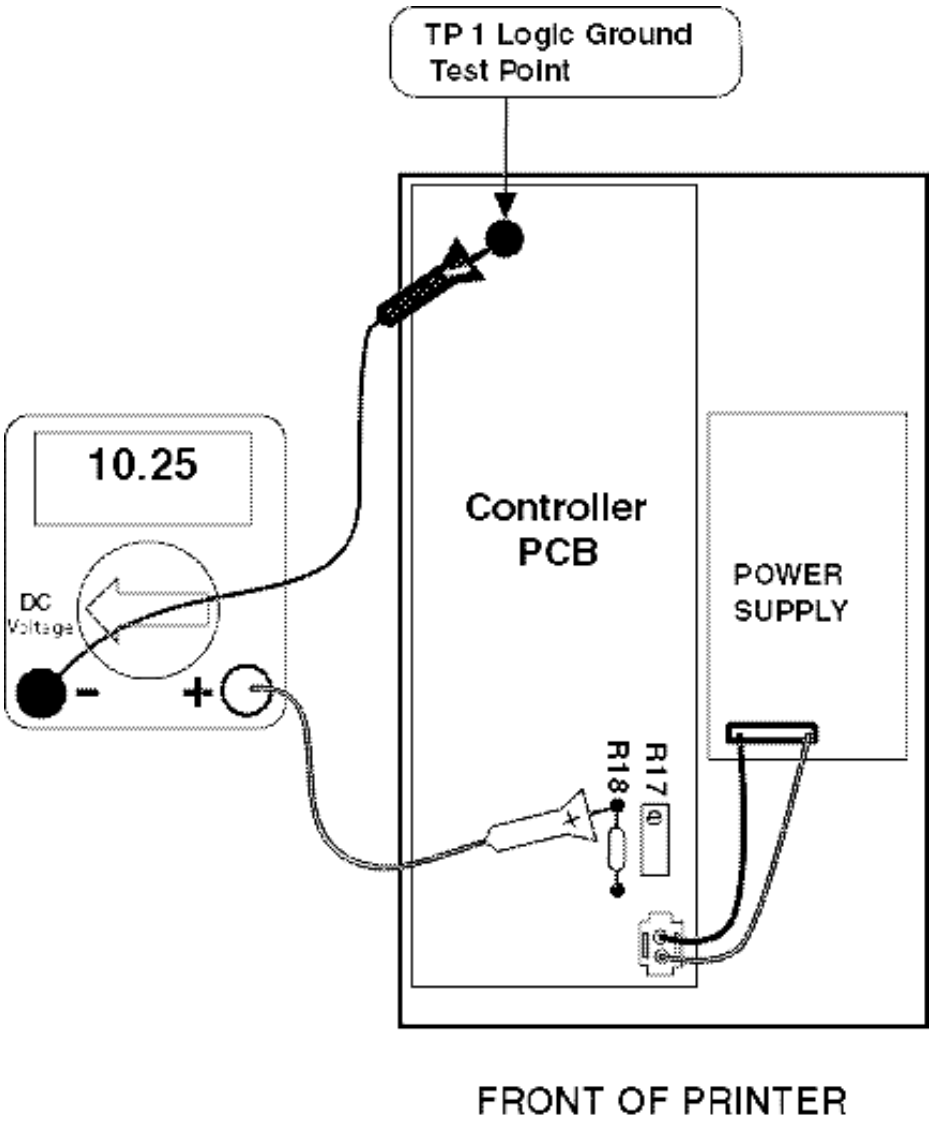


10. Reinstall the head cover with the screw.
11. Reinstall the ribbon cassette.

Strike Time Adjustment

1. With the printer unplugged, remove the four (4) Phillips head screws located at the lower side of the printer.
2. Lift the upper case and set it to the left, being careful of the ribbon cable connected to the Controller PCB at J2. If required, disconnect the ribbon cable.
3. Plug the printer in.
4. Locate R18 resistor and potentiometer R17 as shown below.
5. With the DVM set to DC voltage, adjust R17 to between 10.0 VDC to 10.5 VDC.
6. When complete, unplug and reassemble the printer, and test for correct print.

Warning : Do Not exceed 10.5 VDC



I. Self Test

The self test is used to get a printed configuration report of the printer set up. To print the Configuration Report:

Note: Double-strike in prom version 2.00 does not work in self-test.

