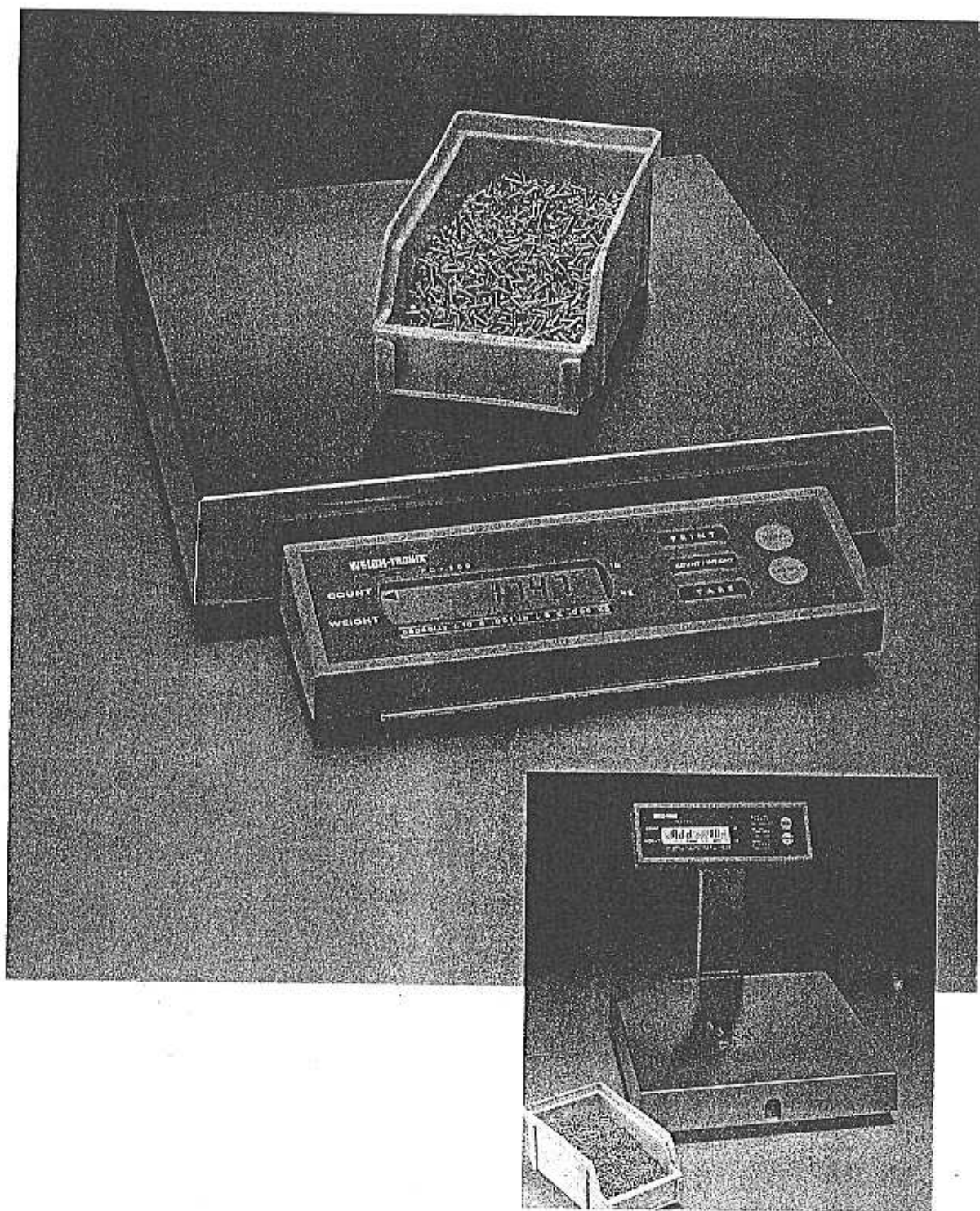




PC-800 COUNTING SCALE



Service Manual

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Introduction

This manual contains the information you need to configure, calibrate and service the PC-800 counting scale. The manual is divided into the following sections:

