

SERVICE MANUAL

Fairbanks[®] Scales

UPS "Maxiship" Series Scales

Models: 70-2453-4

70-2453-4 w/421

BULLETIN 50138 / SJ4547 / Issue #3

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DISCLAIMER

Every effort has been made to provide complete and accurate information in this manual. However, although this manual may include a specifically identified warranty notice for the product, Fairbanks Scales makes no representations or warranties with respect to the contents of this manual, and reserves the right to make changes to this manual without notice when and as improvements are made to the product.

SECTION 1: INTRODUCTION

1.1 Introduction

The following sections explain the specifications, operating controls, indicators, and operating instructions for the UPS Package Scale Model 70-2453-4. Calibrating the instrument at the time of installation may be necessary. These instructions assume that all of the equipment is properly installed and calibrated.

Read and understand this manual before power is applied to the instrument. A thorough understanding of all capabilities and procedures is essential for correct installation and operation of this equipment.

Modification

Absolutely no physical, electrical, or program modifications are to be made to this equipment. Electrical connections, other than those specified, may not be made and no physical alterations (mounting holes, etc.) are allowed. Alterations or modifications to the instrument may void any and all warranties.

Customer, Operator Responsibilities

It is the customer, operators' responsibility to maintain the equipment in good condition and operating order. This includes protecting the equipment from accidental or malicious damage. Failure to do some may void any and all warranties.

Other than the procedures authorized in this manual, no service, repair, or adjustment to the equipment may be made or performed by untrained personnel.

1.2 General Service Policy

Prior to installation, it must be verified that the equipment will satisfy the customer's requirements as supplied, and as described in this manual. If the equipment cannot satisfy the application and the application cannot be modified to meet the design parameters of the equipment, the installation should not be attempted.

The complete installation consists of:

1. Verifying application
2. Unpacking
3. Instrument checkout
4. Customer and site readiness:
 - a. Is Location ready?

- b. Is Load Receiver ready?
 - c. Is the customer aware there will be work disruptions?
 - d. Is operator available for training?
5. Making Platform connections
6. Doing Calibration and Adjustments
7. Doing Customer training

NOTICE

- A. *These instructions apply to the instrument only; installation procedures for Printers and other Accessories are given in Manuals specifically provided for those units. The instructions include a pre-installation checkout, which must be performed, either at the Service Center before the Technician goes to the site, or at the site before he places the equipment on-line.*
- B. *All electronic and mechanical calibrations and/or adjustments required to make this equipment perform to accuracy and operational specifications are considered to be part of the installation, and are included in the installation charge. Only those charges which are incurred as a result of the equipment's inability to be adjusted or calibrated to performance specifications may be charged to warranty.*
- C. *Absolutely no physical, electrical or program modifications other than selection of standard options and Accessories are to be made to this equipment. Electrical connections other than those specified may not be performed, and no physical alterations (mounting holes, etc.) are allowed.*
- D. *The installing Technician is responsible to make certain that personnel are fully trained and familiar with the equipment's capabilities and limitations before he considers the installation complete.*

1.3 Pre-Installation Checklist

The following points should be checked and discussed with the Field Engineer and/or Customer if necessary before the Technician goes to the site to install the equipment.

Has the customer's application been checked to make certain that it is within the capabilities and design parameters of the equipment?

If the installation will disrupt the customer's normal operations, is he aware and has he made arrangements?

Is properly-grounded power available at the installation location?

Will the equipment operator(s) be available for training?

Has the Service Technician thoroughly reviewed the installation procedures?

Has the Service Technician reviewed the recommended set-up with the Field Engineer or "Request for Service", and identified all necessary variations to satisfy the customer's particular application?

1.4 Unpacking

1. Check that all components and Accessories are on hand, and agree with the customer's order.
2. Remove all components from their packing material, checking to make certain that all parts are accounted for and no parts are damaged. Advise the shipper immediately if damage has occurred. Order any parts necessary to replace those which have been damaged. Keep the shipping container and packing material for future use. Check the packing list.
3. Collect all necessary installation manuals for the instrument and accessories.
4. Open the Instrument.
5. Perform an inspection, making certain that all hardware, electrical connections and PC Assemblies are secure. Do not reinstall cover if final installation is to be performed after the pre-installation checkout.

1.5 Instrument Location

The Instrument should be positioned away from direct sunlight which would make the display difficult to read.

1.6 Safety

As is the case with any material handling equipment, certain safety precautions should be observed during operation:

1. Never load the platform beyond its rated capacity. Refer to the rating on the serial number plate if in doubt.
 2. Ensure that any structure which supports the platform is capable of withstanding the weight of the platform plus its rated capacity load.
 3. Do not load the platform if there is any evidence of damage to the platform or supporting structure.
 4. Use safety chains or other suitable restraining devices if there is any possibility of the load shifting, falling, or rolling from its position on the load receiver.
 5. Do not leave the platform unattended when it is loaded.
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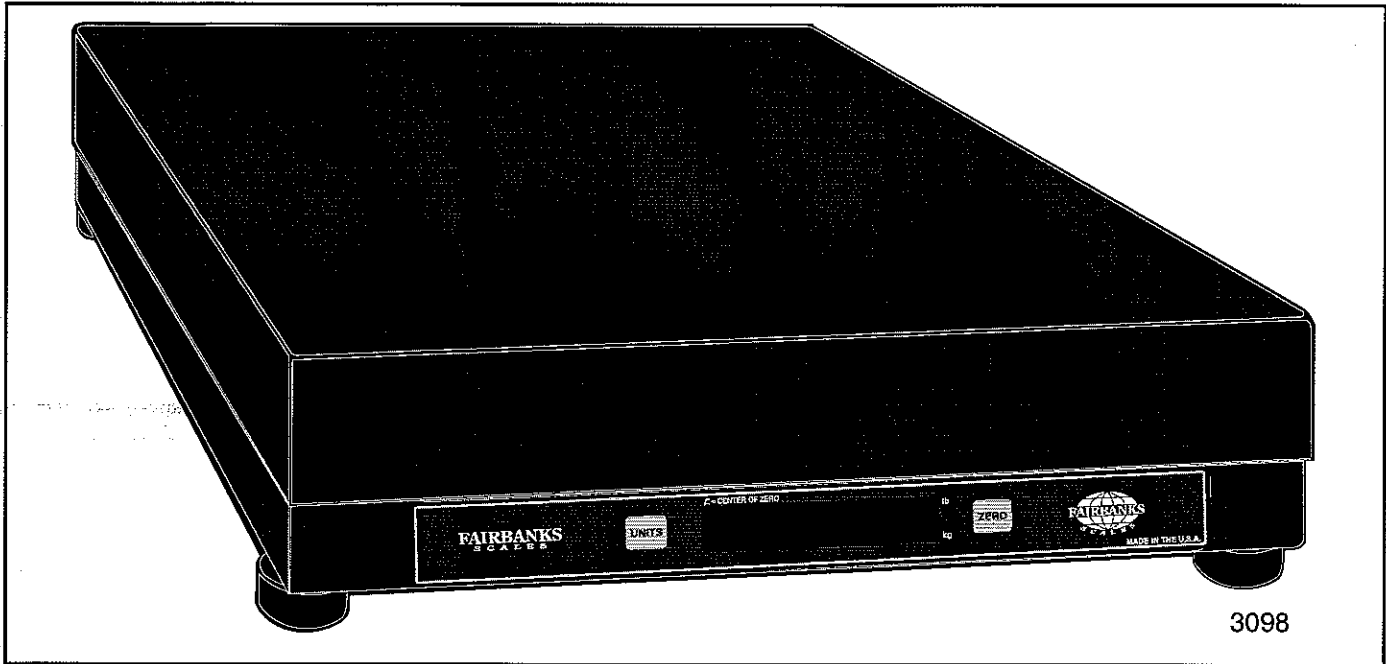


FIGURE 2-1: UPS PACKAGE SCALE 70-2453-4


SECTION 2: INTRODUCTION & DESCRIPTION


2.1 General Description

The UPS Package Scale is an AC powered unit. It has a capacity of 150 lbs. The scale is made in two varieties: the standard version, 70-2453-4, with a plain cover, and the 70-2453-4 with an accessory 421, roller ball cover.

Because the scale uses special low power circuitry, no warm up time is required. Weight readings will be accurate as soon as the scale is turned on.

The scale has a main display with 2 panel switches.

Pressing the  key will "zero" the weight display.

Pressing the  key will change weight units to lbs or kgs.

A single RS232 output will enable the Instrument to be used in applications where an RS232 output is required for computer interface.

2.2 Specifications/Design Features

A. Technical Specifications:

1. Capacities:

150 lb, factory set

2. Resolution:

"7500 d" 7500 divisions
"Ranging" 3000 divisions

3. Rounding:


Nearest division per NIST H-44

4. Weight Display:

- a. Light Emitting Diodes (LED)
- b. 6 active digits

5. Power-On Lockout:

Displays "8.8.8.8.8.8."; when power is turned on. Push

 to go to Weigh Mode.

6. Display Update Rate:

Programmable for 0.4, seconds, factory set

7. Overcapacity Warning:

Displays "HiLOAD" for overcapacity.

8. Underload Warning:

Display of "LoLOAD" indicates an underload condition. This can result from no output from load cell, incorrect connection of load cell, or Deadload (Zero Offset) set incorrectly.

9. Exceeds display Capacity Warning:

"- - -" indicates the weight on the platform exceeds the capacity of the display.

10. Motion Detection:

Satisfies H-44 requirements

11. Power Failure Protection:

Zero reference, programming and service calibrations are retained if the Instrument AC power is lost.

12. Load Cell Excitation:

10 Volts, pulsed

13. RS232 Cable Length:

8 feet

14. Indicators:

- a. Center of Zero
- b. lb, kg

15. Dimensions

- a. Platform including feet 14" x 14" x 4"

16. Auto Zero Tracking (AZT):

Compensates for gradual buildup of material on the load receiver. Factory set .6 divisions.

17. Power Requirements

120 VAC 50-60 Hz or 240 VAC 50-60 Hz
Selectable

B. Environment

All equipment should be protected from direct sunlight.

1. Temperature:

Operating: 0°C (32°F) to 50°C (122°F).
Maximum change rate $\pm 10^\circ\text{C}$ (20°F)/hour.