- Turn the printer OFF.
- On DIP switch SW2 on the back of the printer, set DIP switch 8 to the closed position.
- Place a blank piece of paper in the printer so it covers both paper sensors.
- Turn the power ON and the self test report will be printed.
- When the report is complete, turn the power OFF and return switch 8 to the open position.

Each time the DIP switch setting are changed, a new Configuration Report should be printed. The report will only print on power up, so each time the switches are changed, power must be cycled to get an accurate report. The report includes the program revision level, the memory status of both the RAM and ROM memory, and the DIP switch setting, open or closed, for each of the SW1 and SW2 switches and the character set

J. Operation

To operate the ticket printer:

- Turn on power to the printer using the switch on the back of the enclosure. A GREEN indicator power light will come on. The paper light will be RED.
- Place a blank ticket into the printer. When the ticket covers the "top of the form" sensor, the paper light will turn GREEN.
  Slide the ticket to the designated ticket position. The printer is now ready to print a ticket. When data is sent to the printer, the ticket will be printed. When data is being received by the printer, an LED on the back of the enclosure near the serial port will blink. This verifies that there is communications between the indicator and the printer.

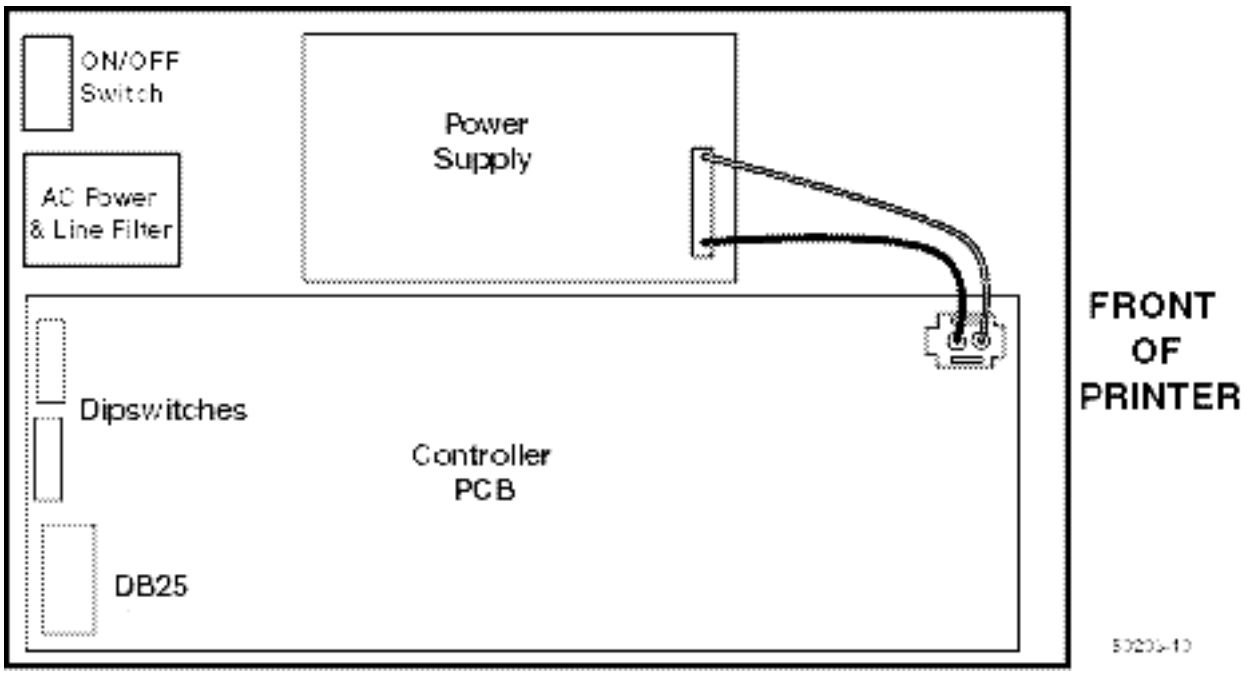
K. Printer Repair

To remove power to the printer, unplug the AC power cord at the back of the printer. To replace any parts other than the printer mechanism, it is necessary to open the lower part of the printer. This is accomplished by removing the 4 screws, two on each side of the base. These are the screws nearest the bottom of the base of the printer. CAREFULLY tilt the top of the printer toward the rear. There is a ribbon cable that connects the upper part of the printer to the PC Board in the base. Disconnect the ribbon cable at the PC Board. The top of the printer can now be set aside.

