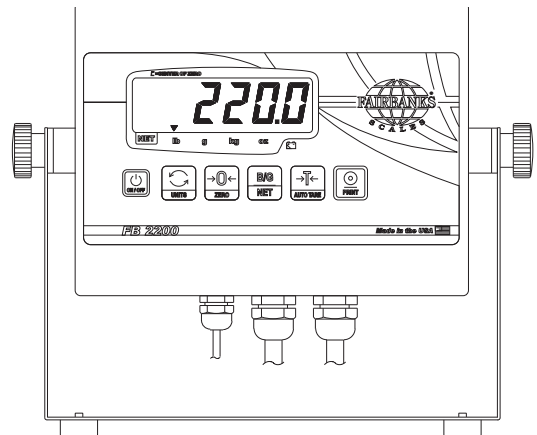
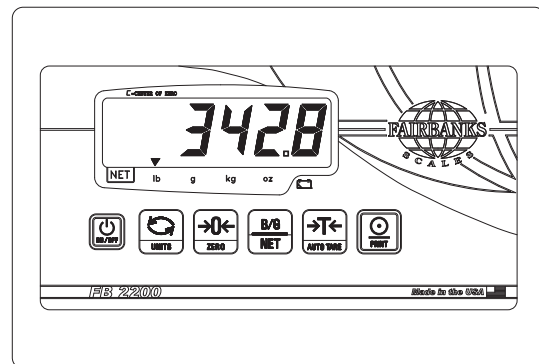




FB 2200 Series Indicator

Model: FB 2200-1
FB 2200-2
FB 2200-3
FB 2200-4



Amendment Record

FB 2200 Series Indicator
50746

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

Created	01/2004	
Issue #1	02/2004	New product
Issue #2	04/2004	Added stainless steel models
Issue #3	06/2004	Added COC and Printers Appendix
Issue #4	10/2004	Added battery model information
Issue #5	03/2005	Revision (file rebuild from Issue #1)
Issue #6	08/2005	Added programming steps for PROM update
Issue #7	02/2006	Added CWM number, page 5
Issue #8	06/2006	Added programming steps for backlight feature
Issue #9	06/2006	Added programming steps for PLC feature
Issue #10	02/2007	Updated Remote Display Information and Parts Descriptions

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.

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Section 1: General Information

A. Introduction

The information contained in this manual provides a general description of the product, customer/operator responsibilities, technical specifications, features, and safety.

B. Description

The **Fairbanks FB 2200** series is a general purpose instrument that can be used with a wide variety of platforms with a capacity setting of up to six digits. This indicator is designed to be used in a dry environment using a 120VAC adapter as its power source.

C. Specifications

1. Instrument Approvals:

NTEP: C.O.C. 04-035

CWM: AM 5559

2. Enclosure Material: **ABS, Model FB 2200-1 and FB 2200-3**

A. Desk mount

B. Wall mount (with optional bracket)

Enclosure Material: Stainless Steel, Model FB 2200-2 and FB 2200-4

A. Desk mount

B. Wall mount (with optional bracket)

3. Display: One-inch (1") Liquid Crystal Display with backlight

4. Display Update Rate: Service programmable in tenths of a second from 0.1 to 1.0

5. Capacity: Service programmable by using front panel keys to scroll and select each digit, up to six (6) displayed digits. [999999] Note largest graduation size selectable is "50."

6. Resolution:

A. 1,000,000 divisions, internal.

B. 10,000 divisions, commercial.

C. 100,000 divisions, non-commercial

7. Division Sizes: Service programmable for .001 to 50

8. Load cells:
- A. Up to eight (8) - 350 W cells.
 - B. Up to sixteen (16) - 1000 W cells

Note: *For applications with more than four (4) load cells, cable length cannot exceed 25 feet.*

9. Electrical:
- A. Requirements = 9VDC @ 500 ma supplied by AC Adapter on the ABS model
 - B. Excitation = Five volts AC (Square wave)

10. Displayed Indications:
- A. Center-of-zero
 - B. Net
 - C. lb
 - D. g
 - E. kg
 - F. oz
 - G. lb-oz (This selection is not Legal for Trade.)
 - H. Low Battery - Lo Batt

11. Over, Under, and Out of Range warnings
- A. HiCAP Scale input is over Capacity or input exceeds 30mv.
 - B. LoCAP Scale input is under Zero range or input is less than -.05mv.
 - C. ----- Displayed weight exceeds 6 digits

12. AZT: Service programmable in divisions from:
- A. Off = none
 - B. 0.5
 - C. 1
 - D. 3

13. Units: Service programmable Units:
- A. lb
 - B. kg
 - C. oz
 - D. g
 - E. lb:oz

14. Zero Range: Service programmable,
- A. USA = 100%
 - B. CAN = 2%

15. Motion Detection: Service programmable in divisions from:

- A. Off = none
- B. 0.5
- C. 1
- D. 3

16. Digital Filter: Service programmable.

- A. Std
- B. FAST
- C. SLO

17. Tare Modes: Service programmable.

- A. OFF Auto Tare Inhibited
- B. ON Auto Tare Enabled
- D. On-CLr Auto Tare Cleared when weight returns to zero Gross.
 Note: This selection is not Legal for Trade.

18. Outputs: Service programmable.

- A. Print, simple RS232 output of
 - 1) Gross Weight (crlf)
 Tare Weight (crlf)
 Net Weight (crlf)
 - 2) Net only
 - 3) Time and or Date printing selectable (enabled or disabled)

Note: *No ticket data location formatting available in this instrument.*

B. Computer Interface:

- 1) Demand Output, G-T-N when CR is received.
- 2) Continuous Displayed Weight in Std. Fairbanks stream.
- 3) Time and or Date printing selectable (enabled or disabled)

C. Standard DB9 connection.

19. Environment:

Handbook 44 Compliance Tested Operating Environment:

Temp -10°C to + 40°C (+14°F to + 104°F)

Storage:

Temp -40°C to + 60°C (-40°F to + 140°F)

D. Keys

1. ON/OFF turns unit on or off.
2. UNITS used to switch between program selected units.
3. ZERO used to “zero” displayed weight; program selectable 2% or 100% of capacity.
4. B/G – NET used to toggle between Gross and Net weights
(only if a tare value has been entered greater than zero)
5. AUTOTARE automatically tares off displayed weight when key is pressed.
Depending on programmed selection, Tare weight will either:
A. Be retained for reuse until changed or power is removed, or
B. Automatically clear when Gross weight returns to Zero.
Note: This selection is not Legal for Trade.
6. PRINT simple RS232 output when key is pressed.

Note: *For front panel programming, see Page 27.*

Section 2: Installation

A. General Service Policy

1. 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.
2. These instructions apply to the instrument and its specific accessories. Installation procedures for printers and other peripherals 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 in service.
3. 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.
4. 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 and will immediately void warranty.
5. The installing technician is responsible to make certain that personnel are fully trained and familiar with the equipment's capabilities and limitations before the installation is considered complete.
6. The complete installation consists of:
 - Verifying the application
 - Unpacking
 - Instrument checkout

- Customer and site readiness:
 - a. Is the Location ready?
 - b. Is the Load Receiver ready?
 - c. Is the customer aware there will be work disruptions?
 - d. Are the operators available for training?
- Platform connections, both electrical and mechanical
- Calibration and Adjustments
- Customer training

B. Pre-Installation Checklist

The following items should be checked before the equipment is installed.

1. Has the application been checked to make certain that it is within the capabilities and design parameters of the equipment?
2. If the installation will disrupt normal operations, have arrangements been made?
3. Is properly-grounded power available at the installation location?
4. Will the equipment operator(s) be available for training?
5. Has the technician thoroughly reviewed the installation procedures?

C. Unpacking

1. Check that all components and accessories are on hand, and agree with the order.
2. Remove all components from their packing material.
 - Check 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 parts that 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 and 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.

D. Instrument Location

The Instrument should be positioned away from direct sunlight.

E. 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.

F. Load Cell Connections

1. Remove the two screws located at the bottom corners of the back housing, and gently open from the bottom to release the top two holding tabs in the housing. Be careful not to pull the cables out of their connectors.
2. Bring the dressed end of the load cell cable through the strain relief connector on the back of the instrument, allowing enough cable on the inside to reach the load cell connection terminal on the main board. Tighten strain relief as needed to hold the load cell cable.
3. Connect the platform interface cable wires to the terminal strip as follows:

TB1

1. - excitation
 2. + excitation
 3. shield
 4. + signal
 5. - signal
4. Reassemble housing and proceed with installation.

Note: Refer to the platform documentation for the proper interface color code of the wiring.

G. Powering up the Indicator

1. Using AC Adapter:
 - A. Plug the AC Adapter into the connector on the back of the instrument.
 - B. Plug the AC Adapter into a 110 volt outlet.
2. Instrument will perform warm-up cycle:
 - A. Display test, count down from 0 to 9 with all legends tested.
 - B. PROM number and Revision shown.
 - C. Displays dashes briefly and then goes to zero, provided that the weight on the scale is at zero or within 10 divisions of zero. If outside the 10 division window, the scale will show the current weight on the scale.

Note:

1. If the instrument continues to display “-----” press the “ZERO” key to begin weighing.
2. If motion exists, display will show “-----” until motion stops.
3. If the instrument continues to display “ErrOr” this is an indication of an uncalibrated instrument. Press the “ZERO” key or the internal “Cal” switch and begin setup and calibration.

Section 3: Programming

A. GET READY

The program group is shown and accessed in steps. At each step, a word or abbreviation will be shown indicating the parameter to be set. Pressing the [ZERO] key will enter the parameter. Use the [UNITS] key to scroll and select the required setting, and press the Enter [ZERO] key to accept the shown value and advance to the next step.

To access, select, and step through the program, configuration, and subsequent calibration, we'll use these keys:

ZERO ENTER. Accepts the shown value and advances to the next program step.

B/G/Net Scrolls Back through parameters and returns to weigh mode after multiple pressings.

UNITS Scrolls Forward through the available parameters and individual step choices.

B. GET SET

To program the instrument, access to the PC Board is required. Quick access is made by removing the plug on the rear cover of the ABS models or removing the small cover plate on the rear cover of the stainless steel models.

C. GO

To enter the programming mode, press and release the SW7 switch located at the bottom, center of the board. Note that the default factory settings are in underlined italics.

1. **SEt-UP** - Instrument Setup Mode will be displayed.

Press the enter key [ZERO] to enter the program mode, or

Press the scroll key [UNITS] to advance to desired program step, or

Press the [B/G/NET] key to return to weight display.

2. **SEt-ti Set Time** will be displayed.

Press [ZERO] enter key to set time in the HH.MM A/P format. The flashing digits indicate the entry being made. Use the scroll [UNITS] key to advance to the desired numeric or am/pm entry, and press the [ZERO] enter key to select entry and advance to the next set of flashing digits.

3. **SEt-dA - Set Date** will be displayed.

Press [ZERO] enter key to set date in the MM.DD.YY format. The flashing digits indicate the entry being made. Use the scroll key [UNITS], to advance to the desired numeric entry and press [ZERO] enter key to select entry and advance to the next set of flashing digits.

Note: Time and Date can be set from the front panel by pressing and holding the "B/G-Net" key for a few seconds.

4. **diSP - Set Display Update Rate.** The times between display updates in tenths of a second.

Press [ZERO] enter key to view or change the display update rate. Changes are made by using the scroll key [UNITS] and pressing [ZERO] enter key to select entry and advance to the next programmable parameter. Selections are as follows in tenths of a second:

0.1	0.6
<u>0.2</u>	0.7
0.3	0.8
0.4	0.9
0.5	1.0

5. **UnitS - Set Weigh Units** will be displayed.

Press enter [ZERO] to begin selection of the weighing units desired.

Press the scroll key [UNITS] and **SELEcT** will be displayed. A carat symbol will be above a units legend on the front cover. Use the enter key [ZERO] to select the displayed unit(s). If the displayed unit is not desired, press the scroll key [UNITS] to advance to the next choice. When all choices have been made, the display will indicate **UnitS** with the chosen units indicated. Press the enter key [ZERO] to advance to the next program step. Selections for units are as follows:

lb.

kg.

oz.

g.

Lb-oz. Note: This selection is not Legal for Trade.

Lb, g, kg, oz. - any combination

6. **Print - Set Print Mode** will be displayed.

Press enter [ZERO] to view or change the current status.

Use the scroll key [UNITS] to select desired status. Use the enter key [ZERO] to select and advance to the next program step. Selections for print are as follows:

OFF	Function is not active.
<u>button</u>	Output upon depressing the print key - stable weight only
Auto	AutoPrint, activated by stable weight above 10d, reset by return to ½ of printed weight value.
Contin	Continuous Output. Once every display update rate.
Polled	Demand Output by receipt of CR from external source. i.e. computer or terminal.

Note: *PROM 25023 rev 3.0 New Selections for Remote Display has been added. Please see Appendix III for complete list of prompts and features.*

7. **bAUd - Set Baud Rate** will be displayed.

Press enter [ZERO] to view or change the current baud rate. Use the scroll key [UNITS] to select desired baud rate. Use the enter key [ZERO] to select and advance to the next program step. Selections for baud rate are as follows:

Note: *Further information on data strings is located in I/O section.*

2400
4800
9600
19.2 = 19200

8. **d-bitS - Set Character Length** will be displayed.

Press enter [ZERO] to view or change the current character length. Use scroll key [UNITS] to select desired character length. Use the enter key [ZERO] to select and advance to the next program step. Selections for character length are as follows:

7 bit
8 bit

9. **PAritY - Set Parity** will be displayed.

Press enter [ZERO] to view or change the current parity setting. Use scroll key [UNITS] to select desired parity setting, then use the enter key [ZERO] to select and advance to the next program step. Selections for parity are as follows:

nonE
odd
EvEn

10. **StoP - Set Stop Bit Length** will be displayed.

Press enter [ZERO] to view or change the current stop bit settings. Use scroll key [UNITS] to select desired stop bit settings. Use the enter key [ZERO] to select and advance to the next program step. Selections for stop bit are as follows:

- 1
- 2

11. **nEtPnt - Set Net Print Mode** will be displayed.

Press enter [ZERO] to view or change the current net print setting. Use scroll key [UNITS] to select desired net print configuration, then use the enter key [ZERO] to select and advance to the next program step. Selections for net print are as follows:

- Gr.tA.nt Gross , Tare , and Net weights are printed.
- nt.ONLY Net weight only is printed.

12. **Pnt-ti** (Set Enable/Disable Printed Time) will be displayed.

Press enter [ZERO] to view or change the current time print setting. Use scroll key, [UNITS] to select desired time print configuration, then use the enter key [ZERO] to select and advance to the next program step. Selections for time print are as follows:

- OFF Disabled, time will not be print.
- ON Enabled, time will be printed

13. **Pnt-dA - Set Enable/Disable Printed Date** will be displayed.

Press enter [ZERO] to view or change the current date print setting. Use scroll key [UNITS] to select desired date print configuration. Use the enter key [ZERO] to select and advance to the next program step. Selections for date print are as follows:

- OFF Disabled, date will not be printed.
- ON Enabled, date will be printed

Note: Steps 14 and 15 were added when PROM 25023 Rev. 4.0 Backlight Display was added to the instrument.

14. **bL Set - Enable /Disable /Configure Back Light feature.**

- bL OFF** Back light always OFF.
- bL On** Back light always ON.
- bL POS** Back light only on with a positive weight on the scale, otherwise off.
- bL tr1** Back light ON with a positive weight on the scale until weight has been stable for whatever time limit is selected at Step 15, tr Set.
- bL tr2** Back light ON with a positive weight until returned to zero and stable for whatever time limit is selected at Step 15, tr Set.

15. **tr Set** **Time in seconds** that the back light will remain on.

- 15 30
- 60 300

Section 4: Configuration

A. GET READY

The configuration group is shown and accessed in 'steps'. At each step, a word or abbreviation will be shown indicating the parameter to be set. Pressing the [ZERO] key will enter the parameter. Next, use the [UNITS] key to scroll and select the required setting, and press the [ZERO] key to accept the shown value and advance to the next step.

To access, select, and step through the program, configuration, and subsequent calibration, we will use these keys:

ZERO ENTER. Accepts the shown value and advances to the next program step.

B/G/Net Scrolls Back through parameters and returns to weigh mode after multiple pressings.

UNITS Scrolls Forward through the available parameters and individual step choices.