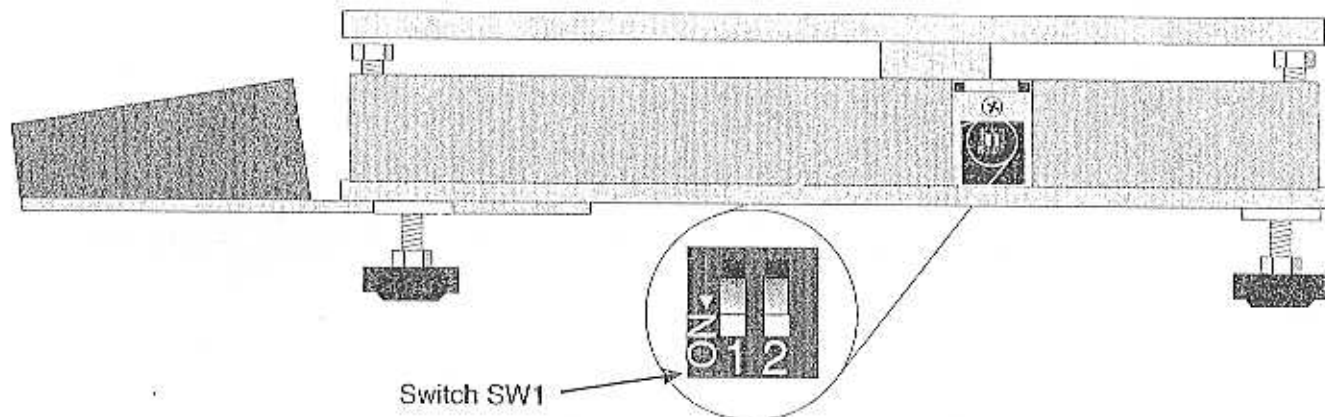
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- Schematics and Parts

The different modes of operation are accessed by placing the switches of SW1 in the positions described in Table 1. Switch SW1 is located under the scale shroud on the right side of the scale. See Figure 1.

Table 1: Switch SW1 Postitions

SW1		MODE
-1	-2	
ON	ON	Normal Calibration Diagnostics Configuration
OFF	ON	
ON	OFF	
OFF	OFF	

Figure 1: Switch SW1 Location



Configuration

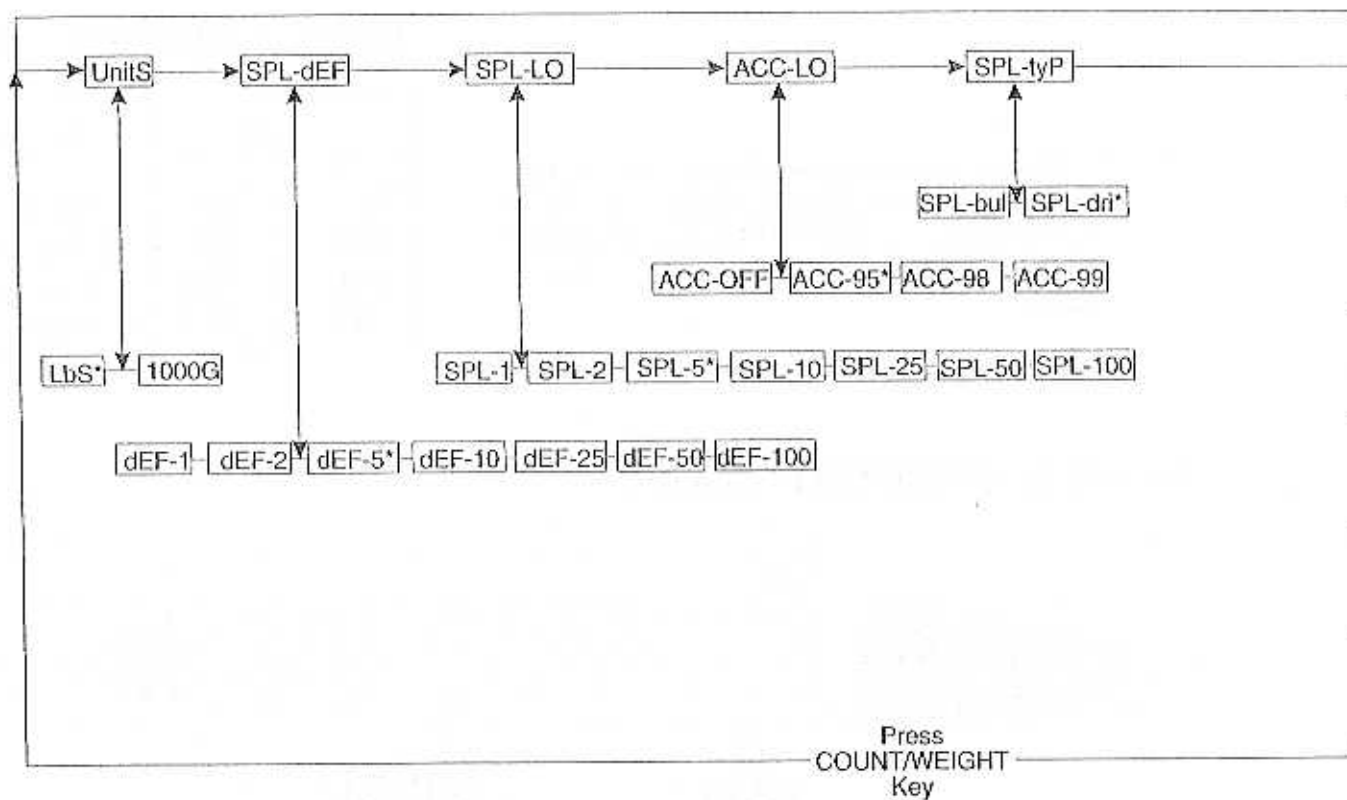
Set SW1-1 and -2 to the OFF position. This puts the scale in configuration mode. Figure 2 is a flowchart showing the configuration parameters you may change and the options in each. Use the **ZERO** key to move horizontally through the choices and the **SAMPLE** key to move vertically and to select your choice when it is displayed on the screen. Notice that to exit from the submenu under *SERIAL* you must press the **COUNT/WEIGHT** key. This returns you to the *UNITS* display.