Storage: - 20°C (- 4°F) to 60°C (140°F) at 100%
Relative Humidity protected from condensation.

- 2. Relative Humidity:** 0% to 90% non-condensing; not suitable for water washdown
-

SECTION 3: OPERATION

3.1 Unpacking and Setup

1. Remove the scale from the packing box.
2. Place on a flat bench top where it will be used.
3. Remove the platform cover to expose the bubble level located in the center of the platform.
4. Adjust the 4 feet to level the scale and tighten the locking nut.
5. Replace the platform cover.

3.2 Connections

1. Using the AC selector switch on the underside of the platform, select 120 VAC or 240 VAC. Plug the power cord into the correct outlet.
2. The RS232, 9 pin output connector is used to interface the scale with a computer terminal. The connector is permanently attached to the scale on an 8 foot cable. Plug the free end of the cable into the customer's PC.

3.3 Operating Controls

The operating controls for the scale are located on the main display.

A. Display Panel

 :


Pushbutton resets the display to indicate zero; the Center-of-Zero () indicator will turn ON and the display will read 0.00. (The zero range is limited to 2% of capacity or 3 lbs. when set up for Canadian use.)

 :

Enables the selection of lb or kg. Indicators will show which is enabled.

3.4 Preparations For Operating

A. Instrument Inhibits



The function of  key will be inhibited if the instrument detects any one of the following conditions:

- i. Motion on the platform
- ii. An underload
- iii. An overload

B. Power-on

When the scale is plugged into AC power, the scale will come on, do a display test, and flash 8's several times.

3.5 Basic Gross Weighing

1. With the platform empty, push  ; the display will indicate zero and the Center-of-Zero indicator will appear at the left of the display.
2. Press the  key to select lb or kg.
3. Place the item to be weighed on the platform.
4. Read the Gross weight from the display.

SECTION 4: CUSTOMER/OPERATOR SERVICE

4.1 Introduction

This Section describes maintenance procedures performable by operating personnel. No other adjustments or repairs are to be attempted by other than Fairbanks Trained personnel.

4.2 Cleaning

Wipe the instrument off with a damp cloth. Do not wash-down this unit, or allow water to drip onto the display.

4.3 Operator Instrument Prompts

The various operator display prompts that may be displayed are indicated in the following chart:

Prompt	Description
HiLOAd	Scale over capacity or above maximum counts (40,000 counts).
LoLOAd	Scale under load. Less than "0" counts.

4.4 Troubleshooting

In the event that the instrument does not function properly, check the following guide before contacting Fairbanks Service.

In case of malfunction, the operator should check the following for problems and suggested remedies before contacting Fairbanks Service.

A. No Display:

1. Power off.
2. Display cable unplugged.

B. Incorrect Weight:

1. Check that nothing is interfering with movement of the platform.
2. Incorrect operating procedure: Review Operating Procedures.
3. Faulty Load Receiver: Contact Fairbanks Service.

C. Display Segment(s) Missing:

1. Contact Fairbanks Service for repair.

D. ZERO Key Does Not Display ZERO

1. Load receiver in motion: Remove source of vibration or motion.
2. Weight outside programmed zero range (2% Canada, 100% USA).

E. Display Locked-up or Inoperative

1. Faulty Instrument: Contact Fairbanks Service.

F. Display Indicates "HiLOAd":

1. Weight on platform exceeds the capacity of the Instrument. Remove the load from the platform.

G. Display Indicates "LoLOAd":

1. Deadload has been removed from load receiver. Reinstall item removed.

H. Pushbuttons will not operate:

1. Faulty instrument: Contact Fairbanks Service.

If problems persist, contact Fairbanks Service.

CALIBRATION DEVIATION

To achieve optimum accuracy, contact Fairbanks Service to provide re-calibration. Fairbanks Service will seal the scale when it is used in "legal for trade" applications.

ZONE 1

The UPS "MAXISHIP" Scale has been calibrated in Saint Johnsbury, Vermont, Zone 1, and should be within acceptable tolerance, if used in the following states and Canadian provinces:

Connecticut	Idaho	Massachusetts	Maine	Minnesota
Montana	New Brunswick	New Hampshire	New York	North Dakota
Nova Scotia	Ontario	Oregon	Quebec	Rhode Island
South Dakota	Vermont	Washington	Wisconsin	Wyoming

ZONE 2

A calibration deviation of -0.041% can be expected, due to variations in gravitational acceleration in the following states:

Colorado	Delaware	Iowa	Indiana	Illinois
Kansas	Kentucky	Maryland	Missouri	Nebraska
Nevada	New Jersey	Ohio	Pennsylvania	Utah
Virginia	Washington, D.C	West Virginia		

ZONE 3

A calibration deviation of -0.092% can be expected, due to variations in gravitational acceleration in the following states:

Alabama	Arizona	Arkansas	California	Georgia
Mississippi	North Carolina	Oklahoma	South Carolina	Tennessee

ZONE 4

A calibration deviation of -0.122% can be expected, due to variations in gravitational acceleration in the following states:

Florida	Louisiana	Texas
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ZONE 5

A calibration deviation of -0.194% can be expected, due to variations in gravitational acceleration in the following states:

Hawaii	Puerto Rico
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ZONE 6

A calibration deviation of +0.051% can be expected, due to variations in gravitational acceleration in the following provinces:

Alberta	British Columbia	Manitoba	Saskatchewan
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ZONE 7

A calibration deviation of +0.143% can be expected, due to variations in gravitational acceleration in the following states and provinces:

Alaska	NW Territories	Yukon
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SECTION 5: CALIBRATION PROCEDURES

5.1 Pre-Calibration

On the side of the platform, locate and remove the two sealing bolts holding the cover plate to the scale. Once the cover plate is removed, access to the programming switch on the PC Board is gained, through the hole in the bottom of the scale.