B. GET SET

To program the instrument, access to the PC Board is required. Quick access is made by removing the plug on the rear cover of the ABS models or removing the small cover plate on the rear cover of the stainless steel modules.

C. GO

To enter the programming mode, press and release the SW7 switch two (2) times. This is located at the bottom center of the board. The display will indicate **ConFIG**. Press the enter key [ZERO] to access the configuration parameters.

1. **CAP - Scale Capacity** will be displayed.

Press enter [ZERO] to view or change the current capacity setting. The flashing digit indicates the digit to be changed. Use the scroll key [UNITS] to advance the flashing digit to the proper value. If the number is not needed, scroll till the number reaches zero, and with the zero flashing, press the enter key [ZERO] to remove digit and advance to next digit. When proper value is displayed use the enter key [ZERO] to select and advance to the next program step.

Note: Capacity can be up to six displayed digits (999999).
All six digits **must** be entered to advance to the next step.
Factory default is 005000

2. **P-Unit - Primary Unit** (the unit that the instrument will default to upon power up) will be displayed. A carat symbol is indicated above the currently selected primary unit legend on the front cover.

Press the scroll key [UNITS] and the carat symbol will move from legend to legend on the front cover. When the desired primary unit is selected, use the enter key [ZERO] to select and advance to the next program step. Selections for primary units are as follows:

lb.

g.

kg.

oz.

Lb-oz. Note: This selection is not Legal for Trade.

Note:

1. If lb-oz is selected as the units, the Capacity and Span must be entered as ounces (oz).
2. If lb-oz is selected, no other units selections will be available.

Note: The Primary units available will be only those which were selected under the **Set-UP** programming of units.

3. **AZt - Auto Zero Tracking, the means by which small amounts of material may be automatically removed from the scale by the instrument** will be displayed. Press enter [ZERO] to view or change the current Auto Zero Tracking setting. Use scroll key [UNITS] to select desired Auto Zero Tracking setting. Use the enter key [ZERO] to select and advance to the next program step. Selections are in divisions, and are as follows:

OFF AZT is disabled.

0.5

1

3

4. **bAL - Motion Band** (the range in divisions that weight must be stable before a print function will be allowed) will be displayed. Press enter [ZERO] to view or change the current balance setting. Use scroll key [UNITS] to select desired balance setting, then use the enter key [ZERO] to select and advance to the next program step.

Selections for balance are as follows:

OFF Balance is not disabled.

0.5

1

3

5. **O.rAnGE - Zero range** (represented by a percent of scale capacity that may be removed by pressing the Zero Key) will be displayed.

Press enter [ZERO] to view or change the current zero range setting. Use scroll key, [UNITS] to select desired zero range setting, then use the enter key [ZERO] to select and advance to the next program step. Selections for zero range are as follows:

USA 100% of programmed capacity

Can 2% of programmed capacity

6. **d - Value of a scale division** will be displayed.

Press enter [ZERO] to view or change the current division setting. Use scroll key [UNITS] to select desired division setting, then use the enter key [ZERO] to select and advance to the next program step.

Note: *When selecting the grad size, only grad sizes for the primary unit will be available. For a complete list of grad sizes by primary unit, please see Appendix I.*
Factory default is 1.

7. **FILtEr - Digital Filter** (a means to electronically dampen excessive motion) will be displayed. Press enter [ZERO] to view or change the current digital Filter setting. Use the scroll key [UNITS] to select desired digital filter setting. Use the enter key [ZERO] to select and advance to the next program step. Selections for digital filtering are as follows:

Std Medium dampening
FAST Light dampening
SLO Heavy dampening

8. **A-tArE - AutoTare** (a means by which a container's weight may be removed, allowing the viewing of the products' net weight only) will be displayed. Press enter [ZERO] to view or change the current auto tare setting. Use scroll key [UNITS] to select desired auto tare setting, then use the enter key [ZERO] to select and advance to the next program step.

Selections for auto tare are as follows:

OFF Autotare is not disabled.
ON Autotare is active.
On-CLr Tare automatically clears when Gross weight returns to Zero
Note: This is not a Legal for Trade setting.

Section 5: Calibration

A. Calibration Procedure

1. To enter the programming mode, press and release the SW7 switch three (3) times. It is located at the bottom, center of the board. The display will indicate:
CAL - Calibration. Press the enter key [ZERO] to enter calibration mode or press [B/G/NET] key to backup or exit to weigh display. If the enter key [ZERO] is pressed, the following prompts will be seen:
2. Raw counts will be seen, this can be any random value. Press [ZERO] key to establish Cal Zero. Zeroed counts will be displayed +/- 1 count, rezero counts if or as needed. Once counts have stabilized press the [UNITS] key to advance to the next step.
3. **CAL At** will be displayed. Press the [ZERO] key.
4. The full scale capacity will be displayed with the most significant digit flashing. Enter the calibration weight one digit at a time using the scroll [UNITS] key and enter [ZERO] key until all six digits have been entered and the test weight value is displayed. Press enter [ZERO] to continue.

Note: Pressing enter [ZERO] on the sixth digit will advance the display to **LOAD** .

5. **LOAD** will be momentarily displayed then span counts. Place the calibration weight (as entered in the previous step) and when stable, press the enter [ZERO] key. The display will indicate **C Pd x** momentarily to indicate calibration is now complete and the scale will return to the gross weigh mode. The **C Pd x** should be >1 for proper operation.

B. Service Sealing

If the scale is to be placed in a commercial application, it must be “placed in service” by the local Weights and Measures jurisdiction. (Commercial applications are buying or selling products by weight, weighing for a charge, or using weight as a basis to charge for a service).

1. ABS Model:

- Insert the “double D” plastic plug into the calibration switch access hole in the brass sealing peg that protrudes through the right rear corner of the instrument housing.
- Crimp the seal to secure the sealing wire. Apply the paper security seal (part number 14339) over the “Double D” plug to comply with Weights and Measures regulations.

2. Stainless Steel Model:

- To comply with Weights and Measures regulations, the seal wire must go through two of the screws on the switch cover plate, two of the screws on the right side of the rear cover, and two of the screws on the left side of the rear cover.

C. Capacity/Division Label

Per Weights and Measures and Handbook 44, no installation/calibration is complete until the proper Capacity and Division stickers are affixed to the instrument in a clearly visible location on the front face of the instrument.

Section 6: I/O

A. Program selection for Print

OFF	Function is not active.
button	Output upon depressing the print key - stable weight only
Auto	AutoPrint, activated by stable weight above 10d, reset by return to ½ of printed weight value.
Contin	Continous Output. Once every display update rate.
Polled	Demand Output by receipt of CR from external source (i.e.- computer or terminal).

General Notes:

1. In all cases where <GrossWt>,<NetWt> etc. is listed, it is signed 7 character w/ DP format.
2. The legends for gross/net/tare will be upper and lower case based on motion.
(standard: GR = stable, gr = unstable)
3. <CR> = means carriage return character.
4. <LF> = line feed character.
5. <SP> = space character.
6. <EOT> = end of transmission character.
7. <> = used to show individual characters for clarity only (not present in data stream).

1. Print Data Strings: Activated by the [PRINT] key, or Auto print criteria.

The selection of Gross, Tare, Net or Net only will be conditional.

Example 1:

```
<GrossWt> <SP> <l> <b> <SP> <G> <R> <CR> <LF>
<TareWt> <SP> <l> <b> <SP> <T> <A> <CR> <LF>
<NetWt> <SP> <l> <b> <SP> <N> <T> <CR> <LF>
```

Example 2:

```
<GrossWt> <SP> <k> <g> <SP> <G> <R> <CR> <LF>
<TareWt> <SP> <k> <g> <SP> <T> <A> <CR> <LF>
<NetWt> <SP> <k> <g> <SP> <N> <T> <CR> <LF>
```

Example 3:

```
<NetWt> <SP> <k> <g> <SP> <N> <T> <CR> <LF>
```

Example 4:

```
<NetWt> <SP> <o> <z> <SP> <N> <T> <CR> <LF>
```

2. Demand: Activated by the receipt of a <CR>.

The displayed weight only, Gross or Net will be transmitted. (This is the UPS Maxiship and or Worldship format with NET support as well, Version 7 or higher.)

Example 1: Weight Stable

```
<GrossWt> <SP> <l><b> <SP> <G> <R> <SP> <SP> <CR> <LF> <EOT>
```

Example 2: Weight in Motion

```
<GrossWt> <SP> <l><b> <SP> <g> <r> <SP> <SP> <CR> <LF> <EOT>
```

Example 3: Weight Stable

```
<NetWt> <SP> <l><b> <SP> <N> <T> <SP> <SP> <CR> <LF> <EOT>
```

Example 4: Weight in Motion

```
<NetWt> <SP> <l><b> <SP> <n> <t> <SP> <SP> <CR> <LF> <EOT>
```


3. Continuous: Outputs once every display update rate cycle.

Example 1: Weight Stable

<GrossWt> <SP> <SP> <SP> <SP> <G> <R> <SP> <SP> <CR> <LF> <EOT>

Example 2: Weight in Motion

<GrossWt> <SP> <SP> <SP> <SP> <g> <r> <SP> <SP> <CR> <LF> <EOT>

Example 3: Weight Stable

<NetWt> <SP> <SP> <SP> <SP> <N> <T> <SP> <SP> <CR> <LF> <EOT>

Example 4: Weight in Motion

<NetWt> <SP> <SP> <SP> <SP> <n> <t> <SP> <SP> <CR> <LF> <EOT>

Section 7: Operation

If the instrument is OFF, remove any objects from the platform, then press the ON/OFF key until the display starts its warm-up cycle. The instrument will automatically zero itself after 3-4 seconds and the display will show “0” with the center-of-zero legend (C) illuminated. The Zero function, Auto Tare function, and AZT require the displayed weight to be stable before these functions will operate. The weight reading is stable if the variation in weight is less than the programmed **bAL** motion range.

A. Instrument Weighing Functions

The industry uses three terms to describe the apportionment of an object’s weight. These terms are GROSS WEIGHT, TARE WEIGHT, and NET WEIGHT.

Example: A can of house paint is an object to be weighed.
The empty can is the 'TARE' weight,
The paint is the 'NET' weight, and
Together they equal the 'GROSS' weight.

GROSS = NET + TARE

GROSS – NET = TARE

GROSS – TARE = NET

B. Basic Weighing

Ensure platform is empty, turn the scale ON, press the GROSS/NET key, press the ZERO key and the scale is at “0” and ready to weigh.

1. Gross Weighing

- a. Press the GROSS/NET key, if required, to set the display to GR (gross).
- b. Use the ZERO key, if required, to set scale to “0”.
- c. Place container/object on scale platform.
- d. Read the GROSS weight on the display.

2. Net Weighing

- a. Press the GROSS/NET key, if required, to set display to GR (gross).
- b. Use the ZERO key, if required, to set scale to “0”.
- c. Place container/object on scale (Tare weight).
- d. Press the GROSS/NET key, then the AUTOTARE key.
- e. Place material in container or add objects (Net weight).
- f. Read the NET weight on the display.

3. Gross/Tare/Net Weighing

- a. Press the GROSS/NET key, if required, to set display to GR (gross).
- b. Use the ZERO key, if required, to set scale to "0".
- c. Place container/object on scale (Tare weight).
- d. Press the GROSS/NET key, then the AUTOTARE key.
- e. Place material in container or add objects (Net weight).
- f. Read the NET weight on the display.
- g. Press the GROSS/NET key to switch to Gross mode and view Gross weight.

C. Front Panel Programming

Front panel programming is accessed by pressing and holding the "B/G/NET" key for a few seconds until the first program step is displayed.

1. The display will show "Set-ti" (set time). Press the "ZERO." The display will show the current time setting with the "hours" value flashing. Press "ZERO" again to accept the displayed "HOURS" or press "UNITS" to change.

Press "ZERO" to move to the "minutes" selection. The display will show the current minutes value flashing. Press "ZERO" again to accept the displayed minutes, or "UNITS" to change the current setting. Press "ZERO" to accept any changes and advance to am/pm settings.

The "A" or "P" will now flash. Press "ZERO" to accept the displayed "A" or "P" or press "UNITS" to change. Press "ZERO" to accept any changes and advance to "Set-dA."

2. The display will show "Set-dA" (set date). The current Date will be displayed with the Month flashing. Press "ZERO" to accept the displayed Month, or press "UNITS" to change. Press "ZERO" to accept any changes and advance to the next step.

The current DAY will start flashing. Press "ZERO" to accept the displayed DAY, or "UNITS" to change. Press "ZERO" to accept any changes and advance to the next step.

The current YEAR will start glashing. Press "ZERO" to accept, or "UNITS" to change. Press "ZERO" to accept any changes and advance to the next step.

3. SLEEP will be briefly displayed followed by the current SLEEP setting. Press "UNITS" to scroll through available choices, or "ZERO" to accept current setting.
 - a. Off
 - b. 1 = 1 minute
 - c. 2 = 2 minutes
 - d. 5 = 5 minutes
 - e. 10 = 10 minutes
 - f. 10 = 20 minutes
 - g. 30 = 30 minutes.

Note: To "wake" the unit, press the "ON" key.

4. "batt" will be briefly displayed, followed by either
Ac Pr - the AC adapter is connected, or
PCr xx - showing the percentage of battery life remaining.

Note: When the percent (%) of battery life is displayed, you can view the actual battery voltage by pressing the "AUTOTARE" key. Return to the weigh mode by pressing the "ZERO" key.

D. Warning Messages

1. HiCAP During the process of weighing, if weight in excess of the "programmed" capacity is applied to the platform, the instrument will respond by displaying "HiCAP." All other scale operations will be inhibited while "HiCAP" is displayed. Faulty wiring or bad load cells will also produce this response.
2. LoCAP If a condition develops resulting in insufficient weight on the platform for the scale to operate properly, the indicator will display "LoCAP." All other scale operations will be inhibited while "LoCAP" is displayed. Check for objects under the platform, faulty wiring, or bad load cells.
3. ----- Numbers in excess of six digits. When weighing in certain units, it is possible to have a displayed weight in excess of six displayed digits and still be below the scale capacity. Change displayed units.
4. ----- If motion exists, display will still show dashes until motion stops.
5. ErrOr If error conditions exist for span or zero counts, the display will lock on "ErrOr" until ZERO or CAL switch is pressed.
6. LoBatt The indicator located above the battery symbol on the front cover will come on when the battery voltage drops to 5.9 VDC, indicating that the battery is in need of recharging.

E. Battery Life

	Battery Life (w/o backlight)	Battery Life Continuous (with backlight)	Recharge Time
1 - 350Ω Load Cell	20 - 24 hours	15 - 20 hours	14 - 16 hours
1 - 1000Ω Load Cell	36 - 40 hours	30 - 34 hours	14 - 16 hours
4 - 350Ω Load Cell	12 - 16 hours	8 - 12 hours	14 - 16 hours
4 - 1000Ω Load Cell	20 - 24 hours	15 - 20 hours	14 - 16 hours
8 - 350Ω Load Cell	8 - 12 hours	5 - 9 hours	14 - 16 hours
8 - 1000Ω Load Cell	12 - 16 hours	8 - 12 hours	14 - 16 hours
16 - 1000Ω Load Cell	8 - 12 hours	5 - 9 hours	14 - 16 hours

Notes: There are four basic tests for a battery using a digital volt meter and the front panel indications:

1. Any battery not connected to an instrument or charger, and having a reading less than 4.5 VDC should be disposed of properly and replaced.
2. A fully-charged battery not connected to an instrument or charger should have a reading of 6.4 VDC.
3. A fully-charged battery plugged in to and loaded by an instrument (AC adapter unplugged) should have a reading of 6.25 to 6.60 VDC as seen from the front panel.
4. A fully-charged battery plugged in to and loaded by an instrument (AC adapter plugged in) should have a reading of 9.60 VDC as seen from the front panel.