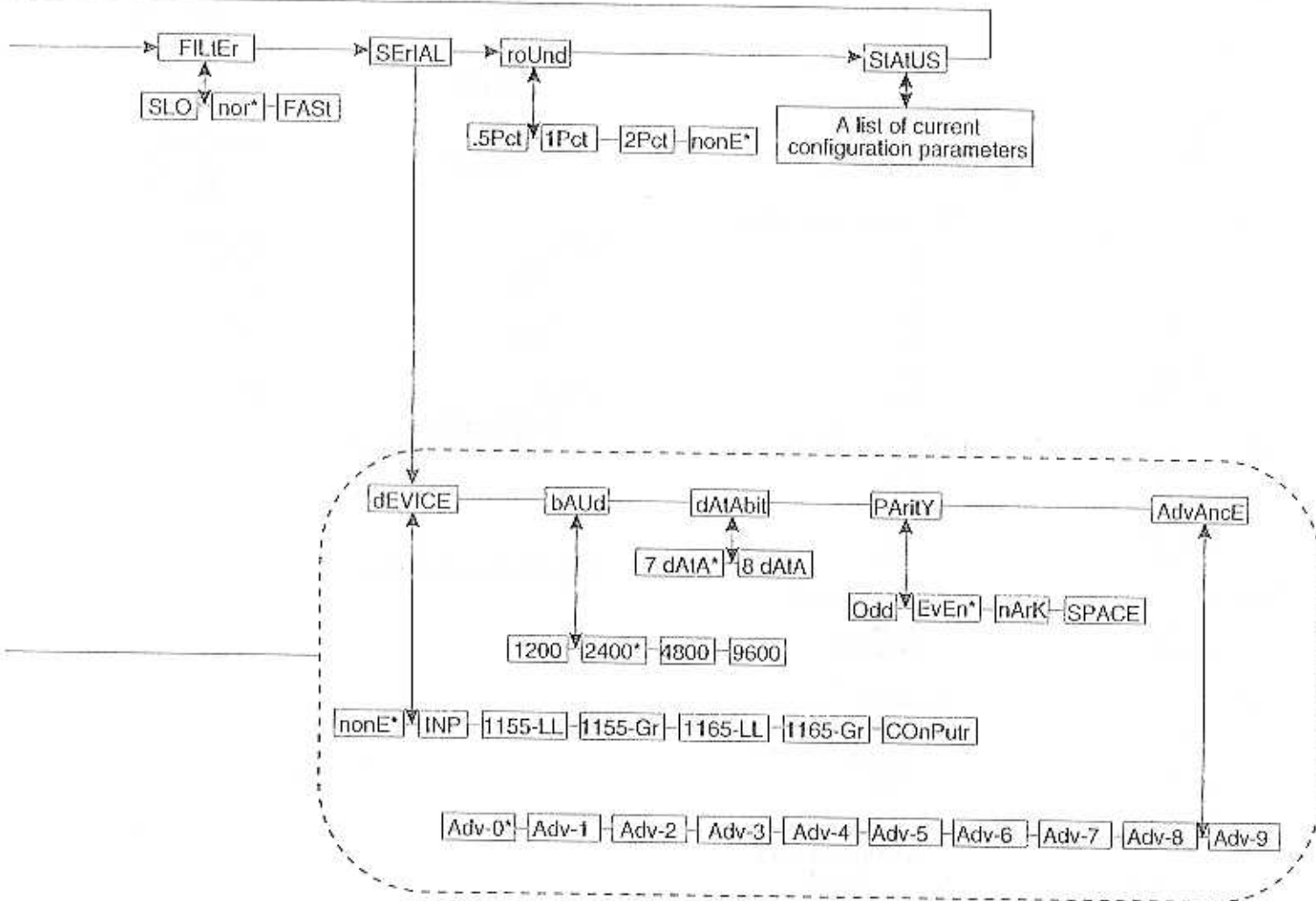
There is one other method to get into configuration mode. Press and hold the **PRINT** key until *CONFIG* is displayed. To exit configuration mode if you enter using this method, press **COUNT/WEIGHT** repeatedly until you return to normal weighing mode.