Replace the PC Board

To replace the PC Board:

- Remove AC power to the printer and disconnect the DB25 connector on the back of the printer. Open the printer as described above.
- Disconnect the cable from the power supply to the PC Board.
- Remove the 4 screws holding the PC Board to the printer base.
- Replace the PC Board and secure with the 4 screws. Reconnect the cable from the power supply.
- Reset the DIP switches, SW1 and SW2, on the back edge of the PC Board to match the switch setting on the board that was removed.
- Reconnect the ribbon cable from the print mechanism and reassemble the printer.
- Perform a self-test to verify operation and settings.



Fuse Replacement

To replace the fuse:

- Remove AC power to the printer and open the printer as described above.
- The fuse is located on the power supply board. Remove the old fuse.
- Install a new fuse and reassemble the printer.
- Perform a self-test to verify operation and settings.

Replace the power supply board

To replace the power supply board:

- Remove AC power to the printer and open the printer as described above.
- Disconnect the cable from the AC power switch to the power supply board.
- Disconnect the cable from the power supply board to the PC Board.
- Remove the 4 screws that secure the power supply board to the base of the printer.
- Replace the power supply board and secure with the 4 screws.
- Replace all of the cables and close the printer.
- Perform a self-test to verify operation and settings.

Replace the AC power switch

To replace the AC power switch:

- Turn off power to the printer and open the printer as described above.
- Remove the wire from the back of the switch. Note the color and position of each wire on the switch.
- Press the lock tabs on the top and bottom of the switch and slide the switch out the back of the enclosure.
- Slide the new switch into the enclosure from the back. Press it into place until the locking tabs snap onto the enclosure.
- Reconnect the wires to the back of the switch.
- Close the printer.
- Perform a self-test to verify operation and settings.

Replace the power connector/line filter

To replace the power cord connector/line filter:

- Turn off power to the printer and open the printer as described above.
- Remove the wire connectors on the back of the line filter. Note the color and position of each of the wires.
- Remove the 2 screws holding the line filter in place. These are removed from the back of the printer.
- Remove the old filter and replace with a new one.
- Secure the new filter with the two screws and reconnect the wires.
- Close the printer.
- Perform a self-test to verify operation and settings.

Replace the printer mechanism

To replace the printer mechanism:

- Turn off power to the printer.
- Lift the printer cover to expose the print mechanism. Remove the ribbon.
- Remove the ribbon cable from the clip on the side of the print mechanism Unplug the connector from the back of the print mechanism.
- Remove the 4 screws holding the print mechanism in place. Two screws are on the side and 2 in the back.
- Lift the print mechanism out of the printer. Place the new print mechanism in its place. Secure with the 4 screws.
- Reassemble the printer. Reconnect the ribbon cable. The red edge is at the top of the connector on the print mechanism.
- Perform a self-test to verify operation and settings.

L. Parts List

Part#	Description	Reference Part#
96130	Switch, rocker, 250 VAC	2-62028-1
96131	Power Supply, 24 Volt @ 2.0 A.	2-62028-2
96132*	PC Board Assembly	2-62028-3
96133*	Print Mechanism, 9 wire, 40 column	2-62028-4
96134	Power Cord	2-62028-5
96135	Ribbon	2-62028-6
96136	Fuse	2-62028-7
96137	AC Line filter	2-62028-8
96138	Cable assembly, 40 conductor, flat	2-62028-9
96139	Hinge, printer cover	2-62028-10
18969	Prom Version 2.00 (Double-strike capability, SW2-2)	

* Parts available through parts exchange program

ALL PARTS ARE TO BE ORDERED USING THE 5 DIGIT NUMBER.

NOTE: SW1, position 8 and SW2, position 5 MUST be set to match the indicator. See Section 4 for detailed information.

Note: The double-strike feature on prom version 2.00 will not work in the self test mode.