Section 8: Parts List

ABS Model: FB 2200-1

<u>Item</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>
1	24160	1	INDICATOR KIT ASSY

Item 1 Includes:

<u>Item</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>
4		1	FRONT HOUSING
5		1	BACK HOUSING
10		1	STEEL PLATE, ADHESIVE BACKED
11		1	POWER CABLE ASSY, INTERNAL - W/FERITE BEAD
12		1	OUTPUT CABLE ASSY, INTERNAL - 2/FERITE BEAD

<u>Item</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>
2	24152	1	OVERLAY
3	24617	1	PCB ASSY L.C. INDICATOR CONTROLLER
4	24925	1	FRONT HOUSING
5	24926	1	BACK HOUSING
6	13578	1	CONNECTOR, CUTOUT COVER
7	17543	1	CONNECTOR, LIQUID TIGHT .750 DIA
8	24327	1	NAMEPLATE
9	20190	4	FOOT
10	24150	1	STEEL PLATE, ADHESIVE BACKED
11	24154	1	POWER CABLE ASSY, INTERNAL – W/ FERITE BEAD
12	24153	1	OUTPUT CABLE ASSY, INTERNAL – W/ FERITE BEAD
13	24156	4	SCREWS SELF TAPPING (MOUNT PC TO CASE)
14	24155	2	SCREWS, M4 X 12, PAN HD (FOR CASE)
15	24157	1	AC/DC POWER ADAPTER 120VAC TO 9VDC – 500 mA (NOT SHOWN)

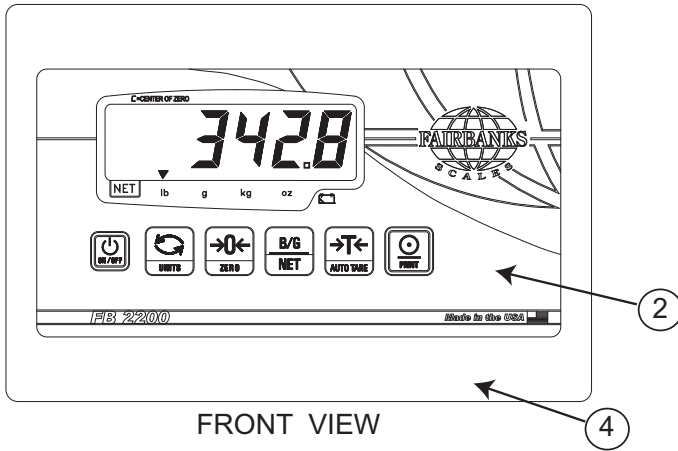
Accessories:

N/S	24920	1	WALL PLATE KIT
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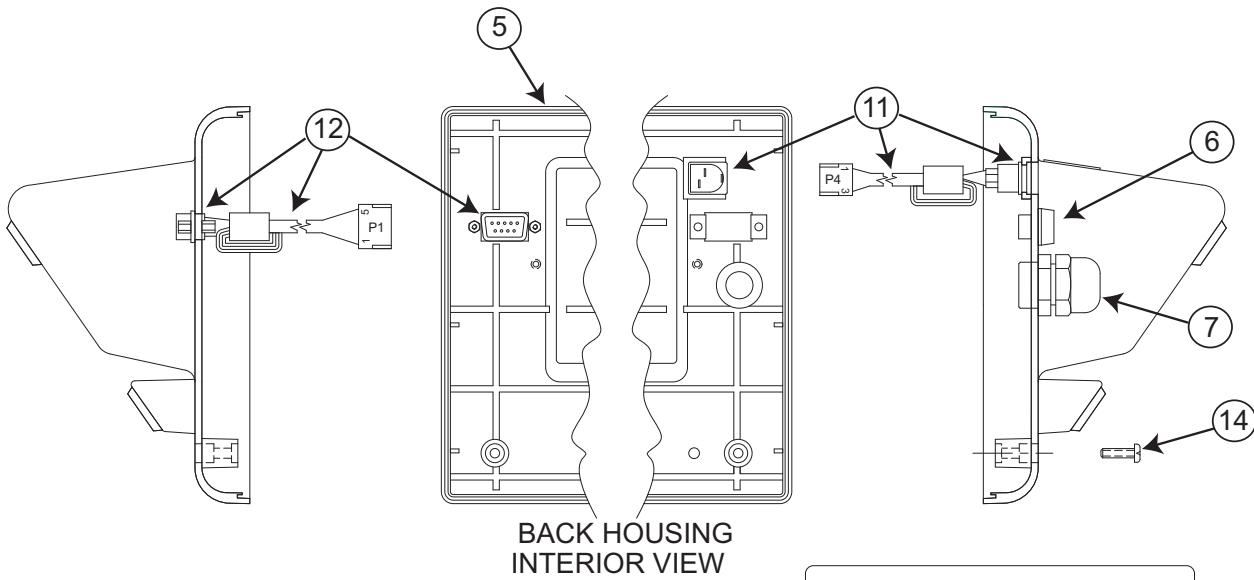
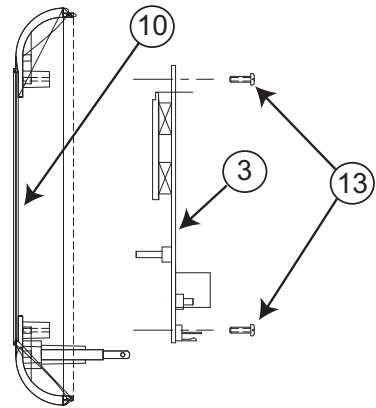
Kit includes:

	13177	2	SCREWS, PAN M4X5
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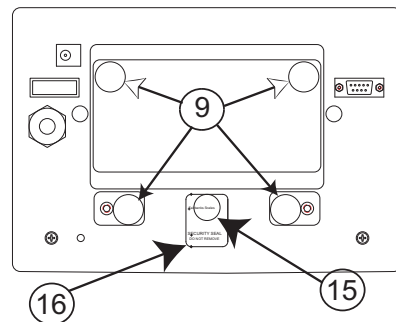
ABS Model, FB 2200-1



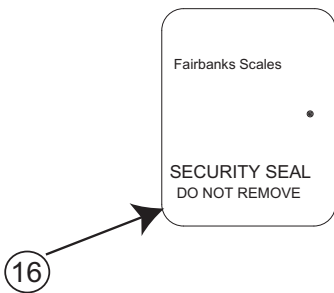
FRONT VIEW



BACK HOUSING
INTERIOR VIEW



BACK VIEW OF HOUSING
EXTERIOR VIEW

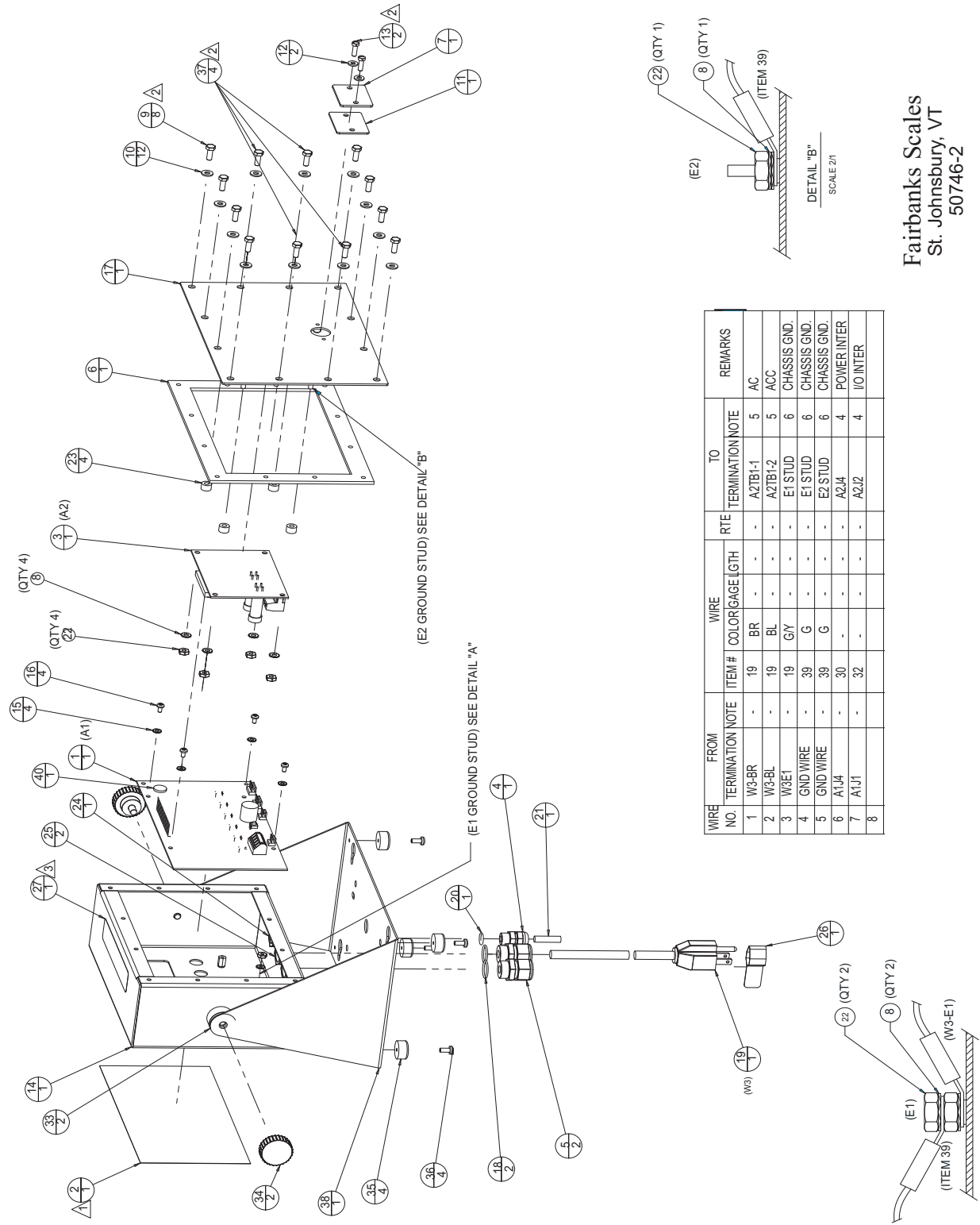


Fairbanks Scales
St. Johnsbury, VT
50746-1A

Stainless Steel Model: FB 2200-2

<u>Item*</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>	<i>* not shown</i>
1	24617	1	PCB ASSY, ANALOG WEIGHT CONTROLLER	
2	24152	1	OVERLAY	
3	25046	1	PCB ASSY POWER SUPPLY	
4	17545	1	CONNECTOR, LIQUID TIGHT	
5	17534	2	CONNECTOR, LIQUID TIGHT	
6	14954	1	GASKET	
7	16006	1	PLATE	
8	11188	4	WASHER-LOCK-EXT TOOTH NO. 8 SS	
9	11075	8	SCREW-MACH-HEX HD 10-32 X .50, SS	
10	11495	12	WASHER-PLAIN NO. 10, NYLON	
11	16007	1	GASKET	
12	11339	2	WASHER-PLAIN NO. 8, NYLON	
13	13468	2	SCREW-SEALING	
14	25079	1	ENCLOSURE ASSY	
15	11191	5	WASHER-LOCK-EXT TOOTH NO. 6, SS	
16	11153	4	SCREW-MACH-PH-PHIL 6-32 X .25, SS	
17	25084	1	COVER ASSY, ENCLOSURE	
18	12342	2	O-RING	
19	25104	1	POWER CORD ASSY	
20	15651	1	O-RING	
21	12609	1	ROD, NYLON	
22	11104	4	NUT, HEX 8-32, SS	
23	11271	4	SPACER, ROUND	
24		1	INCLUDED WITH ITEM 4	
25		2	INCLUDED WITH ITEM 5	
30 *	25085	1	CABLE ASSY, POWER INTERFACE	
32 *	25086	1	CABLE ASSY, I/O INTERFACE	
33	12621	2	WASHER-RETAINER	
34	15745	2	KNOB	
35	12103	4	FOOT	
36	11138	4	SCREW-MACH-PH-PHIL 8-32 X .38, SS	
37	14083	4	SCREW-MACH-HEX HD 10-32 X .50, SS	
38	15823	1	BRACKET, INDICATOR	
39	23277	1	CABLE ASSEMBLY, GROUND	
40	15820	1	BATTERY, LITHIUM	
41 *	11176	1	BUSHING, AMPHENOL RUBBER	

Stainless Steel Model, FB 2200-2



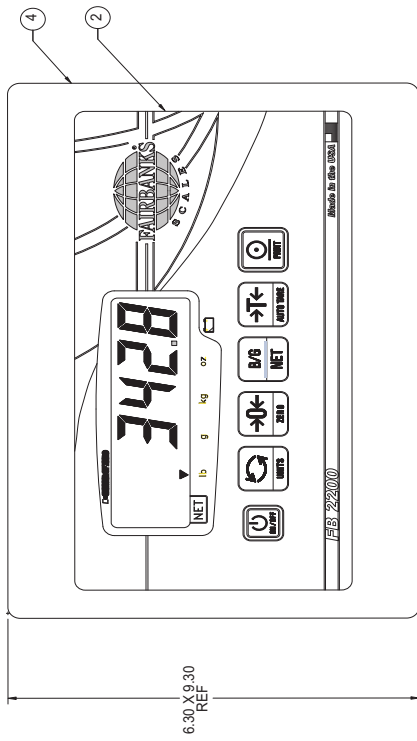
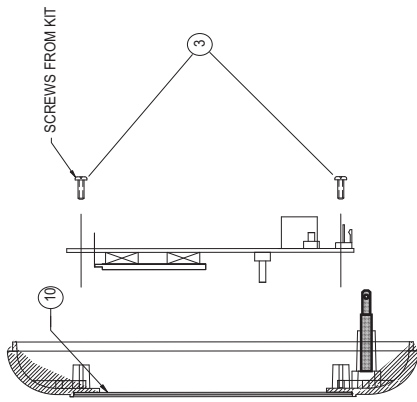
WIRE NO.	FROM TERMINATION NOTE	WIRE COLOR/GAUGE LGTH	RTE		TO		REMARKS
			ITEM #	TERMINATION NOTE	ITEM #	TERMINATION NOTE	
1	W3-BR	BR -	19	A2TB1-1	5	A2TB1-1	AC
2	W3-BL	BL -	19	A2TB1-2	5	A2TB1-2	ACC
3	W3-E1	GY -	19	E1 STUD	6	E1 STUD	CHASSIS GND.
4	GND WIRE	G -	39	E1 STUD	6	E1 STUD	CHASSIS GND.
5	GND WIRE	G -	39	E2 STUD	6	E2 STUD	CHASSIS GND.
6	A1J4	-	30	A2J4	4	A2J4	POWER INTER.
7	A1J1	-	32	A2J2	4	A2J2	I/O INTER.
8							

Fairbanks Scales
 St. Johnsbury, VT
 50746-2

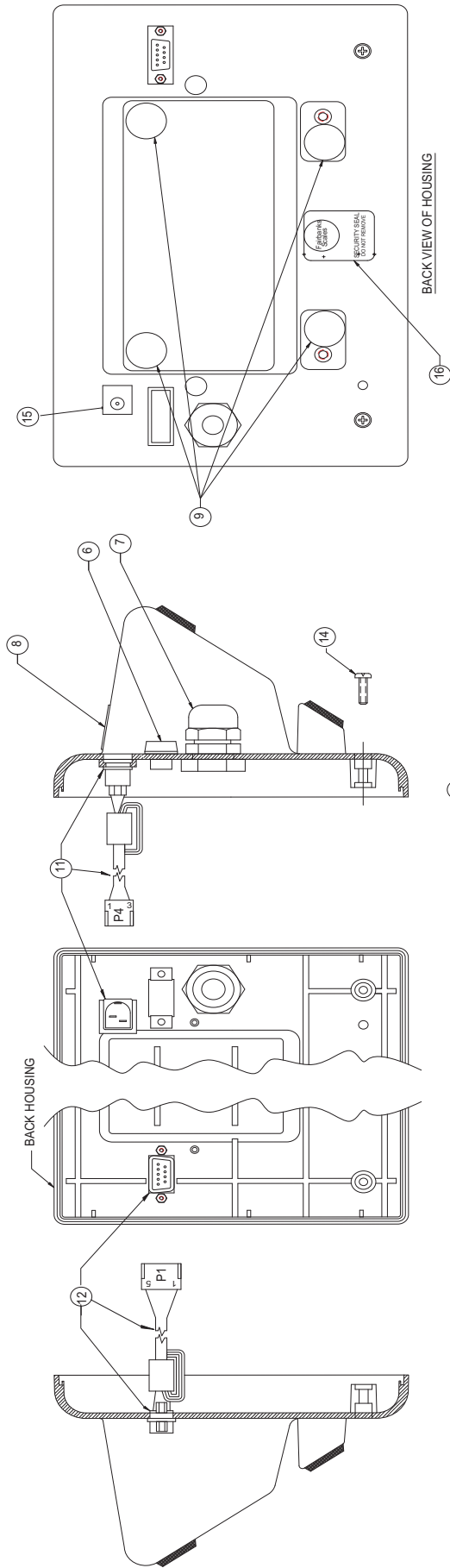
ABS Model: FB 2200-3

<u>Item*</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>	<i>* N/S = not shown</i>
1	24160	1	INDICATOR KIT ASSY	
Item 1 Includes:				
4		1	<i>FRONT HOUSING</i>	
5			<i>BACK HOUSING</i>	
10			<i>STEEL PLATE, ADHESIVE BACKED</i>	
11			<i>POWER CABLE ASSY, INTERNAL-W/FERITE BEAD</i>	
12			<i>OUTPUT CABLE ASSY, INTERNAL-W/FERITE BEAD</i>	
2	24152	1	OVERLAY	
3	25192	1	PCB ASSY ANALOG WEIGHT CONTROLLER	
6	13578	1	CONNECTOR, CUTOUT COVER	
7	17543	1	CONNECTOR, LIQUID TIGHT .750 DIA	
8	25324	1	NAMEPLATE	
9	20190	4	FOOT	
13	24156	4	SCREWS, SELF-TAPPING (MOUNT PC TO CASE)	
14	24155	2	SCREWS, M4 X 12, PAN HD (FOR CASE)	
15	19454	1	DOUBLE D PLUG	
16	14339	1	SECURITY SEAL (PAPER)	
17	24924	1	BATTERY KIT	
Item 17 includes:				
18		1	BATTERY	
N/S		1	CONNECTOR ASSY	
N/S		1	MOUNTING BRACKET	
N/S		2	SCREWS, SELF-TAPPING (MOUNT BRACKET TO CASE)	
N/S	24157	1	AC/DC POWER ADAPTER (120VAC TO 9VDC - 500mA)	
Accessories:				
N/S	24920	1	WALL PLATE KIT	
Kit includes:				
	13177	2	SCREWS, PAN M4X5	