Figure 2: Configuration Flow Chart

To move →, press the ZERO key.

To move ↑↓, and to choose an option, press the SAMPLE key.





Configuration Menu Displays and Meanings

Below are the display messages you will see in the configuration menu with their meaning listed to the right.

Display	Meaning	Display	Meaning
<i>UnitS</i>	Units of Measure	<i>dAtAbit</i>	Data Bits
<i>LbS</i>	Pounds*	<i>7 dAtA</i>	7 Data bits*
<i>1000G</i>	Kilograms	<i>8 dAtA</i>	8 Data bits
<i>SPL-dEF</i>	Default Sample Size	<i>pArity</i>	Parity Bit
<i>dEF-1</i>	1	<i>EvEn</i>	Even Parity*
<i>dEF-2</i>	2	<i>Odd</i>	Odd Parity
<i>dEF-5</i>	5*	<i>nArK</i>	Set 1
<i>dEF-10</i>	10	<i>SPACE</i>	Set 0
<i>dEF-25</i>	25		
<i>dEF-50</i>	50	<i>AdvAncE</i>	Line Feed
<i>dEF-100</i>	100	<i>Adv-0-9</i>	0* - 9 line feeds
<i>SPL-LO</i>	Minimum Sample Size	<i>roUnd</i>	Rounding
<i>SPL-1</i>	1	<i>nonE</i>	None*
<i>SPL-2</i>	2	<i>.5PCt</i>	0.5%
<i>SPL-5</i>	5*	<i>1PCt</i>	1%
<i>SPL-10</i>	10	<i>2PCt</i>	2%
<i>SPL-25</i>	25		
<i>SPL-50</i>	50	<i>StAtUS</i>	Status
<i>SPL-100</i>	100	List of current configuration choices.	
<i>ACC-LO</i>	Minimum Accuracy		
<i>ACC-OFF</i>	Off		
<i>ACC-95</i>	95%*		
<i>ACC-98</i>	98%		
<i>ACC-99</i>	99%		
<i>SPL-tyP</i>	Sample Method		
<i>SPL-bul</i>	Bulk		
<i>SPL-dri</i>	Dribble*		
<i>FILtEr</i>	Filtering		
<i>SLO</i>	Slow		
<i>nor</i>	Normal*		
<i>FASt</i>	Fast		
<i>SErIAL</i>	Serial Interface		
<i>dEvICE</i>	Device Selection		
<i>nonE</i>	None*		
<i>InP</i>	Impact Printers (W-T WP-231)		
<i>1155-LL</i>	1155 Thermal label/lister printer		
<i>1155-Gr</i>	1155 Graphics printer		
<i>1165-LL</i>	1165 Thermal label/lister printer		
<i>1165-Gr</i>	1165 Graphics printer		
<i>COOnPutr</i>	Computer		
<i>bAUd</i>	Baud Rate		
<i>1200</i>	1200 Baud		
<i>2400</i>	2400 Baud*		
<i>4800</i>	4800 Baud		
<i>9600</i>	9600 Baud		

* Default selection

Calibration

Warm the scale up for at least 20 minutes before calibrating. Exercise the load cell by applying full capacity weight three times. Set SW1-1 to OFF and SW1-2 to ON to enter the calibration mode.

Figure 3 shows the calibration menu. While in the calibration mode, use the **ZERO** key to step or scroll through the choices on the horizontal rows. Use the **SAMPLE** key to select an item and move to the next parameter.

Below are the specific instructions for the calibration part of the menu.

When the display shows **CAL 0**, be sure scale shroud is in place and the scale is empty, then press **SAMPLE....**

CAL X is displayed, prompting you to place a test weight equal to X on the scale. X will be the capacity you have chosen.

