Installation Manual

# Yellow Jacket
# Mild Steel Floor Scale
# Model 3500

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# Amendment Record

## Yellow Jacket
## Mild Steel Floor Scale
## Model 3500

Document 51233

Manufactured by Fairbanks Scales Inc.

| Revision # | Date | Update |
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| Revision 5 | 10/14 | Corrected summing pcb part number |
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# Section 1: General Information

## 1.1. Introduction

The **3500 Series Floor Scale** uses a summing junction box for interfacing to all analog weight instruments.

The Yellow Jacket Floor Scale is designed with both durability and safety in mind. Its low-profile build and distinctive safety-yellow powder coat finish enhance visibility for forklift operators, even in low-light warehouse environments. This floor scale's unique, multi-ribbed understructure provides superior support, ensuring reliable and accurate performance over years of heavy use.

Available in a 4' x 4' platform, the Yellow Jacket offers two capacity options: 2,500 pounds and 5,000 pounds. Both options meet or exceed standard application requirements, making it a versatile solution for a wide range of industrial weighing needs.

- The scale platform is shipped in a crate, fully assembled, and wired.
- The floor scale size is **4' x 4'** (both smooth and safety tread).
- The floor scale capacities range from **2.5k to 5k (lbs).**
- Both scale types are equipped with a **thirty-foot** interface cable.
- All models have threaded holes in the deck for attaching eyebolts to facilitate installation and cleaning.

## 1.2. Platform Specifications

| | |
|---|---|
| **Platform Deck Plate** | *0.25" thick deck with safety tread* |
| **Deck Construction** | *Type A36 carbon steel* |
| **Paint** | *Yellow powder coat* |
| **Platform Height** | *3.0"* |
| **Operating Temperature** | *15° to 104°F* |
| **Overload Capacity** | *150% of rated scale capacity* |
| **Endloading Capacity** | *100% of rated scale capacity* |
| **Humidity** | *0 to 95% non-condensing* |
| **Grade Level** | *Within 3° of level* |
| **NTEP** | *5000 divisions* |

## 1.3. Load Cell Specifications

| | |
|---|---|
| **Cable** | *Shielded, 4 conductor* |
| **Protection rating** | *IP67K* |
| **Construction** | *Alloy Tool Steel* |
| **Rated Output** | *3 mV/V +/- .0.01* |
| **Output resistance** | *350 ohms +/- 2 ohms* |
| **Ultimate Overload (FSO)** | *150%* |
| **NTEP CC** | *06-079* |
| **FM Approved** | *Yes* |

## 1.4. Models

| Part Number | Size | Capacity | Deck Type |
|---|---|---|---|
| 30326 | 4' x 4' | 2.5K | Smooth |
| 30325 | 4' x 4' | 2.5K | Safety Tread |
| 30328 | 4' x 4' | 5K | Smooth |
| 30327 | 4' x 4' | 5K | Safety Tread |

## 1.5. General Service Policy

Prior to installation, ***always*** verify that the equipment satisfies 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.**

**W A R N I N G**

**Absolutely NO physical, electrical or program modifications, other than selection of standard options and accessories, can be made by customers to this equipment.**

**Repairs are performed by Fairbanks Scales Service Technicians and Authorized Distributor Personnel ONLY!**

***Failure to comply with this policy voids all implied and/or written warranties.***

- Check all devices for proper operation. If any error messages occur, refer to Troubleshooting or the proper manual of that device.
- ***Only those charges which are incurred as a result of the equipment's inability to be adjusted to performance specifications may be charged to warranty.***
- No physical alterations (mounting holes, etc.) are allowed during installation.

***The installing technician is responsible that all personnel are fully trained and familiar with the equipment's capabilities and limitations before the installation is considered complete.***

- All electrical assemblies must be replaced in their entirety as a complete unit.
  - Replacement of individual components is not allowed.
  - These components must be returned intact for replacement credit per normal procedures.
- All electronic and mechanical adjustments are considered to be part of the installation and are included in the installation charge(s).
  - Included is any required computer programming or upgrades.
  - Included are any accuracy and/or operational specification changes.
- The AC receptacle / outlet shall be located near the instrument and easily accessible.
- Electrical connections other than those specified may not be performed.
- The technician must be prepared to recommend the arrangement of components which provide the most efficient layout, utilizing the equipment to the best possible advantage.
- The warranty policy must be explained and reviewed with the customer.