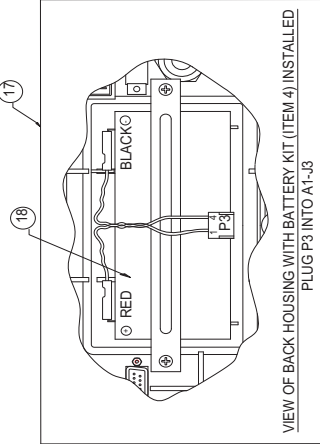
ABS Model, FB 2200-3



FRONT VIEW



BACK VIEW OF HOUSING

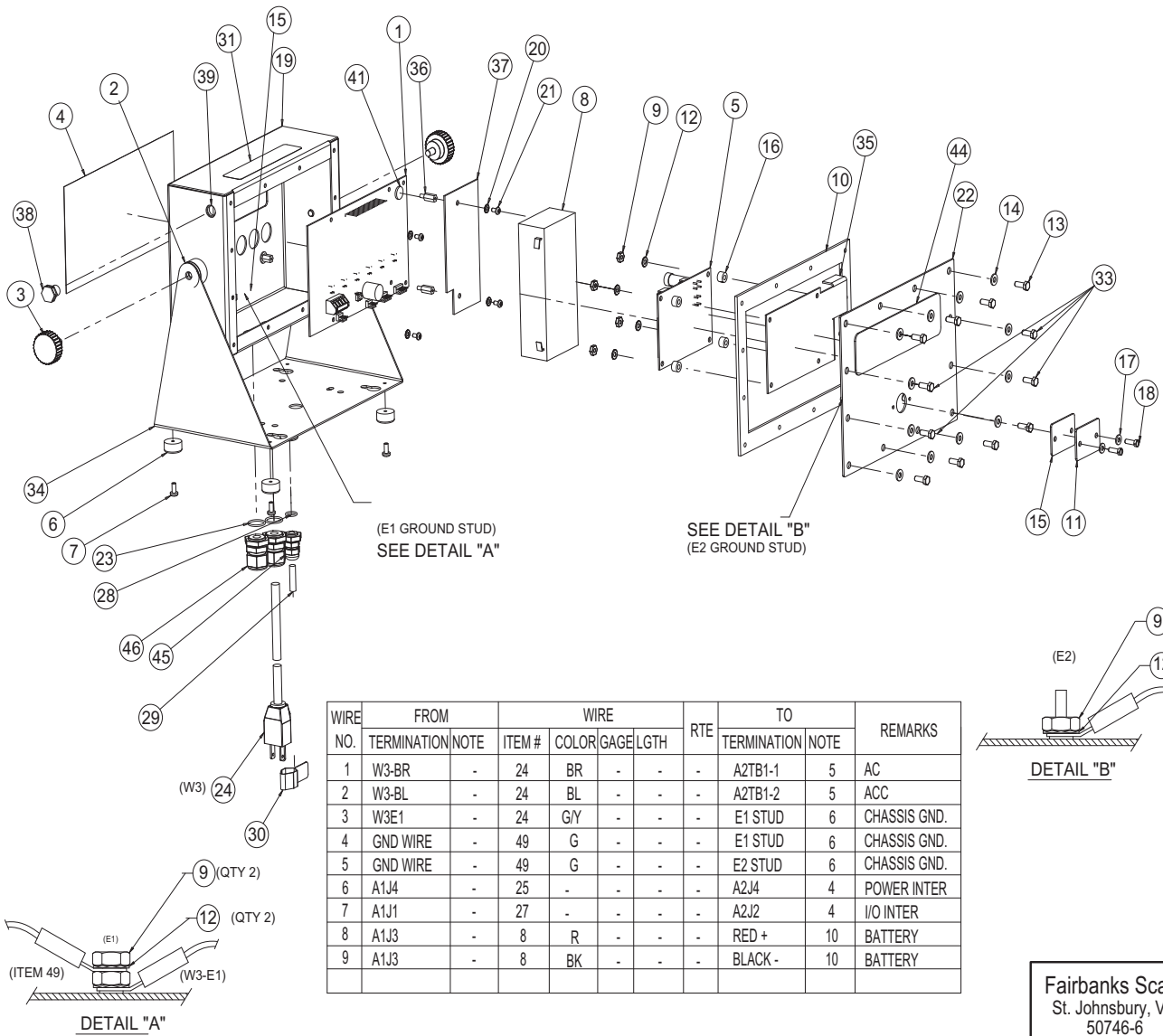


Fairbanks Scales
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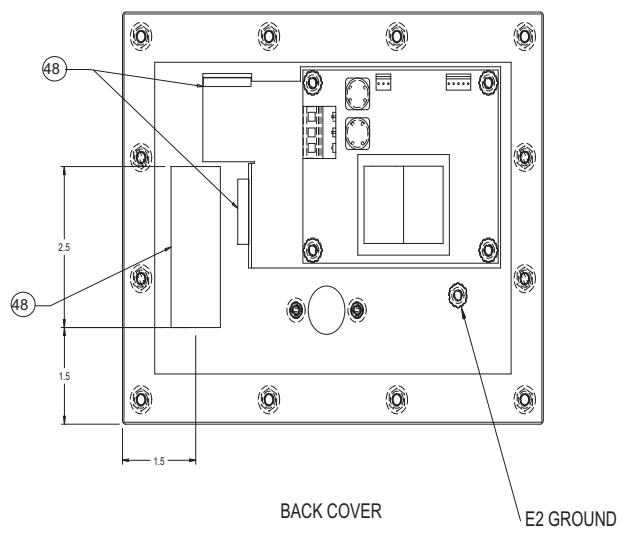
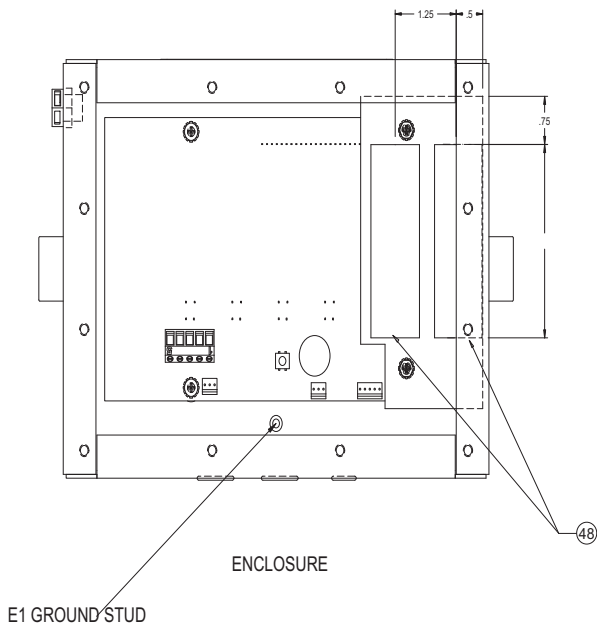
Stainless Steel Model: FB 2200-4

<u>Item*</u>	<u>Part#</u>	<u>QTY</u>	<u>Description</u>	<i>* N/S = not shown</i>
1	25192	1	PCB ASSY, WEIGHT CONTROLLER BATT (A1)	
2	12621	2	WASHER - RETAINER, NEOPRENE	
3	15745	2	KNOB	
4	24152	1	OVERLAY, FB 2200	
5	25046	1	PCB ASSY, POWER SUPPLY	
6	12103	4	FOOT	
7	11138	4	SCREW-MACH-PH-PHIL 8-32 X .38, SS	
8	24924	1	BATTERY KIT	
9	11104	7	NUT, HEX 8-32, SS	
10	14954	1	GASKET	
11	16006	1	PLATE	
12	11188	7	WASHER-LOCK-EXT TOOTH, NO. 8, SS	
13	11075	8	SCREW-MACH-HEX HD 10-32 X .50, SS	
14	11495	12	WASHER-PLAIN, NO. 10, NYLON	
15	16007	1	GASKET	
16	11271	4	SPACER, ROUND, .18 DIA X .25 LONG	
17	11339	2	WASHER-PLAIN, NO. 8, NYLON	
18	13468	2	SCREW-SEALING, PHIL, 8-32 X .50	
19	25079	1	ENCLOSURE ASSEMBLY	
20	11191	4	WASHER-LOCK-EXT TOOTH, NO. 6, SS	
21	11153	4	SCREW-MACH-PH-PHIL, 6-32 X .25, SS	
22	25084	1	COVER ASSY, ENCLOSURE	
23	12342	2	O-RING, .625 ID	
24	12504	1	POWER CORD ASSY	
N/S	25085	1	CABLE ASSY, POWER INTERFACE	
N/S	12189	3	SEAL, HEAVY METER	
N/S	25086	1	CABLE ASSY, I/O INTERFACE	
28	15651	1	O-RING, .375 ID	
29	12609	1	ROD, NYLON	
30	22003	1	LABEL	
31	25088	1	NAMEPLATE	
33	14083	4	SCREW-MACH-HEX HD, 10-32 X .50, SS	
34	15823	1	BRACKET, INDICATOR	
35	15361	1	BRACKET, BATTERY TOP	
36	17612	2	SPACER, HEX, M/F 6-32 X .50	
37	35360	1	BRACKET, BATTERY BOTTOM	
38	25355	1	VENT, MEMBRANE	
39	25356	1	NUT, VENT	
N/S	11176	1	BUSHING, AMPHENOL RUBBER	
41	15820	1	BATTERY LITHIUM	
N/S	12083	1	LABEL, NOMINAL CAPACITY	
N/S	12356	1	LABEL, NOMINAL CAPACITY	
44	24961	1	LABEL, FAIRBANKS	
45	17545	1	CONNECTOR, LIQUID TIGHT .50	
46	17534	1	CONNECTOR, LIQUID TIGHT .75	
N/S	25358	1	CARD, BATTERY CHARGE	
N/S	15718	11	GASKET, ADHESIVE BACKED (CUT TO LENGTH)	
N/S	23277	1	CABLE ASSY, GROUND	
N/S	24694	2	FUSE	

Stainless Steel Model, FB 2200-4



Fairbanks Scales
St. Johnsbury, VT
50746-6



Appendix I: Primary Unit and Grad Sizes

The following is a listing of Primary Units selections and their associated available grad sizes.

<u>lbs</u>	<u>g</u>	<u>kg</u>	<u>oz or lb_oz</u>
.0001	.05	.00005	.002
.0002	0.1	.0001	.005
.0005	0.2	.0002	.01
.001	0.5	.0005	.02
.002	1.0	.001	.05
.005	2.0	.002	0.1
.01	5.0	.005	0.2
.02	10	.01	0.5
.05	20	.02	1.0
.1	50	.05	2.0
.2	100	.1	5.0
.5	200	.2	10
1.0	500	.5	20
2.0	1000	1.0	50
5.0	2000	2.0	100
10	5000	5.0	200
20	10000	10	500
50	20000	20	1000

Note: When selecting the grad size, only grad sizes for the primary unit will be available.

Appendix II: Factory Defaults

Factory default settings:

diSP – 0.2

UnitS – Lb, g, kg, oz

Print – button

bAUd – 9600

d-bitS – 8 bit

PAritY – none

StoP – 1

nEtPnt – Gr.tA.nt

Pnt-ti – OFF

Pnt-dA – OFF

bL Set – bL POS

tr Set – 15

CAP – 005000

P-Unit – lb.

AZt – 1

bAL – 1

O.rAnGE – USA -- 100%

d – 1

FiLtEr – Std

A-tArE – ON

Appendix III: Printers

The following printers are recommended by Fairbanks for use with the FB 2200 instrument.

A. Interface procedures for the **Citizens Printer Model iDP3550 Tape Printer.**

- Fairbanks Product 20481 -- Model 3550 Series Tape Printer.
- Use cable Acc 336, Fairbanks Product 14807, for FB 2200-1&3 ABS.
- Use cable Acc 1297, Fairbanks Product 15599, for FB 2200-2&4 SS.

Switch settings are provided to aid in setting up this printer. Please use the suggested switch settings in **bold print**, but note that other configurations may be possible.

Instrument Protocol:

9600 8 None

Cable configuration:

<u>FB 2200-1 & 3 ABS</u>	<u>Printer</u>	<u>FB 2200-2 & 4 SS</u>	<u>Printer</u>
DB 9	DB 25	TB 2	DB 25
2 RX -----	2 TX	2 RX -----	2 TX
3 TX -----	3 RD	3 TX -----	3 RD
5 GND -----	7 SG	5 SG -----	7 SG

Switch Bank 1

<u>Function</u>	<u>Switch</u>	<u>Function</u>	<u>Switch</u>
Auto Cutter	Switch 1	CR Mode	Switch 6
Enabled	ON	CR + LF	OFF
Disabled	OFF	CR	ON
International Characters	Switches 2, 3, 4	Mechanism type	Switch 7
USA	ON, ON, ON	Graphic	ON
France	OFF, ON, ON	Character	OFF
Germany	ON, OFF, ON	Buffer Size	Switch 8
UK	OFF, OFF, ON	6K bytes	ON
Denmark	ON, ON, OFF	256K bytes	OFF
Sweden	OFF, ON, OFF	Operation mode	Switches 9, 10
Italy	ON, OFF, OFF	CBM	OFF, OFF
Japan	OFF, OFF, OFF		ESC/POS
CBM Command	Switch 5	STAR auto cut	ON, ON
ON, OFF			
CBM1 Mode iDP 3530	ON		
ON			
CBM1 Mode iDP 3540	OFF		

Switch Bank 2

<u>Function</u>	<u>Switch</u>
Bit Length	Switch 1
8 bits	ON
7 bits	OFF
Parity Enabled	Switch 2
No	ON
Yes	OFF
Parity	Switch 3
Odd	ON
Even	OFF
Comm Mode	Switch 4
DTR/DSR	ON
X-ON X-OFF	OFF
Baud rate	Switches 5, 6, 7
150	OFF, OFF, OFF
300	OFF, OFF, ON
600	OFF, OFF, ON
1200	OFF, ON, ON
2400	ON, OFF, OFF
4800	ON, OFF, ON
9600	ON, ON, OFF
19200	ON, ON, ON
Unused	Switch 8
Always	OFF

B. Interface procedures for the Okidata Model 184 Turbo Serial Printer.

- Fairbanks Product 14322, Model 3921 Series Form Printer.
- Use cable Acc 336 (14807) for FB 2200-1&3 ABS.
- Use cable Acc 1297 (15599) for FB 2200-2&4 SS.