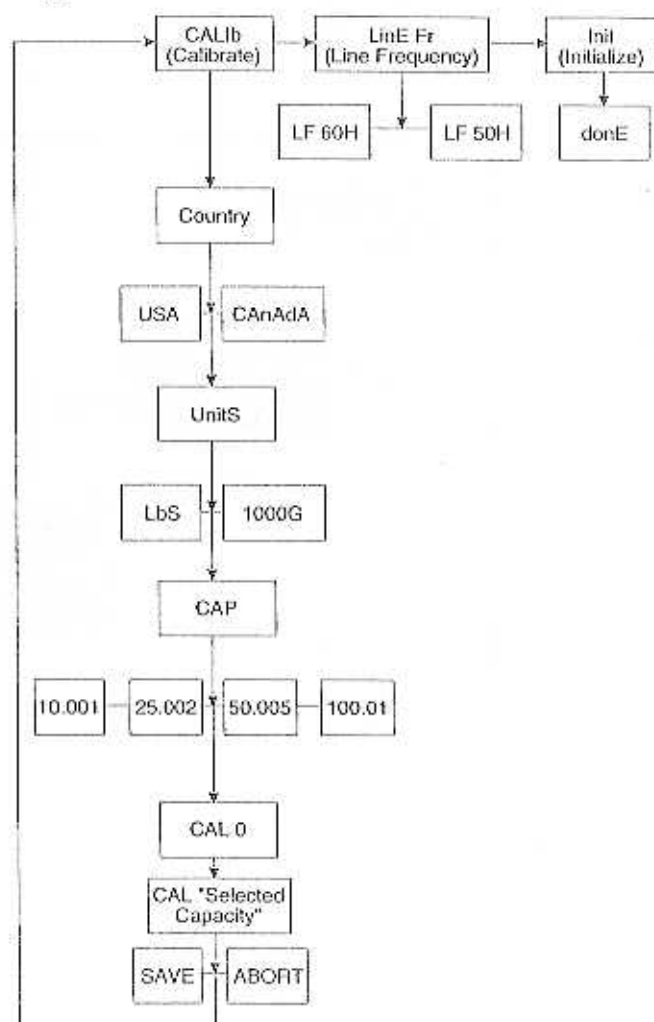
With the test weight on the scale, press **SAMPLE....**

StAndbY is briefly displayed, then **SAVE**.

You have the option of saving the calibration you've just performed or aborting the process. Toggle between **SAVE** and **ABORT** with the **ZERO** key and press **SAMPLE** when your choice is displayed. **CALib** will be displayed after your choice is made.

During calibration the display may read **bUSY** if scale motion is detected. Wait to see if the display clears. If not, turn off the scale and turn back on. Repeat the calibration procedure.