APPENDIX I: SAMPLE TICKETS

FAIRBANKS SCALES NKC,MO 1-800-821-8322

WEIGHED ON A FAIRBANKS SCALE

CUSTOMER'S NAME 19

ADDRESS

COMMODITY

CARRIER

INBOUND DATE TIME

OUTBOUND DATE TIME

3-31-98 12:58AM

24920 lb GROSS

10000 lb TARE

14920 lb NET

DRIVER ON OFF

SHIPPER

WEIGHER

FAIRBANKS SCALE CAT. 083620

NORMAL PRINT

Ticket

```
**************************************
*   PTR3950 - CONFIGURATION REPORT   *
* Prom Version = 2.00  Checksum = 1805 *
* Memory Test PASSED  Buffer Size 4 K *
**************************************

SW1                          12345678
0=Open, C=Closed             OCCCCCCO
S1,2,3: Baud Rate Select      = 2400
S4,5:   Not Available
S6:     Auto LF On/Off        = On
S7:     Invert/Normal         = Normal
S8:     Busy Polarity Low/High= Low

SW2                          12345678
0=Open, C=Closed             CCCCCCCC
S1:     TOF Busy Sent Off/On  = On
S2:     Double Strike Off/On  = On
S3:     Top or Bottom Seek    = Top
S4:     Auto Advance Off/On   = On
S5:     Auto Release Off/On   = Off
S6:     Normal/Enhance        = Normal
S7:     Auto Seek Off/On      = On
S8:     Self Test Off/On      = On

 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
`abcdefghijklmnopqrstuvwxyz{|}~

**************************************
```

Self-test Printout

Place ticket in printer, TOP first.

INVERTED PRINT

Ticket **Self-test Printout**

Place ticket in printer, BOTTOM first.

Appendix II: ASCII Character Set and Control Codes

Character Symbol	Code	Value Decimal	Hex
NULL	CTRL@	0	00
SOH	CTRL A	1	01
STX	CTRL B	2	02
ETX	CTRL C	3	03
EOT	CTRL D	4	04
ENQ	CTRL E	5	05
ACK	CTRL F	6	06
BEL	CTRL G	7	07
BS	CTRL H	8	08
HT	CTRL I	9	09
LF	CTRL J	10	0A
VT	CTRL K	11	0B
FF	CTRL L	12	0C
CR	CTRL M	13	0D
SO	CTRL N	14	0E
SI	CTRL O	15	0F
DLE	CTRL P	16	10
DC1	CTRL Q	17	11
DC2	CTRL R	18	12
DC3	CTRL S	19	13
DC4	CTRL T	20	14
NAK	CTRL U	21	15
SYN	CTRL V	22	16
ETB	CTRL W	23	17
CAN	CTRL X	24	18
EM	CTRL Y	25	19
SUB	CTRL Z	26	1A
ESC	CTRL[	27	1B
FS	CTRL \	28	1C
GS	CTRL]	29	1D
RS	CTRL ^	30	1E
US	CTRL _	31	1F

Character Symbol	Value Decimal	Hex
SPACE	32	20
!	33	21
“	34	22
#	35	23
$	36	24
%	37	25
&	38	26
‘	39	27
(	40	28
)	41	29
*	42	2A
+	43	2B
,	44	2C
-	45	2D
.	46	2E
/	47	2F
0	48	30
1	49	31
2	50	32
3	51	33
4	52	34
5	53	35
6	54	36
7	55	37
8	56	38
9	57	39
:	58	3A
;	59	3B
<	60	3C
=	61	3D
>	62	3E
?	63	3F

ASCII Character Set and Control Codes (con't)

Character Symbol	Value Decimal	Hex
@	64	60
A	65	41
B	66	42
C	67	43
D	68	44
E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
k	75	4b
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A
{	91	5B
\	92	5C
}	93	5D
^	94	5E
-	95	5F

Character Symbol	Value Decimal	Hex
‘	96	60
a	97	61
b	98	62
c	99	63
d	100	64
e	101	65
f	102	66
g	103	67
h	104	68
i	105	69
j	106	6A
k	107	6B
l	108	6C
m	109	6D
n	110	6E
o	111	6F
p	112	70
q	113	71
r	114	72
s	115	73
t	116	74
u	117	75
v	118	76
w	119	77
x	120	78
y	121	79
z	122	7A
{	123	7B
]	124	7C
}	125	7D
~	126	7E
DEL	127	7F

Binary	Decimal	Hex	Symbol	Code	- - - Description - - -
0000000	0	00	NUL	CTRL @	Printer Reset
0001000	8	08	BS	CTRL H	Backspace
0001001	9	09	HT	CTRL I	Horizontal Tab
0001010	10	0a	LF	CTRL J	Line Feed
0001011	11	0b	VT	CTRL K	Vertical Tab
0001100	12	0c	FF	CTRL L	Form Feed
0001101	13	0d	CR	DTRL M	Carriage Return
0001110	14	0e	SO	CTRL N	Select Enhanced Character
0001111	15	0f	SI	CTRL O	Cancel Enhanced Character
0010000	16	10	DLE	CTRL P	Release Form
0010010	18	12	DC2	CTRL R	Cancel Inverted Print
0010100	20	14	DC4	CTRL T	Cancel Inverted Print
0010110	22	16	SYN	CTRL V	Enhance Numbers Only
0011000	24	18	CAN	CTRL X	Cancel (Clears Print Line)
1111111	127	7F	DEL	DEL	Delete (same as backspace)
0011111	31	1F	US	CTRL _	Repeat