Switch settings are provided to aid in setting up this printer. Please use the suggested switch settings in **bold print**, but note that other configurations may be possible.

Instrument Protocol:

9600 8 None

Cable configuration:

<u>FB 2200-1 & 3 ABS</u>	<u>Printer</u>	<u>FB 2200-2 & 4 SS</u>	<u>Printer</u>
DB 9	DB 25	TB 2	DB 25
2 RX -----	2 TX	2 RX -----	2 TX
3 TX -----	3 RD	3 TX -----	3 RD
5 GND -----	7 SG	5 SG -----	7 SG

Main Circuit Board Switches

Microline

Language

Unslashed 0

Slashed 0

British

German

French

French Canadian

Spanish

Switches 1, 2, 3

ON, OFF, OFF

OFF, OFF, OFF

OFF, ON, OFF

ON, ON, OFF

OFF, OFF, ON

OFF, ON, ON

ON, ON, ON

Front Panel

Enable

Disable

Switch 8

OFF

ON

Form Length

11"

5-1/2"

8-1/2"

Switches 4, 5

OFF, ON

OFF, OFF

ON, OFF

Auto Line Feed

Auto LF OFF

Auto LF ON

Switch 6

OFF

ON

Data Bits

8 Bits

7 Bits

Switch 7

ON

OFF

Serial Board Switch Settings

Switch Bank 1

Parity Type	Switch 1
Odd Parity	ON
Even Parity	Off
Parity	Switch 2
No parity	ON
With parity	OFF
Data Bits	Switch 3
8 bits	ON
7 bits	OFF
Protocol	Switch 4
Ready Busy	ON
X-ON X-OFF	OFF
Test Select	Switch 5
Circuit	ON
Monitor	OFF
Mode Select	Switch 6
Print mode	ON
Test mode	OFF
Busy Line Selection	Switches 7, 8
SSD- Pin 11	OFF, ON
SSD+ Pin 11	OFF, OFF
DTR- Pin 20	ON, ON
RTS- Pin 4	ON, OFF

Switch Bank 2

Baud rate	Switches 1, 2, 3
19200	ON, ON, ON
9600	OFF, ON, ON
4800	ON, OFF, ON
2400	OFF, OFF, ON
1200	ON, ON, OFF
600	OFF, ON, OFF
300	ON, OFF, OFF
110	OFF, OFF, OFF
DSR Input Signal	Switch 4
Active	ON
Inactive	OFF
Buffer Threshold	Switch 5
32 bytes	ON
256 bytes	OFF
Busy Signal Timing	Switch 6
200 ms minimum	ON
1 second minimum	OFF
Space after power on ON	
Space when printer selected	OFF
Not used	Switch 8

C. Interface procedures for the Epson Model TM-U295 Ticket Printer.

- Fairbanks Product 24741 Ticket Printer.
- Use cable Acc 336 (product 14807) for FB 2200-1&3 ABS.
- Use cable Acc 1297 (product 15599) for FB 2200-2&4 SS.

Switch settings are provided to aid in setting up this printer. Please use the suggested switch settings in **bold print**, but note that other configurations may be possible.

Instrument Protocol:

9600 8 None

Cable configuration:

<u>FB 2200-1 & 3 ABS</u>	<u>Printer</u>	<u>FB 2200-2 & 4 SS</u>	<u>Printer</u>
DB 9	DB 25	TB 2	DB 25
2 RX -----	2 TX	2 RX -----	2 TX
3 TX -----	3 RD	3 TX -----	3 RD
5 GND -----	7 SG	5 SG -----	7 SG

Switch Bank 1

Data reception error Ignored Prints “?”	Switch 1 ON OFF	Baud rate 1200 2400 4800 9600	Switches 7, 8 ON, ON OFF, ON ON, OFF OFF, OFF
Receive buffer capacity 35 bytes 512 bytes	Switch 2 ON OFF	Pin 6 reset sig. Used Not used	Switch 9 ON OFF
Handshaking XON / XOFF DTR / DSR	Switch 3 ON OFF	Pin 25 reset sig. Used Not used	Switch 10 ON OFF
Word length 7 bits 8 bits	Switch 4 ON OFF		
Parity check Yes No	Switch 5 ON OFF		
Parity selection Even Odd	Switch 6 ON OFF		

D. Interface procedures for the Epson Model TM-U590 Ticket Printer.

- Fairbanks Product 24740 Ticket Printer.
- Use cable Acc 336 (product 14807) for FB 2200-1&3 ABS.
- Use cable Acc 1297 (product 15599) for FB 2200-2&4 SS.

Switch settings are provided to aid in setting up this printer. Please use the suggested switch settings in **bold print**, but note that other configurations may be possible.

Instrument Protocol:

9600 8 None

Cable configuration:

<u>FB 2200-1 & 3 ABS</u>	<u>Printer</u>	<u>FB 2200-2 & 4 SS</u>	<u>Printer</u>
DB 9	DB 25	TB 2	DB 25
2 RX -----	2 TX	2 RX -----	2 TX
3 TX -----	3 RD	3 TX -----	3 RD
5 GND -----	7 SG	5 SG -----	7 SG

Switch Bank 1

Data reception error Ignored Prints “?”	Switch 1 ON OFF	Parity check YES NO	Switch 5 ON OFF
Receive buffer capacity 35 bytes 512 bytes	Switch 2 ON OFF	Parity selection Even Odd	Switch 6 ON OFF
Handshaking XON / XOFF DTR / DSR	Switch 3 ON OFF	Baud rate 2400 4800 9600 19200	Switches 7, 8 ON, ON OFF, ON ON, OFF OFF, OFF
Word length 7 bits 8 bits	Switch 4 ON OFF		

Switch Bank 1

Handshaking (Busy condition)	Switch 1 ON = Buffer Full; OFF = Offline
Customer Display	Switch 2 ON = Connected; OFF = Not connected
Internal use only	Switches 3 through 8 always OFF

E. Interface procedures for the Fairbanks Model PTR-3950 High-Speed Ticket Printer.

- Fairbanks Product 15733 High-Speed Ticket Printer.
- Use cable Acc 336 (product 14807) for FB 2200-1&3 ABS.
- Use cable Acc 1297 (product 15599) for FB 2200-2&4 SS.

Switch settings are provided to aid in setting up this printer. Please use the suggested switch settings in **bold print**, but note that other configurations may be possible.

Instrument Protocol:

9600 8 None

Cable configuration:

<u>FB 2200-1 & 3 ABS</u>	<u>Printer</u>	<u>FB 2200-2 & 4 SS</u>	
Printer			
DB 9	DB 25	TB 2	DB 25
2 RX -----	2 TX	2 RX -----	2 TX
3 TX -----	3 RD	3 TX -----	3 RD
5 GND -----	7 SG	5 SG -----	7 SG
 Switch Bank 1		 Switch Bank 2	
Baud rate	Switch 1, 2, 3	Top of form busy	Switch 1
1200	ON, OFF, OFF	Not busy without Ticket	OFF
2400	OFF, ON, ON	Busy without Ticket	ON
4800	OFF, ON, OFF		
9600	OFF, OFF, OFF	Not used	Switch 2
			LEAVE OFF
Not used	Switches 4 & 5	Top or Bottom Seek	Switch 3
	LEAVE OFF	Disabled, Normal Print	OFF
Auto Line Feed	Switch 6	Enabled, Inverted Print	ON
CR	ON		
CR/LF	OFF	Auto advance	Switch 4
		Disabled	OFF
Busy Signal Polarity	Switch 8	Enabled	ON
High True	ON		
Low True	OFF	Auto release	Switch 5
		Disabled	OFF
		Enabled	ON
		Enhanced Print	Switch 6
		40 char. per line	OFF
		20 char. per line	ON
		Auto-sheet	Switch 7
		Disabled	OFF
		Enabled	ON
		Self-test	Switch 8
		Disabled	OFF
		Enabled	ON

Appendix V: Remote Display

To set-up the FB 2200 for the PLC interface feature, enter the SET_UP mode and select PRINT (Page 15, step 6). Note the new program selection for PLC. This option allows for the interface to an HMS Communicator 27572Q.

Note: HMS Communication Devices are offered through our Solutions Group and all inquiries for these devices must go through this group.

Instrument Setup Protocol: 19,200 Baud, 8 Character bits, 1 Stop bit, and no parity. This is a continuous output that transmits data on every other A/D update (approximately 32 transmissions per second).

The output string is 12 characters, seen as "**wwwwwwuumm<eot>**" where,

<wwwwww> = Weight including decimal point and negative sign.

Negative sign precedes most significant digit and may be preceded by space characters.

<uu> = units "lb", "kg", "oz", or "g ". "oz" may indicate ounces, or lb/ounces.

<mm> = mode "GR" or "NT" for stable weight, or "gr" or "nt" for motion.

<eot> = end of text.

Example 1: Gross - lbs - Weight Stable

<WWWWWWW> <l> <G> <R> <EOT>

Example 2: Gross - lbs - Weight in Motion

<WWWWWWW> <l> <g> <r><EOT>

Example 3: Net - kgs - Weight Stable

<WWWWWWW> <k> <g> <N> <T> <EOT>

Example 4: Net - kgs - Weight in Motion

<WWWWWWW> <k> <g> <n> <t> <EOT>

Note: Once PLC option is selected and protocol has been programmed, the installing technician's setup is complete. Confirmation of output can be performed by monitoring the COM port with a terminal program such as Windows Hyper Terminal.

Note: Interface of the HMS Communications device, power supply to same device, and programming of PLC is strictly the responsibility of the customer.

Programming Information for DeviceNet Communication Device:

These characters may be placed in location 0 of the input area.

U = 55hex = 0101 0101 change units

Z = 5Ahex = 0101 1010 Zero

G = 47hex = 0100 0111 change mode Gross/Net

A = 41hex = 0100 0001 Auto Tare

A config file must be loaded into the HMS Communicator using the ABC Config Tool software supplied with the communicator; this is typically done at the factory. This config file will be on the manual CD that ships with all FB2200s, as well as the 27573Q kit.

Loading the .cfg file:

Load the ABC config tool software onto your PC. If you do not have this on CD, you can get it from www.anybus.com. **Run this software.** It will prompt you on start-up to select a Wizard or "blank" configuration. Select *cancel*, as you will load the .cfg file supplied with the manual CD that ships with all FB2200s, as well as the 27573Q kit. Select *File*, Open and the .cfg file that is supplied. At this point you are not connected to the communicator, so select this icon from the toolbar by moving your cursor over the icons until it indicates "Connect" and click the primary mouse button. If you do not connect to the communicator, you may need to change the port under Tools, but this software should find the communicator for you.

Once connected, select the [+] next to Sub-Network to expand this view and show New Node. You can also select the [+] next to New Node to show 1 Consume and 1 Produce objects. The *Consume* object places the serial output string from the FB2200 into the *In* area of the dual port RAM. The first *Produce* object allows a device on the DeviceNet network to place a character in location 0x0200 that will be passed to the serial port to the FB2200. Viable characters are U, Z, G and A.

You may view the data from the FB2200 by right clicking the *New Node* object and selecting *Node Monitor*. The data is in the grey shaded area of the *In* area and is in hex, so a space is 20, numbers are 0 = 30 to 9 = 39, 2E is the decimal point, l is 6C, b is 62, G is 47, g is 67, R is 52, r is 72, N is 4E, n is 6E, T is 54, t is 74 and <EOT> is 4.

The grey part of the *OUT* area is where a DeviceNet device would place a character to be transmitted to the FB2200.

Appendix IV: Remote Display

To set-up the FB 2200 as a remote display, enter the SET_UP mode and select PRINT (Page 15, step 6). Several new selections have been added, such as rd2200, rd2300, rd2500, rd2800, and rd5200. The “rd” indicates remote display, and the four digits are the model number of the instrument the FB 2200 expects to be connected to.

Instrument Setup Protocols: **9600** Baud, **8** Character bits, **1** Stop bit, and **no** parity.

<u>Inst.</u>	<u>EPROM</u>	<u>Setup</u>
2200	25023 rev 03	Print = Polled, exception of not with LB_OZ as a unit.
2300	21579 rev 5	Port 2 = PC Cr Interface = RS232 Port 1 not for use with remote display interface.
2500	24707 rev 10	LB, KG only. Com 2 or 3 = PC, Continuous Condec, floating decimal.
2800	21305 rev 6	LB, KG, OZ, G only. Port B = Poll
5200A	18396 rev 2	CPTR P, no tdi, net, Cr, St Et0

Function Keys available on remote and data string transmitted on key press.

<u>Inst.</u>	<u>Units</u>	<u>Zero</u>	<u>B/G</u>	<u>Auto Tare</u>	<u>Print</u>	<u>Poll Char</u>
2200	U	Z	G	A	*	<Cr>
2300	*	*	*	*	*	<Cr>
2500	*	*	*	*	*	<Cr>
2800	*	*	*	*	*	W<Cr>
5200A	*	*	*	*	*	NONE (Continuous output; NO setpoints)
5200A	EUL or EUK if LB mode	Z or N if Gross mode	G	A	P	None (Continuous output; NO setpoints)

* = Instrument does not accept this command through its RS232 port.

* = Remote Display will be “-----” with all annunciators shown for three seconds if this key is pressed.

Note: When used as a remote display, the back light feature must be set to “ON” or “OFF” only.

Under/Over load Conditions

Instrument

- 2200 In overload, display will be “-----” with all annunciators shown.
In LB_Oz, Oz is transmitted, so caution should be used when selecting this unit.
- 2300 In overload, display will be “Hi-Load” with no annunciators shown.
When in programming mode or during ID entry, display will be blank.
- 2500 Caution - a weight value will be transmitted in overload.
- 2800 Will display “__ul__” for underload with current units shown.
Will display “__ol__” for overload with current units shown.
Will display “Gt6CHR” if greater than 6 characters with current units shown.

Cables

Remote Display Type

<u>Instrument</u>	<u>FB 2200 (ABS) DB9</u>		<u>FB 2200 (SS) TB Inside</u>	
FB 2200 (ABS) DB9	10ft=26039	50ft=19635	10ft=26041	50ft=26042
FB 2200 (SS) TB inside	10ft=26041	50ft=26042	10ft=*	50ft=*
HR2300 (ABS) TB inside	10ft=26041	50ft=26042	10ft=*	50ft=*
HR2300 (SS) TB inside	10ft=26041	50ft=26042	10ft=*	50ft=*
R2500 DB9	10ft=26039	50ft=19635	10ft=26041	50ft=26042
HR2500 AMP 9 pin	10ft=26040	50ft=23980	10ft=26043	50ft=26044
2800 TB inside 2860	10ft=26041	50ft=26042	10ft=*	50ft=*
5200A AMP 9 pin	10ft=26040	50ft=23980	10ft=26043	50ft=26044

* = Use appropriate length of cable, not to exceed 50 feet.