Figure 3: Calibration Flow Chart



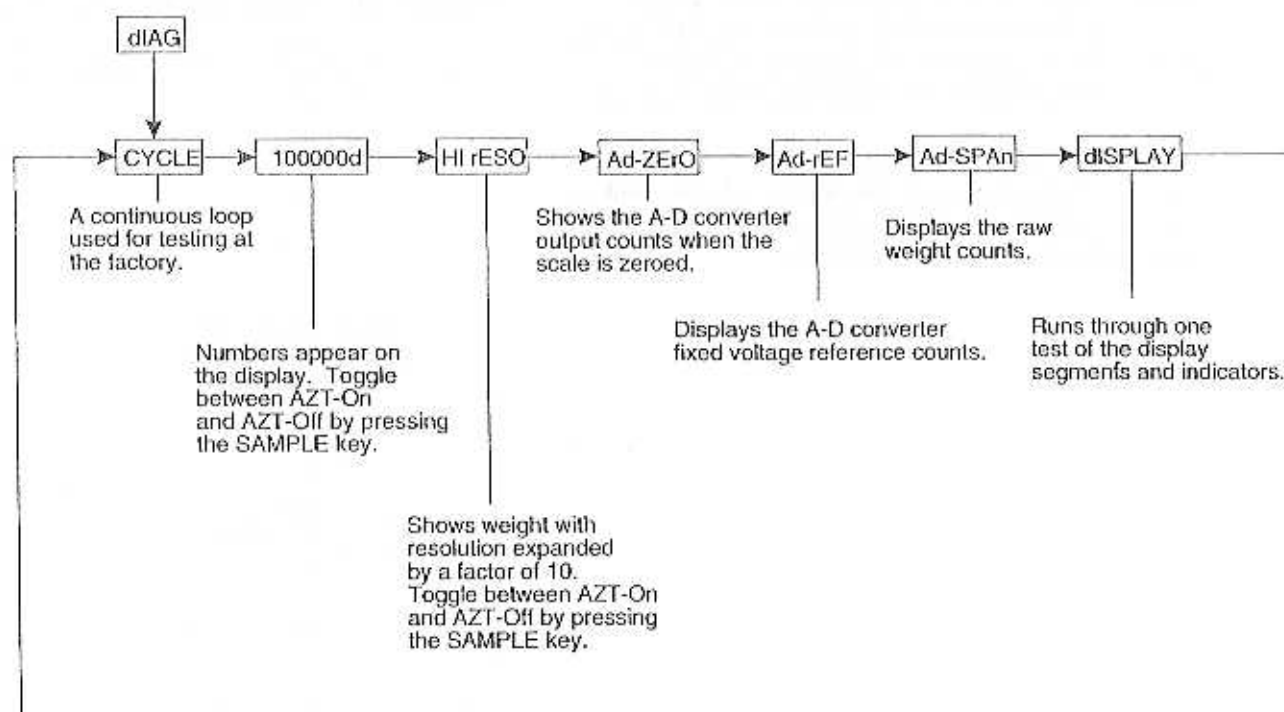
Diagnostics

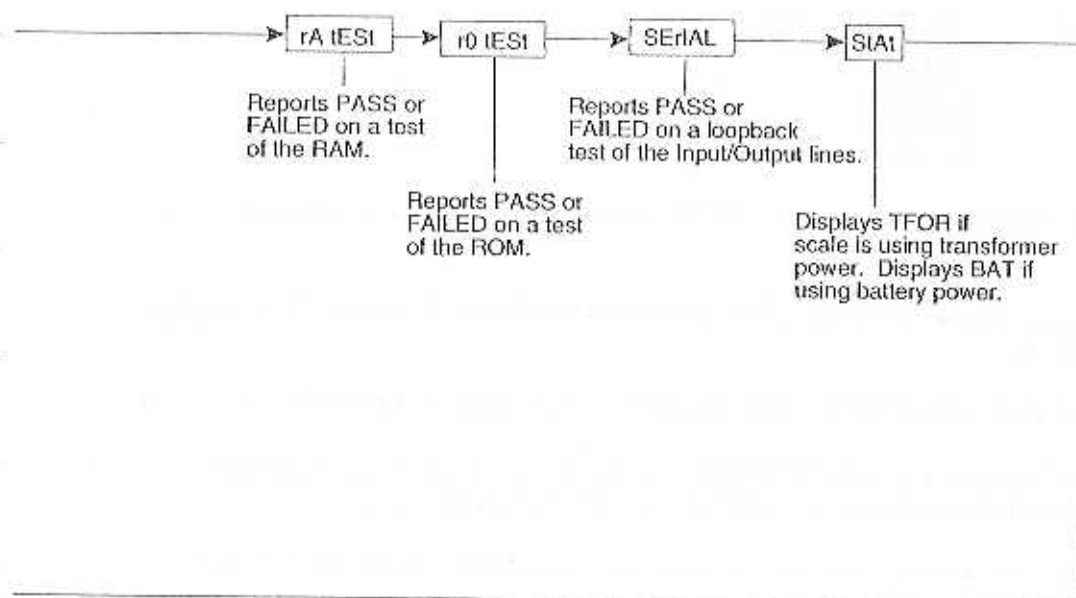
In the diagnostics mode you can access and execute several diagnostic test routines. Place the scale in diagnostics mode by placing SW1-1 to ON and SW1-2 to OFF. Below is a flowchart showing the items in the Diagnostics menu and how you move from one item to another. This is followed by an explanation of the different diagnostic tests.

Press the ZERO key to move → in the menu.
Press the SAMPLE key to start the displayed test.
Press the COUNT/WEIGHT key to stop the test and return to the diagnostic menu.

After CYCLE appears on the display, you have 10 seconds to push the ZERO key to move to the next diagnostic test. Otherwise the cycle test will begin automatically.
Press the COUNT/WEIGHT key to stop the test and return to the diagnostic menu.

During most Diagnostic tests, dIAG will flash on the display for brief periods to remind you that you are in Diagnostics mode.





Diagnostic tests

Cycle test	This test continuously cycles through several of the tests listed above. This is used only for factory testing and need not concern the consumer. If the cycle test is running, press the COUNT/WEIGHT key to escape. When you escape, <i>dIAG</i> will be displayed briefly, then <i>CYCLE</i> . You must press the ZERO key within 10 seconds or the cycle test will begin again. If you press the ZERO key, <i>100000d</i> will be displayed and you will be at the next item on the list shown below.										
Division test	Normalizes the displayed weight to 1 part in 100000. A 25 lb weight on a 25 lb capacity scale would show approximately 100000 on display. Provides an expanded range of sensitivity for testing purposes.										
High Resolution test	Expands the weight sensitivity by a factor of 10. For example, for a capacity with a division size of .001 this test will cause the display to show .0001 divisions.										
A/D Zero test	The stored calibration for zero reference. A typical value is 99,500 $\pm 5\%$. This will vary with deck size and dead load.										
A/D Reference test	This test shows the previously stored full span calibration value. A typical displayed value is 1,220,000 $\pm 15,000$.										
A/D Span test	This test calculates the difference between A/D Span with no load and full capacity <table><tr><th>Capacity</th><th>ΔA/D Span $\pm 5\%$</th></tr><tr><td>10 lb</td><td>1,000,000</td></tr><tr><td>25 lb</td><td>2,000,000</td></tr><tr><td>50 lb</td><td>2,000,000</td></tr><tr><td>100 lb</td><td>2,000,000</td></tr></table>	Capacity	Δ A/D Span $\pm 5\%$	10 lb	1,000,000	25 lb	2,000,000	50 lb	2,000,000	100 lb	2,000,000
Capacity	Δ A/D Span $\pm 5\%$										
10 lb	1,000,000										
25 lb	2,000,000										
50 lb	2,000,000										
100 lb	2,000,000										
Display test	This tests all the segments of the LCD display. The test runs once, then <i>dISPLAY</i> is shown.										
RAM test	This is a non-destructive test of the RAM (Random Access Memory). Will display <i>PASS</i> if OK.										
ROM test	This test validates the system ROM (Read Only Memory). Will display <i>PASS</i> if OK.										
Serial I/O test	This is a loopback test to validate the transmit/receive circuit. Will display <i>PASS</i> if OK. Transmit must be connected to receive at the I/O connector.										
Stat test	This indicates which power source is powering the PC-800, transformer (tFor) or battery (bAt).										