To enter the programming mode, press the programming switch on the main PC Board.

The display will show "rAngE" or "7500 d".

1. Press the **UNITS** key to toggle the display between the choices:

"Range"

From 0 lb to 60 lb by .02 lb and from 60 lb to 150 lb by .05 lb

OR

From 0 kg to 30 kg by .01 kg and from 30 kg to 68 kg by .02 kg

"7500 d"

0 lb to 150 lb by .02 lb

OR

0 kg to 68 lb by .01 kg

2. With the correct choice displayed, press the **ZERO** key.
3. The display will show "USA" or "CAnAdA". The instrument must be programmed for United States or Canadian parameters. The **UNITS** key will toggle the display between "USA" and "CAnAdA."

nadian parameters. The **UNITS** key will toggle the display between "USA" and "CAnAdA."

- a. To select the United States parameters, press the

ZERO

key when "USA" is displayed. The United States parameters are now selected and the display will show the raw A/D counts.

- b. To select the Canadian parameters, press the

UNITS

key. The display will scroll to "CAnAdA."

Press the **ZERO** key and the Canadian parameters will be selected and the display will show the raw A/D counts.

See Programming Steps P3 and P4 for an explanation of the difference between "USA" and "CAnAdA".

5.2 Calibration

With no weight on the platform, push **ZERO** to record the zero reference. The weight display will display zeroed raw counts. Make sure the display reads 0, ± 2 counts.

Push **ZERO** until this reading is achieved.

To span the scale place 100 or 150 lbs on the scale and allow the raw counts reading to stabilize. Pressing the

UNITS

key will scroll through the weight options: C100.00 and C150.00.

When the displayed value matches the weight on the platform, press the PROGRAM switch through the bottom access hole again. The calibration procedure is now complete and the instrument will return to the Weigh Mode and will display the proper weight.

Replace the PROGRAM switch cover and re-seal the unit.

For reference purposes, the following parameters are automatically programmed:

P0	Units - lbs or kg
P1	Grad Size - 0.02 lb
P2	Motion - 1 grad
P3	AZT - .6 grad USA/.5 grad Canada
P4	Zero Range - 100% USA/2% Canada
P5	Weight Mode - Gross only with no sleep
P6	Display Rate - 0.4
P7	Sleep - Off
P8	Temp - Disabled
F0	Print Format - Output and external request enabled

5.3 Sealing The Scale

If the scale is to be used in a commercial application, it must be "placed in service" in accordance with the rules and regulations of the local weights and measures jurisdiction. Commercial applications are the buying and selling of products by weight, weighing for a charge, or using weight as the basis to charge for a service.

Once a scale has been calibrated and "placed in service" by a technician, it must be sealed with the proper sealing devices and reported to the appropriate weights and measures authority.

If the scale seal is broken or missing, the seal is no longer accepted as proper for commercial application.

For assistance in placing the scale in Service, contact the nearest Fairbanks Service Center.

1. Replace the two sealing bolts. These are the bolts with the holes through the bolt head.
2. Install a wire seal through the two bolt heads and crimp the lead seal.

5.4 Gain, Offset And Analog Filter Settings

If the gain, offset and filter switch on the main PC Board need to be adjusted:

1. Remove the platform cover.
2. Remove the two sealing screws on the side of the platform and remove the small cover plate.
3. Remove the two flat socket head screws holding the top of the platform to the load cell (the two socket screws nearest the display).
4. Unplug the four cables running to the main PC Board.
5. There is a large cover over the main PC Board, located on the same side of the platform as the small cover plate removed in Step 2. Remove the two screws attaching the cover to the bottom of the platform. Remove the cover.
6. Remove the five screws holding the main PC Board to the plastic cover.
7. Lift the PC Board out of the plastic cover and turn over to expose the dipswitches.
8. The factory settings for the dipswitches are:

1	ON	} Offset
2	ON	
3	OFF	} Gain
4	OFF	
5	ON	} Filter
6	ON	
7	ON	
8	N/A	

9. Re-connect the four cables as shown:

RS232(out) to J4 on the Main PCB
J4 on the Display PCB to J3 on the Main PCB
J3 on the Display PCB to J1 on the Main PCB
Loadcell Cable to TB1 on the Main PCB