Cable Configurations

Cable 26040 -- 10ft		23980 -- 50ft
2200 ABS (DB9)	to	5200 and HR2500 (9pin AMP)
Pin 2 RX	to	Pin 4 TX
Pin 3 TX	to	Pin 5 RX*
Pin 5 GRD	to	Pin 8 GRD

Cable 26039 -- 10ft		19635 -- 50ft
2200 ABS (DB9)	to	2200 ABS (DB9) and 2500 (DB9)
Pin 2 RX	to	Pin 3 TX
Pin 3 TX	to	Pin 2 RX
Pin 5 GRD	to	Pin 5 GRD

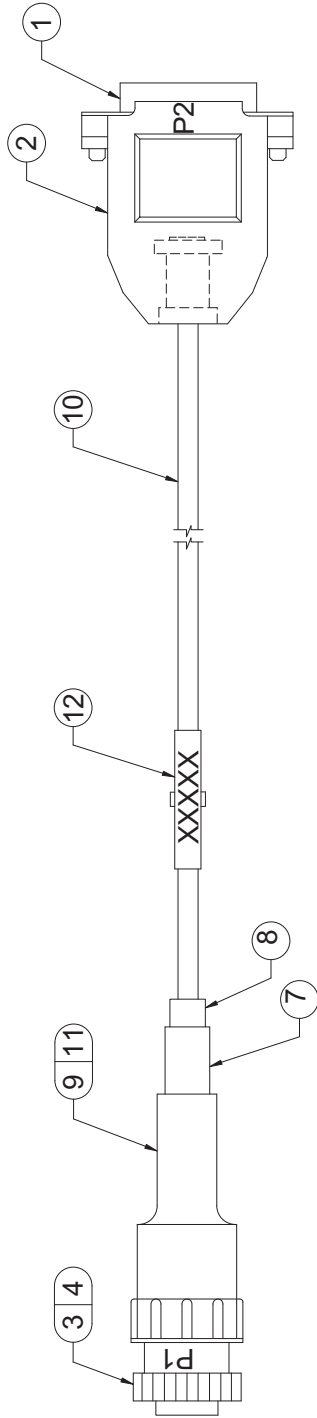
Cable 26041 -- 10ft		26042 -- 50ft
2200 ABS (DB9)	to	2200 SS (TB2) or 2300 (TB2) or 2800 -- Acc 2860 (TB2)
Pin 2 RX	to	Pin 2 TX or Pin 2 TX or TB2 Pin -- 2 TX
Pin 3 TX	to	Pin 3 RX or Pin 1 RX or TB2 Pin -- 1 RX
Pin 5 GRD	to	Pin 5 GRD or Pin 4 GRD or TB2 Pin -- 4 GRD

Cable 26041 -- 10 ft		26042 -- 50 ft
2200 SS (TB2)	to	2500 (DB9)
Pin 2 RX	to	Pin 3 TX
Pin 3 TX	to	Pin 2 RX
Pin 5 GRD	to	Pin 5 GRD

Cable 26043 -- 10ft		26044 -- 50ft
2200 SS (TB2)		5200 and HR2500 (9Pin AMP)
Pin 2 RX	to	Pin 4 TX
Pin 3 TX	to	Pin 5 RX*
Pin 5 GRD	to	Pin 8 GRD

*** = DO NOT connect this line when using 5200A with setpoints. Doing so may result in unexpected relay chatter if the Operator presses a function key on the FB 2200.**

WIRE NO.	FROM		WIRE			RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE		LGTH	TERMINATION	
1	P1-4	1	10	W	-	-	P2-2	2	TX
2	P1-5	1	10	R	-	-	P2-3	2	RX
3	P1-8	1	10	G	-	-	P2-5	2	GND
4									
5									

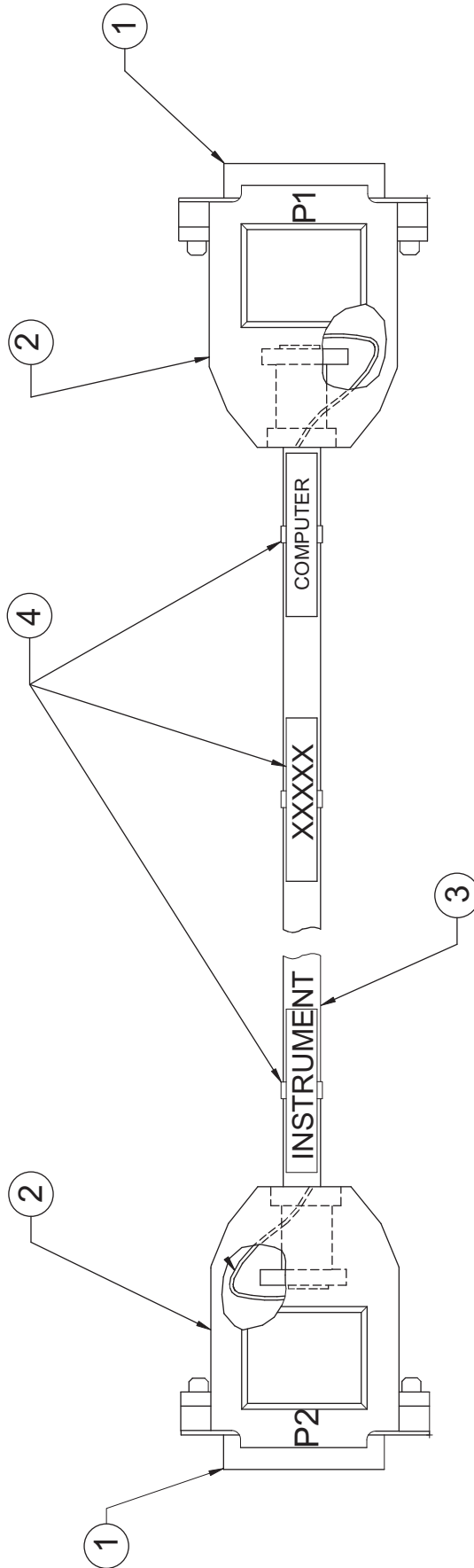


PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	17438	1	CONNECTOR, FEMALE DB9S P2
2	17285	1	HOOD, METALIZED
3	17402	1	CONNECTOR, FEMALE 9 PIN P1
4	17403	3	CONTACT, FEMALE
5			
6			
7	11175	1	BUSHING-AMPHENOL RUBBER
8	11176	1	BUSHING-AMPHENOL RUBBER
9	17620	1	SEAL, CABLE
10	17216	"A"	CABLE, SHIELDED 4 CONDUCTOR
11	12221	AIR	GREASE, FOOD GRADE
12	17616	1	MARKER TIE
13			
14			
15			

Fairbanks Scales
 St. Johnsbury, Vermont
 20702.dwg

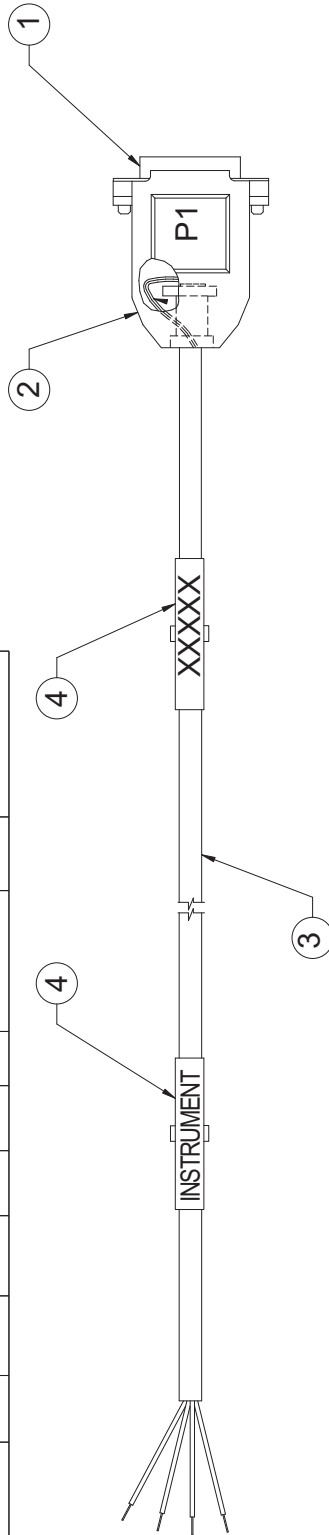
WIRE NO.	FROM TERMINATION NOTE	WIRE			RTE	TO		REMARKS
		ITEM #	COLOR	GAGE		TERMINATION	NOTE	
1	P2-2	3	R	-	-	P1-3	2	TX
2	P2-3	3	W	-	-	P1-2	2	RX
3	P2-5	3	BK	-	-	P1-5	2	GND
4								
5								



PARTS LIST			DESCRIPTION
ITEM	PART NO.	QTY	DESCRIPTION
1	17438	2	CONNECTOR, FEMALE
2	17285	2	HOOD, METALIZED
3	17216	"A"	CABLE, SHIELDED
4	17616	3	MARKER TIE
5			

Fairbanks Scales
 St. Johnsbury, Vermont
 19634.dwg

WIRE NO.	FROM		WIRE			RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE LGTH		TERMINATION	NOTE	
1	W1-R	-	3	R	-	-	P1-2	2	TX
2	W1-W	-	3	W	-	-	P1-3	2	RX
3	W1-BK	-	3	BK	-	-	P1-4	2	CTS
4	W1-G	-	3	G	-	-	P1-5	2	GND
5									



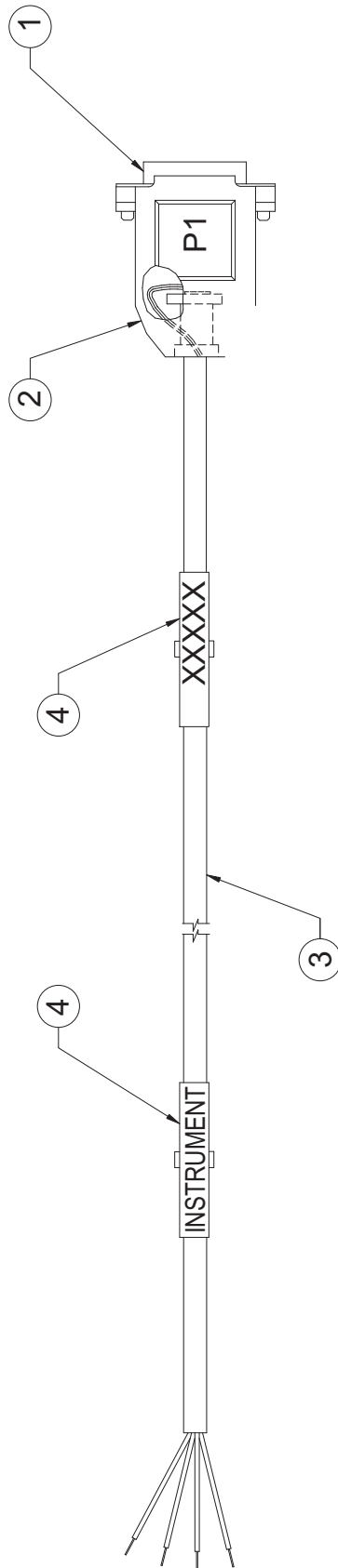
PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	17438	1	CONNECTOR, FEMALE DB9
2	17285	1	HOOD, METALIZED
3	17216	"A"	CABLE, SHIELDED
4	17616	2	MARKER TIE
5			

Fairbanks Scales
 St. Johnsbury, Vermont
 21133-A.dwg

Fairbanks Scales
 St. Johnsbury, Vermont
 21133-B.dwg

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TB 2	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	PIN 3-R	-	3	R	-	-	-	P1-2	2	TX
2	PIN 2-W	-	3	W	-	-	-	P1-3	2	RX
3		-			-	-	-			
4	PIN 5	-	3	G	-	-	-	P1-5	2	GND
5										

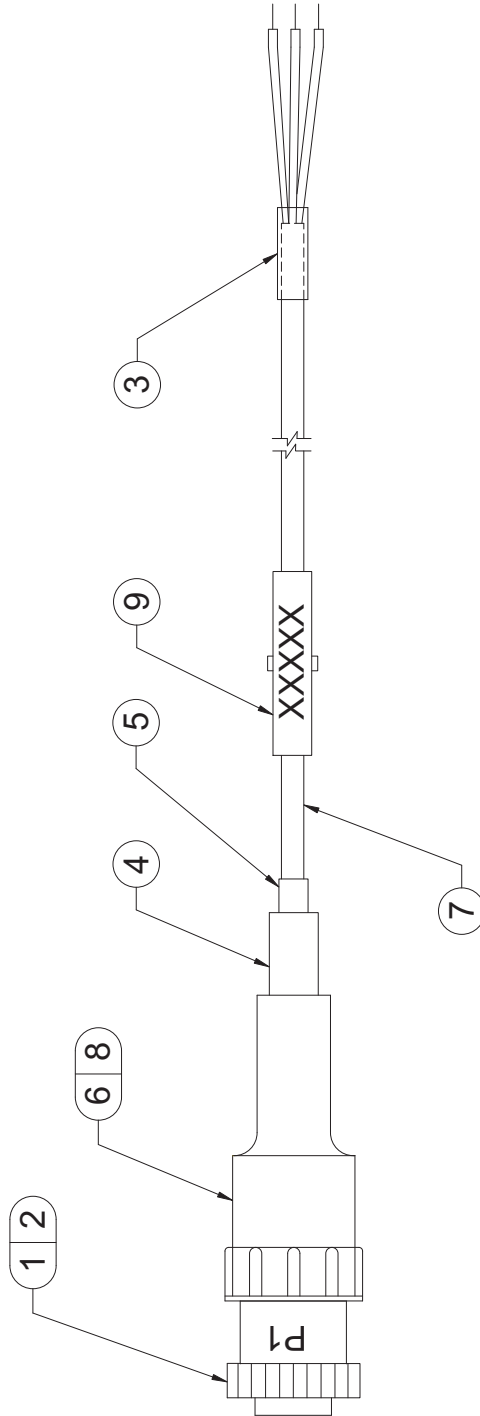


PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	17438	1	CONNECTOR, FEMALE DB9 P1
2	17285	1	HOOD, METALIZED W1
3	17216	"A"	CABLE, SHIELDED
4	17616	2	MARKER TIE
5			

WIRE NO.	FROM		WIRE			RTE	TO	
	TERMINATION	NOTE	ITEM #	COLOR	GAGE		LGTH	TERMINATION
1	P1-4	3	7	R	-	-	TX	PIN 2
2	P1-5	3	7	BK	-	-	RX	PIN 3
3	P1-8	3	7	G	-	-	GND	PIN 5
4								
5								
6								
7								
8								

TB2



PARTS LIST

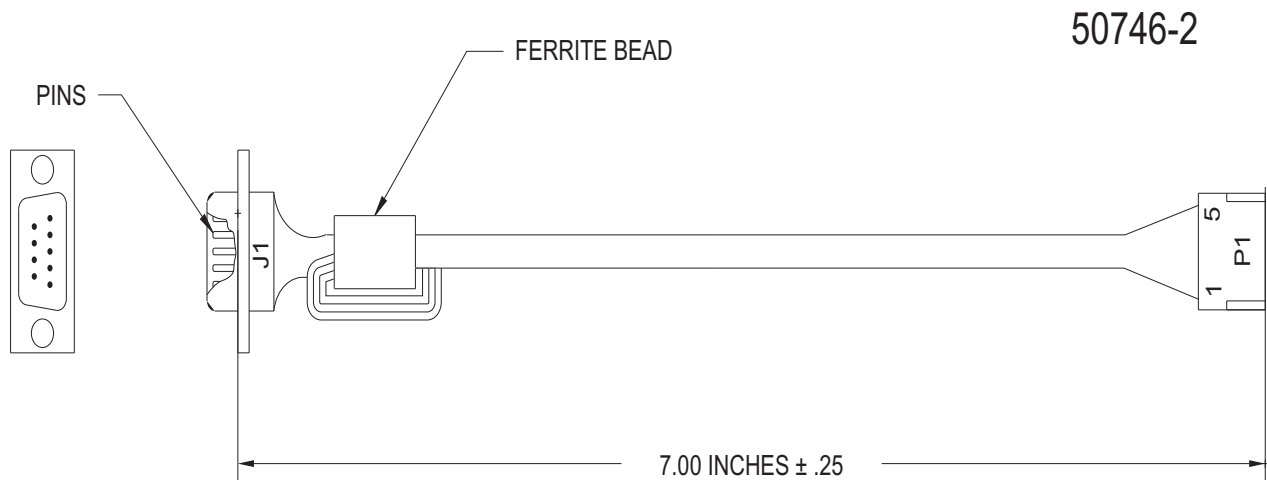
ITEM	PART NO.	QTY	DESCRIPTION
1	17402	1	CONNECTOR, FEMALE
2	17403	3	CONTACT, FEMALE
3	11288	1 IN.	TUBING, SHRINKABLE 3/8"
4	11175	1	BUSHING-AMPHENOL RUBBER
5	11176	1	BUSHING-AMPHENOL RUBBER
6	17620	1	SEAL-CABLE
7	17216	"A"	CABLE, SHIELDED 22 AWG (4 COND)
8	12221	A/R	GREASE, FOOD GRADE
9	17616	1	MARKER TIE
10			

Fairbanks Scales
 St. Johnsbury, Vermont
 20586.dwg

Appendix V: Output Cable Assembly

ABS Model

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS	
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE		
1	J1-2	2		RED	22	7	-	P1-2	1	RX	
2	J1-3	2		BLACK	22	7	-	P1-3	1	TX	
3	J1-5	2		YELLOW	22	7	-	P1-5	1	GND	
4	J1-8	2		BROWN	22	7	-	P1-4	1	CTS	
5											