INSTRUCTION	DECIMAL	HEX
Reverse Line Feed (ESC, LF)	27,28	1B, 1C
Reverse Vertoca; Tab (ESC, VT)	27, 11	1B, 0B
Document Clamp (ESC, FF)	27, 28	1B, 0C
Normal/Inverted Reverse Printing (ESC, RS)	27, 30	1B, 1E

ASCII Control Codes Supported

Additional Instructions Supported by Escape Codes:

NOTE: All Control Codes and Escape Codes not listed will be ignored.

ASCII Control Code Descriptions

NUL - Printer Reset

NUL - (CNTRL @, OOH)

The NUL code is issued to clear the storage buffer and return the printer to a power up reset condition.

BS - Backspace

BS - (CNTRL H, O8H)

Input of the BS code causes the last character stored in the printer buffer to be deleted.

HT - Horizontal Tab

HT - (CNTRL I, 09H)

This HT code carries out the horizontal tab to a predetermined 5 characters. In the Enhanced Mode this will tab 5 double characters.

LF - Line Feed

LF - (CNTRL J, 0AH)

When the LF code is input, any data preceding it is printed and then a single line feed is performed.

VT - Vertical TAB

VT - (CNTRL K, 0BH)

When this VT code is input, all the data stored in the print buffer is printed out, then 5 line feeds are carried out.

FF - Form Feed

FF - (CNTRL L, 0CH) (same AS ETX)

When the FF code is input, all the data in the line buffer, if any, is printed out and then a single line feed is performed.The form is then ejected.If Auto Release is ON, the form will be released.

CR - Carriage Return

CR - (CNTRL M, 0DH) (ignored or same as LINE FEED)

The CR code is ignored unless feature #28 (ADD LF TO CR) is ON. This causes the CR to act exactly like an LF and the line buffer is printed along with a single line feed.

SO - Select Enhanced Character

SO - (CNTRL N, 0EH)

When the SO code is input, all the data that follows this code will be printed as Double Width characters.This code remains in effect until the SI code is received to cancel it. Enhanced and normal characters may be mixed on the same line by inserting the SO code in front of the data being enhanced and inserting the SI code after the data being enhanced.

SI - Cancel Enhanced Character

SI - (CNTRL O, 0FH)

The SI code cancels the Enhanced (Double Width) Mode set by the SO code.Enhanced and normal characters may be mixed on the same line by inserting the SO code in front of the data being enhanced and inserting the SI code after the data being enhanced.

DLE - Release Form

DLE - (CNTRL P, 10H)

The DLE code causes the Ticket Printer to release the form.

DC2 - Cancel Inverted Print

DC2 - (CNTRL R, 12H)

The DC2 code cancels the inverted print selection. This code may be given at any time, but once received, the entire line will be printed in the normal upright mode.

DC4 - Select Inverted Print

DC4 - (CNTRL T, 14H)

This DC4 code will cause the printing to be inverted. This code may be given at any time but the entire line will be inverted. Inverted and non-inverted characters may not be mixed on a single line. The DC2 code releases the inverted mode selection.

SYN - Enhance Numbers Only

SYN - (CNTRL V, 16H)

When the SYN code is input, all numbers will be printed as enhanced, double wide characters.This is useful in printing weight data since the command need only be transmitted once to turn on this feature.When using SO and DC4 control codes to accomplish this, these codes would have to be sent each time a number was to be enhanced.Use the DC4 code to cancel this feature.

CAN - Cancel

CAN - (CTRL X,18H)

When the CAN code is received, all data previously stored in the print buffer on the same line is canceled.

DEL - Delete

DEL - (CNTRL, 7FH) (same as BACKSPACE)

Input of the DEL code causes the last character stored in the print buffer to be deleted.

US - Repeat

US - (CNTRL _, 1FH)

The US code can be used to repeat a specified ASCII printable character or several ASCII control characters a specific number of times.