SECTION 6: REPAIR AND PARTS REPLACEMENT

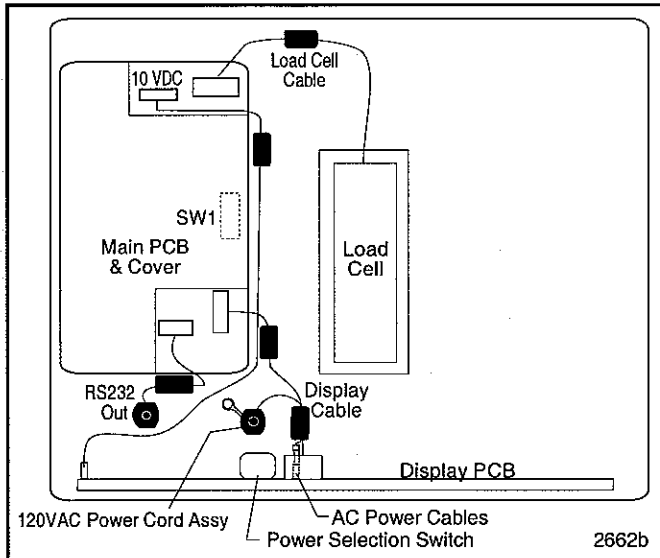


FIGURE 5-1: CABLE CONNECTIONS

To replace the load cell:

1. Disconnect power to the instrument.
2. Remove the platform cover and set it aside.
3. Remove the two flat socket head screws that hold the top of the platform to the load cell (the two socket screws nearest the display).

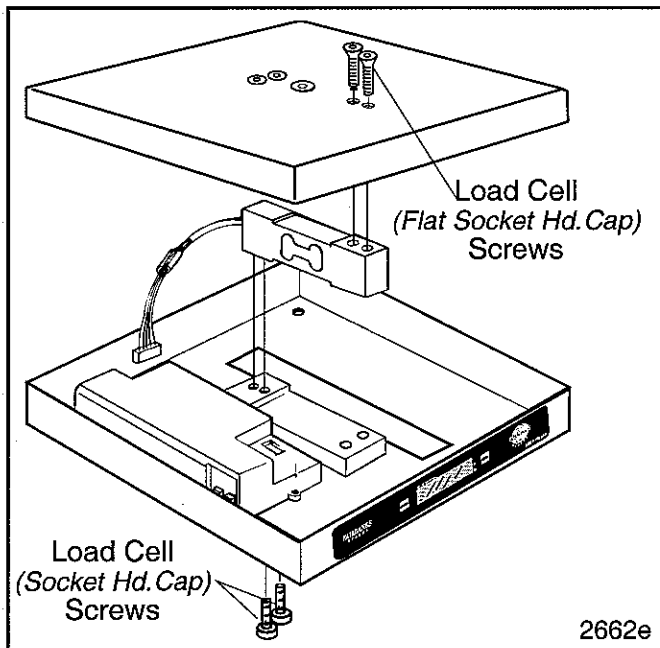


FIGURE 5-2: LOAD CELL REMOVAL

4. Remove the top of the platform.
5. Release the ferrite bead from the plastic clip that secures the load cell cable to the bottom of the platform.
6. Disconnect the load cell cable from the main PC Board at TB1.
7. Turn the platform, bottom side up and remove the two socket head cap screws that hold the load cell to the bottom of the platform (the two socket head cap screws most distant from the display).
8. Remove the old load cell.
9. Place the new load cell in position and install the two upper and two lower socket head screws. Use lock-tite 222 or equivalent on the bolts. Torque the top bolts to 100 in-lbs and the bottom bolts to 150 in-lbs.
10. Re-connect the load cell cable to the PC Board.
11. Place the ferrite bead in position using the plastic clip on the bottom of the platform.
12. Re-assemble the platform by reversing the disassembly steps.

To replace the Main PC Board:

1. Disconnect power to the instrument.
2. Remove the platform cover and set aside.
3. Remove the two flat socket head screws that hold the top of the platform to the load cell (the two socket head screws closest to the display). Remove the top of the platform.

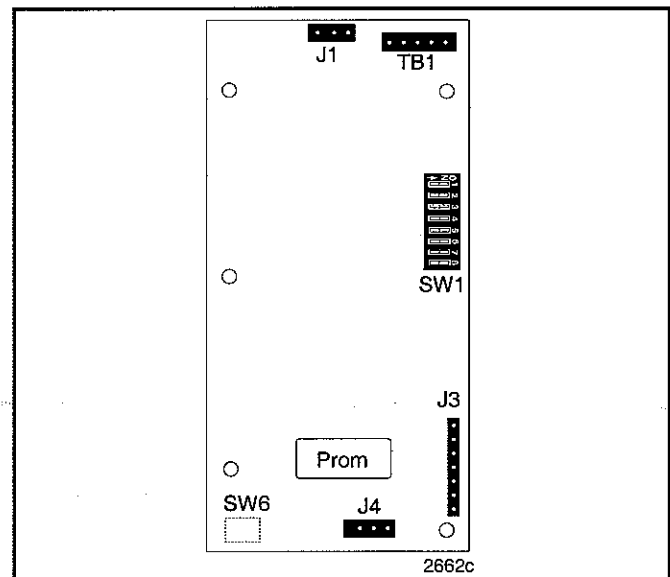


FIGURE 5-3: MAIN PC BOARD CONNECTIONS

4. Remove all the connectors from the main PC Board under the large cover in the base of the platform.
5. Remove the two sealing screws from the side of the platform. This will break the scale seal.
6. Working from the bottom of the unit, remove the two screws that hold the PC Board cover in place. Lift out the PC Board and cover.
7. Turn the cover up-side-down and remove the five phillips head screws that hold the PC Board in the cover. Remove the PC Board.
8. Set the dip switches at SW1 before installing the new board in the cover.