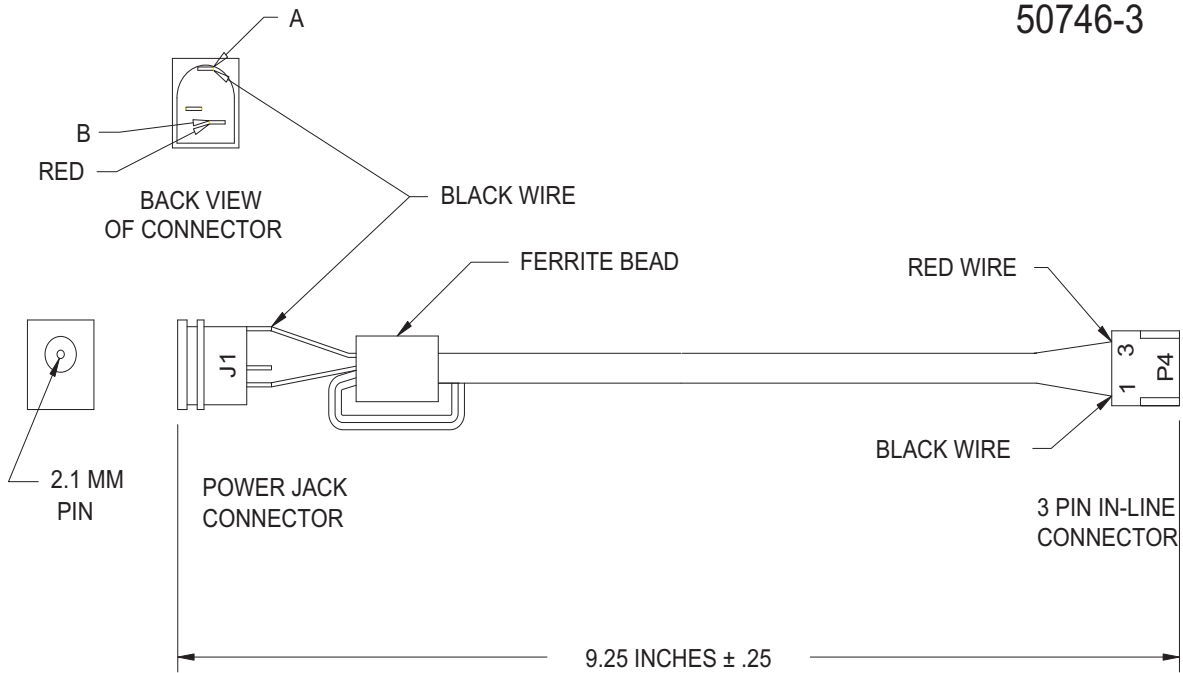
Fairbanks Scales
St. Johnsbury, VT

Appendix VI: Power Cable Assembly

ABS Model

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	J1-A	2		BLACK	22	9	-	P4-1	1	
2	J1-B	2		RED	22	9	-	P4-3	1	
3										

50746-3

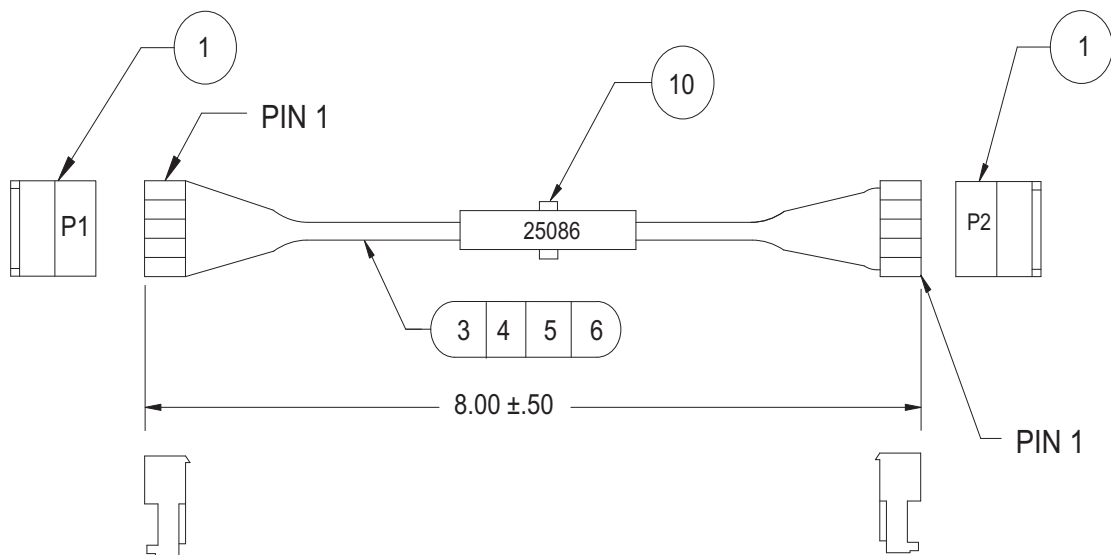


Fairbanks Scales
St. Johnsbury, VT

Appendix VII: Cable Assembly I/O Interface

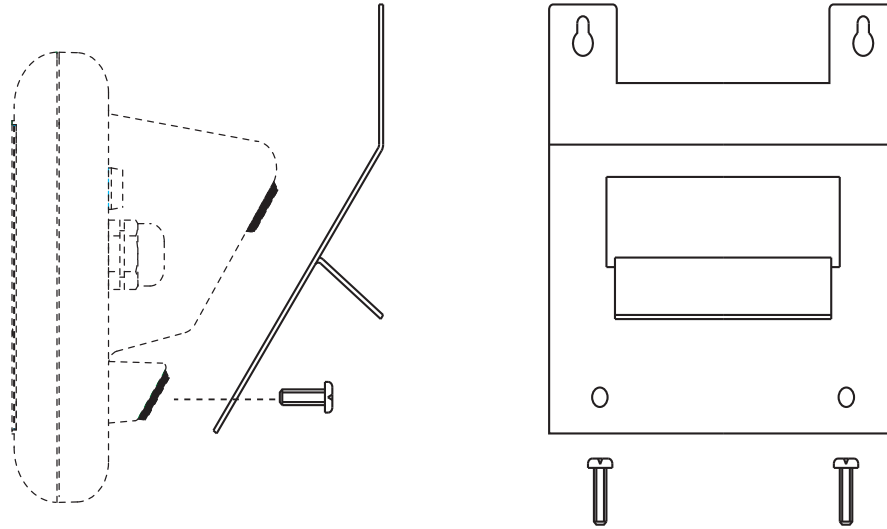
Stainless Steel Model

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	P1-2	1	4	R	22	8.00	-	P2-2	1	RX
2	P1-3	1	6	BK	22	8.00	-	P2-3	1	TX
3	P1-4	1	3	BR	22	8.00	-	P2-4	1	CTS
4	P1-5	1	5	Y	22	8.00	-	P2-5	1	GND
5										
6										



Fairbanks Scales
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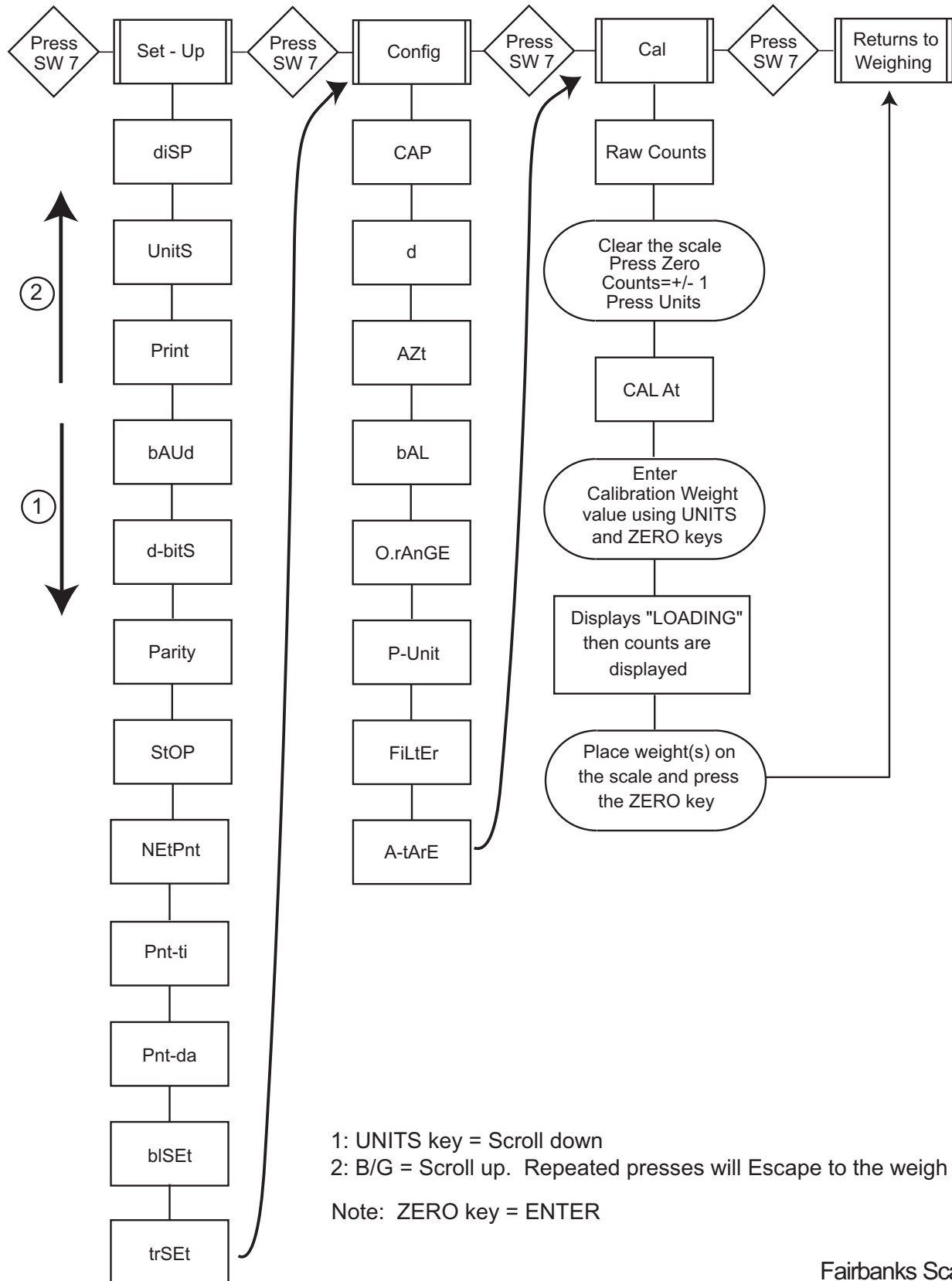
Appendix VIII: Wall Plate Kit



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St. Johnsbury, VT

Note: When installing wall mount kit on the FB 2200 with ABS enclosure, you must remove the four (4) black rubber feet.

Appendix IX: Program Flow Chart

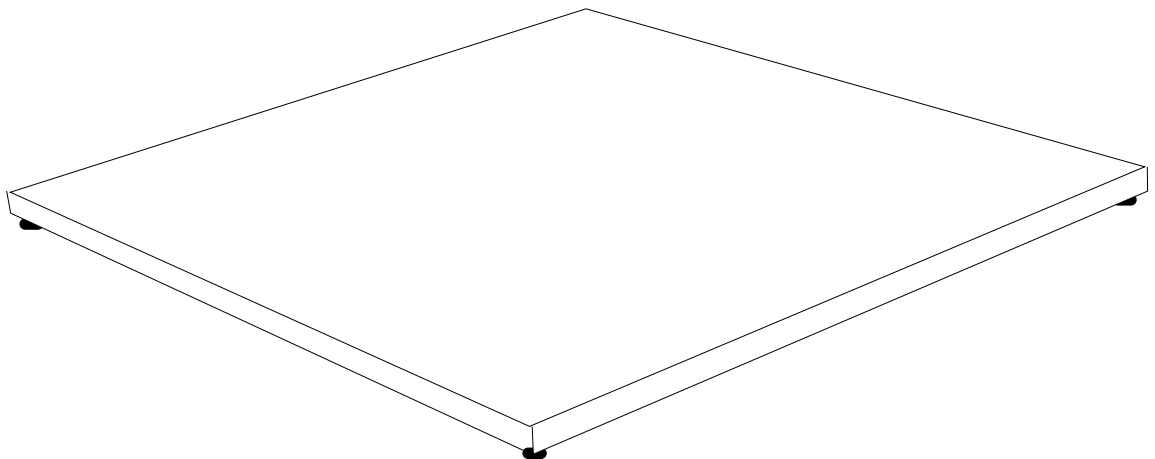


Fairbanks Scales
St. Johnsbury, VT



Reliant Series Floor Scale

Model: 3300



Amendment Record

Reliant Series Floor Scale

Model: 3300

50783

Manufactured by Fancor

821 Locust

Kansas City, Missouri 64106

Created	03/05	
Issue 1	03/05	New Product
Issue 2	10/06	Added NTEP and CWM Certificate of Conformance numbers

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, Fancor 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.

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Section 1: General Information

A. Introduction

The Reliant Series floor scale is a general purpose scale designed for basic weighing applications which require the platform to be installed and relocated in a minimal amount of time. It is available in two different models and has several different optional accessories which may be added to the scale. These optional accessories include ramps, bumper guards, and bolt down plates.

B. Specifications

Model:	3300	
Product Number:	25690	25691
Part Number:	83701	83702
Capacity:	2500 lb	5000 lb
e MIN:	0.5 lb	1 lb
n MAX:	5000	5000
Platform size:	4' x 4'	4' x 4'
Load Cell Specifications:		
Capacity	1000 lb	2500 lb
Material:	Mild Steel	
Resistance:	1000 Ohm	
Rated Output:	2 mV/V	
Safe Overload:	150 %	
Compensated Temp Range:	-10° C to 40° C	
Safe Operating Temp Range:	-10° C to 40° C	

NTEP CC: 05-032

CWM CC: AM-5579

Note:

The Reliant series floor scale is designed for general purpose applications and will not accomodate concentrated loading such as forklift traffic. Severe damage to the scale will occur and will void any warranties, written or implied.

Section 2: Installation

A. 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.

It is the customer/operator's responsibility to ensure the equipment provided by Fairbanks is operated within the parameters of the equipment's specifications and protected from accidental or malicious damage. Other than the procedures authorized in the Operating manual, no service, repair, or adjustments may be performed by unauthorized / untrained service personnel. Any unauthorized repairs will void any verbal, implied, or written warranties.

B. Overview

1. These instructions apply to the floor scale and its specific installation procedures. The procedures for instruments, printers and other peripherals are given in manuals specifically provided for those units.
2. All 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.
3. Absolutely no physical or electrical modifications are to be made to this equipment. Electrical connections other than those specified may not be performed, and physical alterations (holes, etc.) are not allowed.
4. Before the installation is considered complete, the equipment is to be calibrated to meet or exceed any applicable weights and measures requirements, if applicable. The installing technician is responsible to make certain customer personnel are fully trained and familiar with the capabilities and limitations of the equipment. Be prepared to recommend the arrangement of components which will provide the most efficient layout, utilizing the equipment to the best possible advantage. The warranty policy must be explained and reviewed with the customer.

C. Unpacking

1. Check that all components 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.
4. Perform an inspection, making certain all hardware and electrical connections are secure.

D. 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 of the platform.
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 platform.

E. Installation Procedure

1. Select a location which is level and will fully support the weight of the platform plus a full capacity load.
2. Remove the top of the crate and all packing/banding material.
3. Screw the two (2) eyebolts into the threaded adapters in the platform top. Use a forklift or other lifting means along with chains, cables, or nylon straps to remove the scale from the crate bottom.

~Caution~

Failure to use the proper lifting tools may result in personal injury.

4. Set the scale so the interface cable exits in a direction where it can be protected. If possible, use a cable protector to reduce trip hazards and protect the interface cable from being damaged.
5. Wire the scale interface cable to the proper type indicator using the following platform wiring/ color code:

<u>Cable Wire Color</u>	<u>Function</u>	<u>Analog Instrument</u>
Black	(-) Excitation	(-) Excitation
Green	(+) Excitation	(+) Excitation
Yellow	Shield	Shield
White	(+) Signal	(+) Signal
Red	(-) Signal	(-) Signal

Section 3: Calibration

A. Calibration Procedure

1. Adjust the analog indicator to the platform. First, ensure all corners are within one (1) division of each other at 25% of rated capacity. Follow the appropriate indicator service manual to calibrate the instrumentation.
 - a. Perform a coarse platform calibration which will be close to the actual weight.
 - b. Identify the platform's corner numbers.
 - c. Place a concentrated weight (25% of platform capacity) on corner 1, note the displayed weight, move the weight to corner 2, note the displayed weight, move and note the displayed reading on each of the remaining corners.
 - d. If corners require adjustment:
 1. Refer to the Maintenance and Service Section A Errors chart.
 - e. Final Calibration
 1. Remove all weights.
 2. Zero the indicator.
 3. Perform a final calibration with test weights.
 4. Follow the appropriate indicator service manual's calibration procedures to ensure a proper calibration.