Communication

The computer interface will support bidirectional communication in a master/slave protocol. The computer (master) will send a command code sequence to the scale (slave) which will respond by returning the requested data or performing a scale function. Commands to the scale will be in uppercase, terminated with a carriage return. Scale responses will begin with the lowercase equivalent of the command code.

The following command codes will be available:

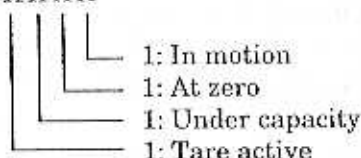
COMMAND	RESPONSE	DESCRIPTION
CA<CR>	no response	Clear sample
CC<CR>	cc_XXXXXX<CR>	Request count value
CM<CR>	no response	Switch scale to count mode
CP<CR>	cp_x.XXXXXX_U<CR>	Request piece weight value
DIXXXXXX<CR>	no response	Display Message (2 seconds) [6]
IC<CR>	no response	Reset scale (warm start)
PWx.XXXXX<CR>	no response	Enter piece weight [5]
TR<CR>	tr_xx.xxx_U<CR>	Request tare value
TZ<CR>	no response	Clear the current tare
Txx.xxx<CR>	no response	Enter tare value [5]
T<CR>	no response	Tare the scale
WD<CR>	wd_xx.xxx<CR>	Request displayed weight
WE<CR>	we_xx.xxx_U<CR>	Request net weight
WG<CR>	wg_xx.xxx_U<CR>	Request gross weight
WM<CR>	no response	Switch scale to weight mode
WS<CR>	ws_HML<CR>	Request scale status
WZ<CR>	no response	Zero the scale
W<CR>	w_xx.xxx_U_HML<CR>	Request net weight and status

Legend:

- 1) " "represents the ASCII space character
- 2) "U"represents the units of measure character(s):
....."LB" for pounds
....."KG" for kilograms
- 3) <CR>..represents the ASCII carriage return
- 4) HML ..represents three bytes of scale status information as described below.
- 5) Value entered is assumed to be in same units of measure as what the scale is currently in.
- 6) Display messages are limited to seven characters.

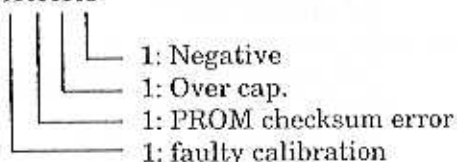
Scale Status Byte II:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 XXXX



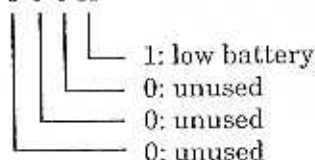
Scale Status Byte M:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 XXXX



Scale Status Byte L:

BIT: 7 6 5 4 3 2 1 0
0 0 1 1 0 0 0 X



RS-232 I/O Pinouts

Pin	Signal
1	Signal Ground
2	Transmit Data
3	No Connection
4	Receive Data
5	Signal Ground
6	Chassis Ground

Printouts

Following are examples of printouts you will obtain when an optional printer is connected to the serial I/O port of the PC-800 and you push the **PRINT** key.

Weigh-Tronix WP-231 Printer

The WP-231 is a dot matrix impact printer. The number of characters per line cannot exceed 40.

COUNT	= 12345
PIECE WT	= 0.0234 LB*
NET WT	= 1.2 LB

* Limited to six digits after the decimal point.

Weigh-Tronix Model 1155I (1165I)

The 1155I is a thermal label printer. The transaction will be printed on a label 1.12 inches in length.

COUNT	= 12345
PIECE WT	= 0.0234 LB*
NET WT	= 1.2 LB

* Limited to six digits after the decimal point.

Output Format to Imp Printers

TTTTTOO = dddd<CR>

TTTTTTO = ddddU<CR>

TTTTTTOO = ddddU<CR>

d = weight data with polarity and decimal point

O = space

U = unit of measure

T = weight type (Net = net weight, Spaces = gross weight, DEV = deviation)

CR = carriage return

DISASSEMBLY INSTRUCTIONS

If it is necessary to service the PC-800, follow this checklist for disassembly and re-assembly.