1	ON	} Offset
2	ON	
3	OFF	} Gain
4	OFF	
5	ON	} Filter
6	ON	
7	ON	
8	N/A	

9. Install the new PC Board and secure with the five screws.

NOTE

The SW6 programming button MUST be located over the sealing hole in the bottom of the platform.

10. Place the cover with the board in place in the bottom of the platform and re-attach with the two phillips head screws.

11. Re-connect the four cables as shown:

**RS232(out) to J4 on the Main PCB
 J4 on the Display PCB to J3 on the Main PCB
 J3 on the Display PCB to J1 on the Main PCB
 Loadcell Cable to TB1 on the Main PCB**

12. Re-install the sealing bolts and seal the unit. Use lock-tite 222 or equivalent.

13. Re-assemble the platform by reversing the disassembly steps.

To replace the Display PC Board:

1. Disconnect the unit from AC power.
2. Remove the top cover of the platform.

3. Remove the two flat socket head screws that hold the top of the platform to the load cell.
4. Remove the top of the platform.

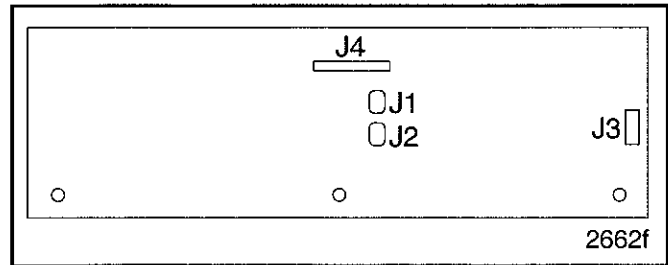


FIGURE 5-4: DISPLAY BOARD CONNECTORS

4. Disconnect the display cable at J4, the AC power cables at J1 and J2, and the power cable at J3.
5. Remove the three long spacers that secure the display board to the platform.
6. Remove the display board.
7. Install the new display board and re-connect the cables as shown:

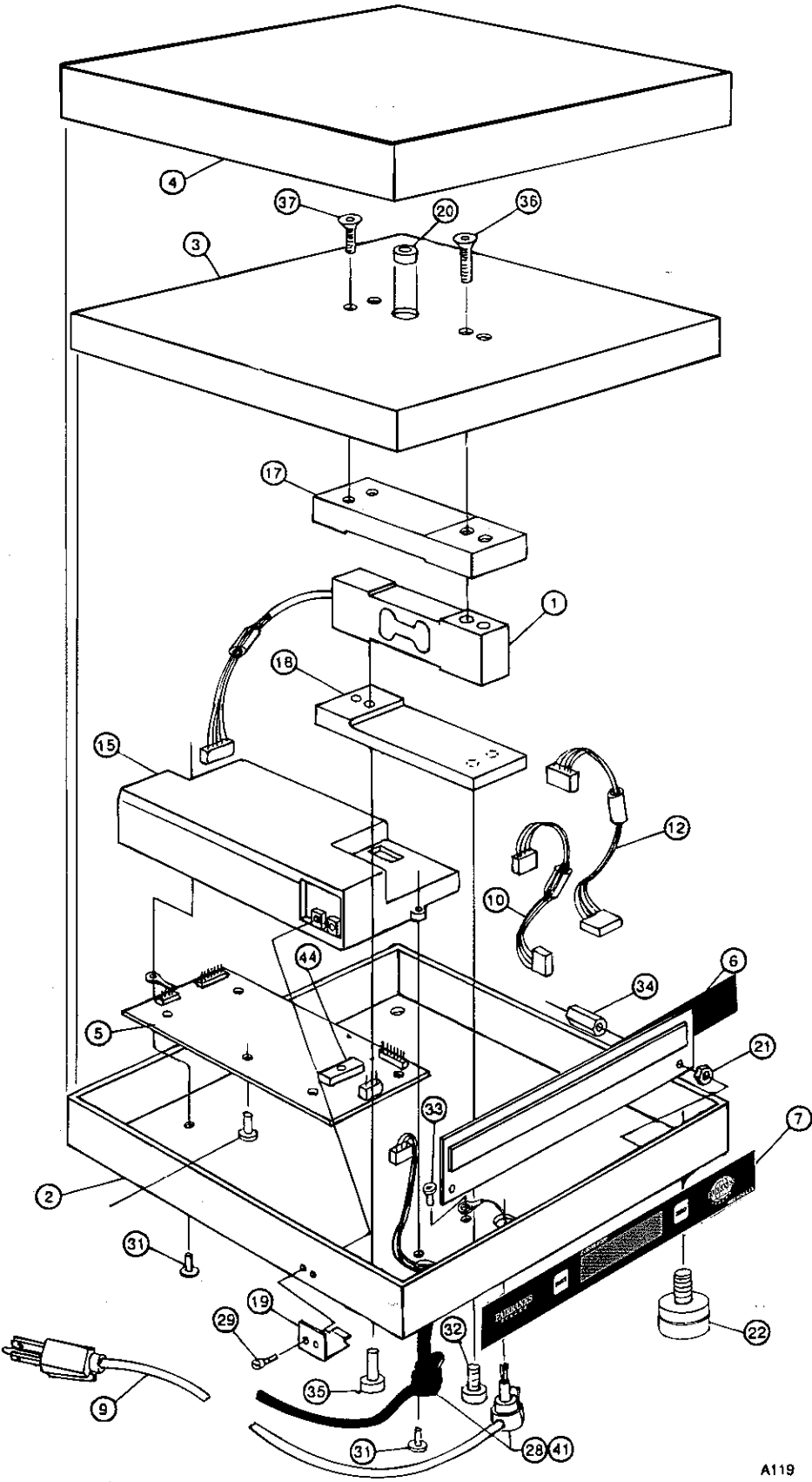
**J1 on the Main PCB to J3 on the Display PCB
 J3 on the Main PCB to J4 on the Display PCB
 Power Cord to J1 and J2 on the Display PCB**