Section 4: Accessories

A. Introduction

The Reliant series floor scales have several accessory options available. These accessories are Bolt-down plates, Ramps, and Bumper-Guards.

B. Bolt-Down Plates

Bolt down plates are used to keep the scale from sliding or moving when loads are applied. The plates are bolted via anchors at each of the scale's feet.

1. Installation
 - a. Place the platform in position.
 - b. Place the bolt-down plate under the foot, plate edge extending out from under the scale.
 - c. Drill the two (2) holes using a hammer drill. Insert anchors with the nut and washer already ON. Tap the anchor into the hole, then tighten the nuts securely. Repeat this process for each plate used.

Note:

If ramps are NOT installed and bolt-down plates are needed, a set of four bolt-down plates will be required.

C. Ramps

Each mild steel ramp accessory comes with two integral bolt down plates and four anchors.

1. Installation
 - a. Place the ramp in position, then lift and set the platform feet into the bolt-down plate holes.
 - b. Drill the two (2) holes using a hammer drill. Insert the anchors with the nut and washer already ON. Tap the anchor into the hole then tighten the nuts securely.
 - If two ramps are installed, NO other bolt-down plates are needed.
 - If one ramp is installed, a set of two bolt-down plates is needed
 - Only two ramps total may be installed on opposite sides of a scale platform.

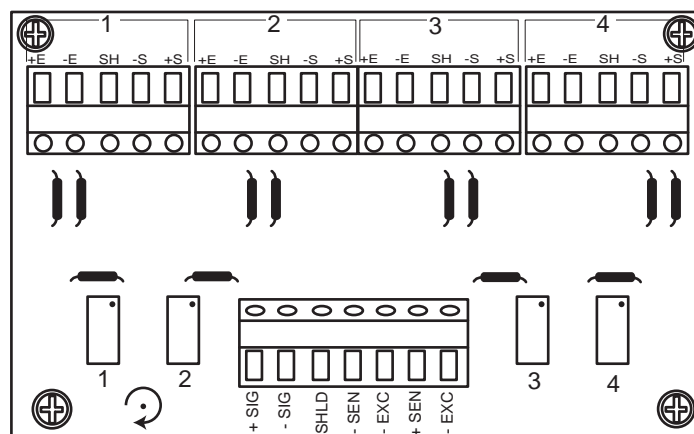
D. Bumper Guards

Bumper Guards are designed to *help* protect the platform from abuse resulting from ensuing forklift traffic. The guards are slightly higher than the scale and will help deflect the forks.

1. Place the bumper guard so it will protect the platform from nonscale traffic, but will not touch or interfere with the platform's movement.
2. Drill the holes using a hammer drill. Insert anchors with the nut and washer already ON. Tap the anchor into the hole, then tighten the nuts securely.

E. Balance Junction Box

1. Installation
 - a. Remove the scale access cover plate.
 - b. Check that all load cells have wire markers on the cable ends. If not, identify load cells with wire markers or other means, then disconnect the load cell wires and the main interface cable wires.
 - c. Dress all wires in order to be inserted into terminal blocks.
 - d. Remove balance junction box cover and loosen all gland fittings.
 - e. Insert the cables into the gland fittings and connect the cables to the appropriate terminal block. The load cell cable for load cell number one (1) will connect to the terminal block designated one (1). This process will continue for all four (4) load cell cables. The main interface cable will connect to the terminal block opposite the load cell terminals.
 - f. Connect the load cell cable as follows:



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<u>Cable Wire Color</u>	<u>Function</u>	<u>Balance Junction Box</u>
Black	(-) Excitation	- E
Green	(+) Excitation	+ E
Yellow	Shield	SH
White	(+) Signal	+ S
Red	(-) Signal	- S

g. Connect the main interface cable as follows:

<u>Cable Wire Color</u>	<u>Function</u>	<u>Balance Junction Box</u>
Black	(-) Excitation	- EXC
Green	(+) Excitation	+ EXC
Yellow	Shield	SHLD
White	(+) Signal	+ SIG
Red	(-) Signal	- SIG
*	(-) Sense	- SEN
*	(+) Sense	+ SEN

* = Used only when main interface cables exceed twenty five (25) feet.

h. Tighten all gland bushing nuts

i. Calibrate as necessary. See Platform Cornering Adjustments.

j. Replace the box cover and tighten all screws. Replace the platform access cover .

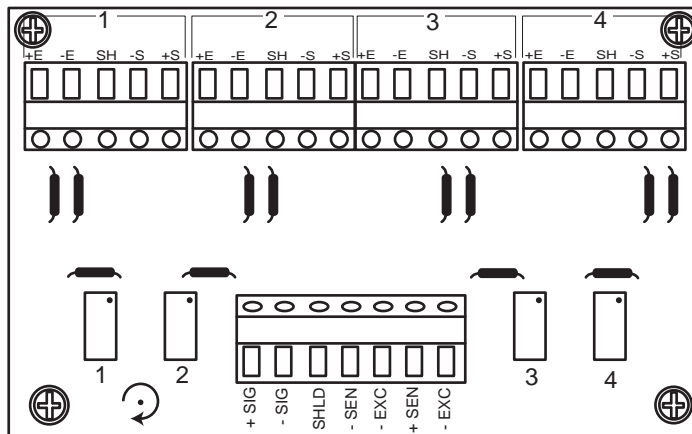
2. Platform Cornering Adjustments

a. Adjust the analog indicator to the platform. First, ensure all corners are within one (1) division of each other at 25% of rated capacity. Follow the appropriate indicator service manual for indicator calibration.

1.) Perform a course platform calibration close to the actual weight.

2.) Identify the platform corner numbers.

- 3.) Place a concentrated weight (25% of platform capacity) on corner 1, move it to corner 2, corner 3 and corner 4, noting the displayed reading on each corner.
- 4.) If corners require adjustment:
 - a.) Place the concentrated weight on the corner displaying the *lowest* weight and use the appropriate potentiometer to change the displayed weight to read the same as the *highest* reading by turning the potentiometer clockwise (CW). Repeat this procedure while rechecking all corners until there are no errors. Perform a zero reference check with a unloaded platform, then repeat the corner test to ensure all readings are the same before proceeding.



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Note:

As you move the weight(s) from corner to corner, do NOT zero the scale. **Remember**, at this time you are only adjusting the corners to be the same, not performing a correct calibration.

Note:

The balance junction box assembly has four (4) extended range, multi-turn potentiometers, one for each load cell. If you have difficulty cornering the platform, turn all potentiometers to the fully counter clockwise (CCW) position until a clicking is heard when turned. With the weight on the lowest reading corner, turn the corresponding potentiometer clockwise (CW) to read the same as the highest reading corner. Repeat this procedure for each corner until the platform is properly calibrated.

- 5.) When the corners are the same in reference to each other:
 - a.) Remove all weights
 - b.) Zero the indicator
 - c.) Perform a final calibration with test weights
 - d.) Follow the appropriate indicator service manual for indicator calibration.

Section 5: Maintenance and Service

A. Errors

Symptom	Cause	Solution
Corner Errors	Debris under scale.	Remove debris.
	Load cell failure.	Replace load cell.
	Broken foot assembly.	Replace foot.
	Platform not level.	Level platform.
	Load cell tolerance change.	Adjust balance junction box per Section 4, if equipped.
Unstable indication	Cables damaged.	Repair cables.
	Load cell failure	Replace load cell.
	Indicator failure	Repair indicator

B. Load Cell Replacement

1. Remove power to the indicator.
2. Remove the cover plate. Identify the load cells with wire markers or other means and disconnect the failed load cell cable at the splice connections.
3. Lift the platform end with a forklift or heavy pry bar using wood blocks for safety.
4. Remove the load cell mounting bolts (use a $\frac{3}{4}$ " socket), then the cell, pulling the load cell cable through the scale while leaving a pull string/wire in the scale.
5. Remove the foot assembly from the old load cell and install on the new load cell. Use anti-seize on the bolt threads.

6. Disconnect the pull string/wire from the old load cell's cable and attach to the new load cell's cable end. Pull the cable of the new load cell through to the splice connection. Mount the load cell using anti-seize on the mounting bolts and torque to 90 ft/lbs.
7. Lower the scale and remove the safety blocks.
8. Ensure that the weight is shared evenly by all four (4) feet. Using crimp connectors, connect the load cell wires to the interface cable at the splice connection. Test and calibrate the scale. Replace the cover plate.
9. Recalibrate as necessary.

C. *Foot Assembly Replacement*

1. Lift the platform end with a forklift or heavy pry bar using wood blocks for safety.
2. Remove the bolt which goes through the load cell and the post on the foot assembly.
3. Pull the foot assembly out of the load cell.
4. Ensure the "O" ring is on the post of the new foot assembly. The "O" ring should be lubricated before the foot assembly is replaced.
5. Slide the post of the foot assembly into the hole in the load cell. Align the position of the foot so that the holes of the foot align with the hole in the load cell.
6. Insert the bolt and tighten.
7. Lower the platform to the floor and adjust the foot to level the platform.

D. *Balance Junction Box/PCB Replacement*

1. Remove power to the indicator
2. Open the platform access cover, then the balance junction box cover

3. Loosen all gland bushing nuts
4. Check that all load cells have wire markers on the cable ends. If not, identify load cells with wire markers or other means, then disconnect the load cell wires from the terminal blocks. Disconnect the main interface cable wires.
5. Remove the balance junction box/ PCB, then install the new balance junction box/ PCB.

Note:

Leave the box cover OFF until all calibration adjustments are completed.

6. Reconnect all load cell and main interface cable wires to the new balance junction box/ PCB.
7. Tighten all gland bushing nuts
8. Recalibrate as necessary.
9. Replace the box cover and tighten all screws. Replace the platform access cover .

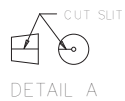
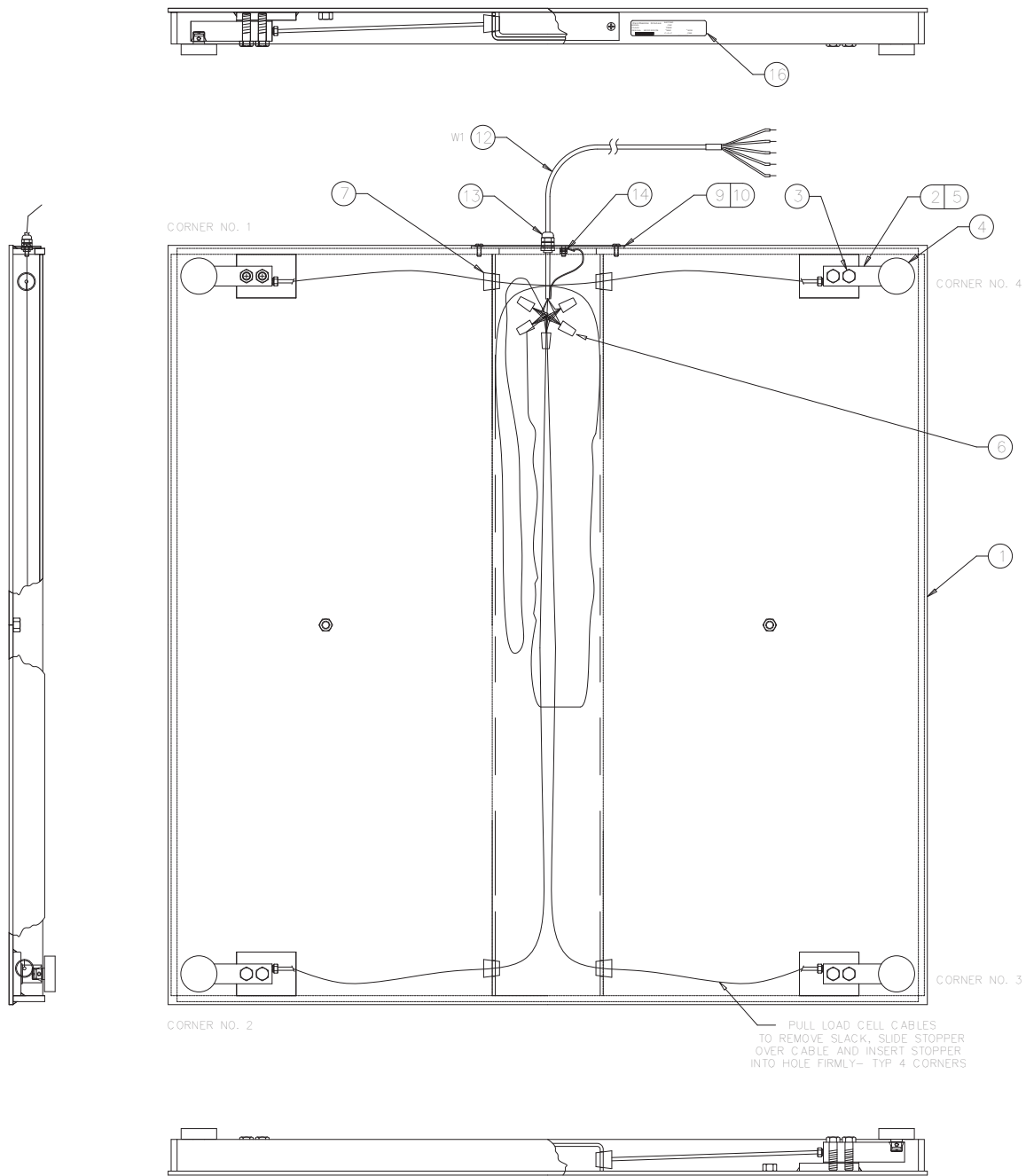
Section 6: Parts

A. Platform Parts List

Item	Part#	Description	Models
1	83703	Platform Weldment	ALL
2*	83634	Load Cell	1K
2*	83635	Load Cell	2.5K
3	54502	Screw, Cap 1/2-20 x 1.75	ALL
4	63899	Foot Assembly	ALL
5	66754	Shim	ALL
6	24988	Crimp Connector	ALL
7	11330	Stopper	ALL
9	83709	Cover Plate Assembly	ALL
10	54054	Screw, Cap 1/4-20 x 0.5	ALL
12	12838	Cable Assembly 30'	ALL
13	17533	Connector, Liquid Tight	ALL
14	11103	SS Hex Nut 10-24	ALL
16	N/A	Nameplate	ALL

B. Optional Accessories Parts List

N/S	96141	Balance Assy pcb only	ALL
N/S	63599	Balance junction box assy	ALL
N/S	63753	Ramp (4')	ALL
N/S	72194	Bumper Guard (4')	ALL
N/S	70895	Eyebolts (Set of 2)	ALL
N/S	63776	Bolt down plates (Set of 4)	ALL
N/S	63778	Bolt down plates (Set of 2)	ALL



- NOTES:
1. MODIFY STOPPERS, ITEM 7, BY CUTTING A SLIT AS SHOWN IN DETAIL A. PRIOR TO INSTALLING ON LOAD CELL CABLES.
 2. APPLY ANTI-SEIZE SEALING COMPOUND TO THE SCREWS, ITEM 3, PRIOR TO ASSEMBLING AND TORQUE SCREWS TO 90 FT-LBS.
 3. USE CRIMP STYLE WIRE NUTS TO MAKE ALL CONNECTIONS

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Appendix I: Accessories

A. Ramps and Bumper Guards

Size	Cap	Ramp	Bumper Guard
4' x 4'	2.5K	63753(4')	72194 (4')
4' x 4'	5K	63753(4')	72194 (4')

B. Bolt-Down Plates and Eyebolts

Size	Cap	Bolt-Down Plates	Eyebolts
ALL	ALL	63776 (Set of 4)	70895 (2)
ALL	ALL	63778 (Set of 2)	

C. Balance Junction Box

Size	Cap	Product Number	Description
ALL	ALL	83941	*Balance junction box assy

* = Factory Installed upon initial product order only.