✍

- ☐ 1. Disconnect the scale from the power source and remove the scale shroud.

WARNING! Be sure to counter the torque force applied when loosening or tightening screws connected to the weight sensor, or weight sensor damage may result.

- ☐ 2. Remove the two socket-head screws securing the top plate to the weight sensor. Lift off the top plate. Do not lose the weight sensor spacer located between the top plate and the weight sensor.

To access the electronics:

- ☐ 3. Disconnect the display cable from the scale base.
- ☐ 4. Remove the two screws holding the electronics cover to the base plate and lift off the cover.

To remove the main PC board:

- ☐ 5. Remove the weight sensor interface cable from the pins on the main PC board.
- ☐ 6. Remove the screws holding the PC board to the base and lift out the PC board.

To remove the weight sensor:

- ☐ 7. Remove, from the bottom of the base plate, two screws that hold the weight sensor in place. Do not lose the weight sensor spacer located between the bottom plate and the weight sensor.

To disassemble the external display:

- ☐ 8. Disconnect the keyboard cable from the display PC board.
- ☐ 9. Depress the round display catch in the center of the housing and slide the display module forward.
- ☐ 10. Remove the screws in the four corners of the back of the display housing.
- ☐ 11. Use a screwdriver to pry back the hold-down tabs and carefully pry the back plate from the display housing.
- ☐ 12. Pry back the hold-downs and carefully lift the display PC board out of the housing.

RE-ASSEMBLY INSTRUCTIONS

Reverse the disassembly procedure to re-assemble the scale. Be sure both weight sensor spacers are reinstalled.

This scale is not currently configured to work with IMP 2600 and 3600 model printers. It does support Models 2600X, 3600X, and 2600B.

PC-800 Counting Scale System
Battery-Powered / AC/DC-Powered
Parts & Assembly

<u>ITEM NO.</u>	<u>WT PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY USED</u>
1	1071-11685	BASE PLATE	1
2	1069-11869	LOAD BRIDGE (10 LB SCALE)	1
3	1069-11679	LOAD BRIDGE (25, 50, 100 LB SCALE)	1
4	1076-11675	SHROUD	1
5	1006-09173	SCREW, 10-32 X .25	3
6	1043-08890	SPACER, 10 LB SCALE	1
	" "	SPACER, 25, 50, 100 LB SCALE	2
7	1007-00820	SCREW, FLT HX, .25-20 X 1.25 10 LB SCALE ONLY	2
8	1007-01765	SCREW, FLT HX, .25-20 X .75 25, 50, 100 LB SCALES	2
9	1007-00140	CAP SCREW, HX, .25-20 X 1.25	2
10	7405-11029	MAIN PC BOARD	1
11	1007-12205	SCREW, FLT HX, .25-20 X .50	4
12	1043-11855	SPACER (10 LB SCALE ONLY)	1
13	1069-11680	DISPLAY MTG. BRACKET	1
14	1069-11848	ELECTRONICS ENCLOSURE	1
15	1069-11849	ENCLOSURE BASE	1
16	7075-80003	FOOT ASS'Y W/ JAM NUT	4
17	7405-10955	DISPLAY PC BOARD	1
18	1163-12080	DISPLAY KEY PAD	1
19	1069-11065	DISPLAY, TOP ENCLOSURE	1
20	1074-00205	CLAMP	1
21	1074-11684	WIRE DUCT (10" L)	1
22	1069-11066	DISPLAY, BOTTOM ENCLOSURE	1
23	1090-11627	CORNER STOP	4
24	1140-11832	DISPLAY CABLE ASS'Y	1
25	1148-10998	POWER SUPPLY, 15 VDC W/ CABLE	1
26	NO PART	NO PART	1
27	7153-11817	LOAD CELL ASS'Y (10 LB/5 KG)	1
28	7153-11818	LOAD CELL ASS'Y (25 LB/10 KG)	1
29	7153-11819	LOAD CELL ASS'Y (50 LB/25 KG)	1
30	7153-11699	LOAD CELL ASS'Y (100 LB/50 KG)	1
31	1006-02600	SCREW, 6-32 X .25	16
32	1007-11862	CAP SCREW, .25-20 X .5	1
33	1069-11861	LOAD CELL MTG. PLATE	1
34	7140-11870	CABLE ASS'Y IMP (OPTIONAL)	1
35	7140-11874	CABLE ASS'Y 1155I (OPTIONAL)	1
36	1043-12478	SPACER (PHENOLIC) .125 THK.	1
37	1075-00262	PAD, CONDUCTIVE (10 LB SCALE ONLY)	4
38	1043-12351	STANDOFF, NYLON	2