8. Re-assemble the platform by reversing the disassembly steps.

Parts List

Item #	Part #	Qty	Description
1	3-58782-1	1	Load Cell Assembly, 100 kg
2	4-58771-1	1	Frame Assembly, Bottom
3	4-58781-1	1	Frame, Top
4	4-57979-4	1	Cover, Flat
5	2-58765-1	1	PCB Assembly, Weight Controller
6	2-58772-1	1	PCB Assembly, Display/Power Supply
7	4-58548-1	1	Overlay, Platform
9	3-58783-1	1	Power Cord Assembly
10	2-58847-1	1	Cable Assembly, Power
12	2-58806-1	1	Cable Assembly, Display
13	3-58799-1	1	Cable Assembly, RS232
15	4-57862-1	1	Cover, A/D
17	3-58777-1	1	Block, Top
18	3-58778-1	1	Block, Bottom
19	2-57818-1	1	Bracket, Sealing
20	6A12056	1	Bullseye Level
21	795097	3	Spacer 6 - 32 x .187
22	2-54419-22	4	Foot
28	6A10275-15	2	Bushing, Heyco
29	1-52884-1	2	Screw, Sealing
30	6P6333	5	Screw, Self Tapping Type B 6 x .31
31	6P6334	2	Screw, Self Tapping Type B 6 x .50
32	2-55369-5	2	Screw, Cap, Socket Head M6 x 12
33	6P6012	1	Screw, Pan Head 6 - 32 x .25
34	1-40146-2	3	Spacer 6 - 32 x 1.00
35	2-55369-6	2	Screw, Cap Socket Head M6 x 25
36	2-56555-6	2	Screw, Cap Socket, Flat Head M6 x 30
37	2-56555-7	2	Screw, Cap Socket, Flat Head M6 x 18
41	1-58784-1	2	Spacer, Cable
44	2-58878-1	1	Prom, Programmed Kit, 70-2453-4
	870081	3	Clip, Plastic (Not Shown)
	870082	2	Clip, Plastic (Not Shown)
	4-58880-1	1	Cover, Roller Ball (optional)

Exploded View



A119

APPENDIX I: DATA OUTPUT SPECIFICATIONS

Scope

This Appendix contains detail data output information on the UPS "Maxiship" Series Scales.

RS232-C Serial Data Output

A. Introduction

The single RS232-C output port is designed for interface with Customer's data processing equipment.

B. Specifications

RS232-C Compatible Data Signal

- 7 Data Bits
- Odd Parity
- 9600 Baud Rate ($\pm 0.1\%$), Models 70-2453-4
- Two Stop Bits
- US-ASCII Character Set
- Mark = -3 to -15V
- Space = +3 to +15V
- Maximum distance of 50 cable-feet
- Connector at the end of the attached cable is a Subminiature D, 9 Pin Female, for connection to a PC serial port

C. Character Frame

Characters are transmitted in an ASCII format at 9600 Baud ($\pm 0.1\%$). The receiver must be capable of a tolerance of $9600 \pm 2.5\%$ Baud to allow for line losses and frequency skew. Character frame consists of one start bit, 7-bit character length, odd parity bit and two stop bits.

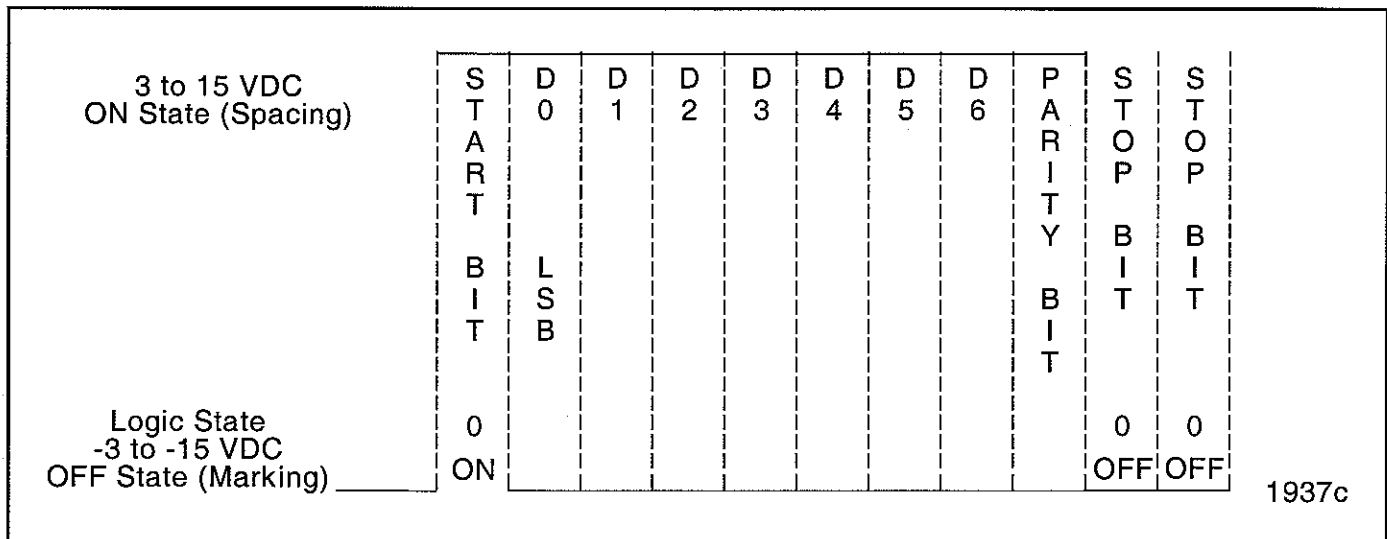


FIGURE 1: CHARACTER FRAME

NOTES

Least Significant Bit (LSB), D0 transmitted first.

Space character = HEX 20.

Voltage levels above 15VDC are invalid.

Voltage levels below -15VDC are invalid.

Voltage levels between -2 and +2 are invalid.

D. Interface Connections

The Figure below defines the pin numbers and signals for the DB9, female, Output Connector.

Pin Number	Signal
1	
2	Transmit (Tx)
3	Receive (Rx)
4	
5	Ground
6	
7	
8	
9	

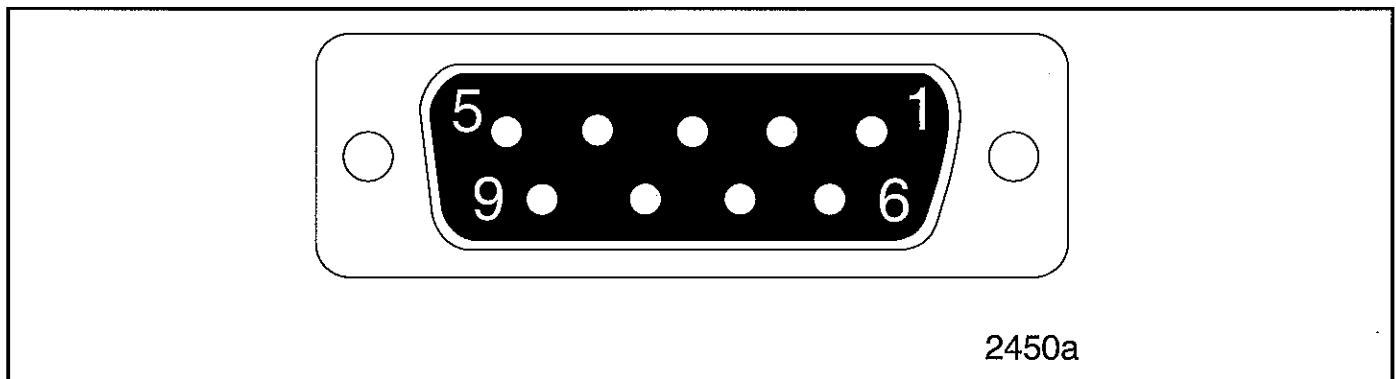


FIGURE 2: PIN NUMBERS ON FEMALE DB9 CABLE CONNECTOR

E. Data Transmission

Data available for transmission consists of the gross weight. Transmission to the computer output will occur if the computer transmits a carriage return (HEX 0D).

F. Computer Output Format

The instrument will transmit the following string of data.

Character Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
String 1																		
Gross Weight	X/-	X	X	X	.	X	X	SP	l/k	b/g	SP	G/g	R/r	SP	SP	CR	LF	EOT

FIGURE 3: OUTPUT STRINGS

NOTES

1. Characters denoted by "X" are characters 0-9. Leading zeroes are replaced with spaces (SP). Character 5 is a decimal point (HEX 2E).
 2. Lower case "l" and "b" for Avoirdupois Units or "k" and "g" for Metric Units.
 3. First character will be a space (SP), HEX 20, if weight is positive or a minus (-), HEX 2D, if weight is negative.
 4. Characters separated with an '/' denotes one of the characters will be transmitted.
 5. Lower case gr in characters 12 & 13 indicate scale motion. Upper case indicates stable weight.
 6. (CR) HEX OD, (ETX) HEX 03 is transmitted in "HiLoad" or "LoLoad" condition.
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