# 1.6. Users' Responsibility

- All electronic and mechanical calibrations and/or adjustments required for making this equipment perform to accuracy and operational specifications are part of the installation.
  - They are included in the installation charge.
  - Only those charges which are incurred because of the equipment's inability to be adjusted or calibrated to performance specifications may be charged to warranty.

***It is the owner's responsibility to document, notify, and follow-up regarding shipping damage with the carrier.***

- Absolutely no physical, electrical or program modifications other than selection of standard options and accessories are to be made to this equipment.
- The equipment consists of printed circuit assemblies which must be handled using ESD handling procedures and must be replaced as units.
  - Replacement of individual components is not allowed.
  - The assemblies must be properly packaged in ESD protective material and returned intact for replacement credit per normal procedures.

# Section 2: Scale Installation

## 2.1. Pre-Installation

### *2.1.1. Checklist*

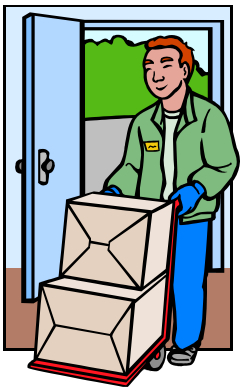
*The following points should be checked and discussed with the **Area Sales Manager and/or customer**, if necessary, before the technician goes to the site and installs the equipment.*

- ✓ Check the customer's application to make certain it is within the capabilities and design parameters of the equipment.
- ✓ If the installation process might disrupt normal business operations, tell the customer and ask that they make ample arrangements.
- ✓ Be sure that the equipment operator(s) are available for training.
- ✓ The service technician reviews the recommended setup with the Area Sales Manager or Area Service Manager, and together they identify all necessary variations to satisfy the customer's particular application.

### *2.1.2. Unpacking*

*Follow these guidelines when unpacking all equipment.*

- ✓ Check in all components and accessories according to the customer's order.
- ✓ Remove all components from their packing material, checking against the invoice that they are accounted for and not 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.*
- ✓ Collect all necessary installation manuals for the equipment and accessories.
- ✓ Open the equipment and perform an inspection, making certain that all hardware, electrical connections and printed circuit assemblies are secure.
- ✓ Do not reinstall the cover if the final installation is to be performed after the pre-installation checkout.



### *2.1.3. Equipment Checkout*

*Position the equipment with these points in mind:*

- ✓ Intense direct sunlight can harm the display.
- ✓ Do not locate near magnetic material or equipment/instruments which use magnets in their design.
- ✓ Avoid areas which have extreme variations in room temperatures. Temperatures outside the instrument's specifications will affect the weighing accuracy of this product.
- ✓ Do not load the platform if there is any evidence of damage to the platform or supporting structure.

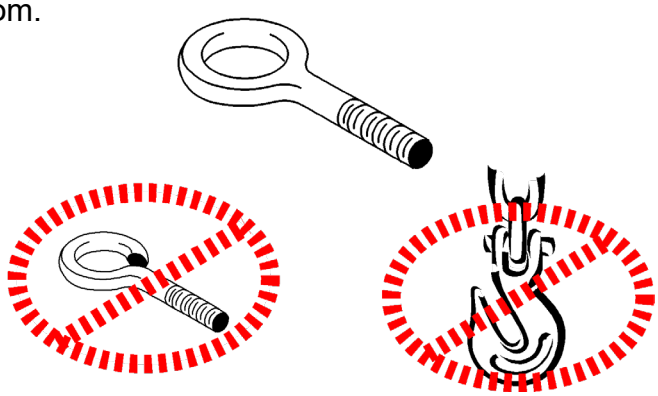
## 2.2. Unloading and Setup

1. Select a location that is flat, solid, level, and one that fully supports the weight of the platform plus a full capacity load.
2. Remove the top of the crate and all packing material.
3. Screw **two (2) eyebolts** into the threaded adapters in the platform top. The eyebolts are not included but may be ordered. See Appendix III: B: Bolt-down Plates, Eyebolts and Hole Plugs
4. Use a forklift or other lifting means, along with chains, cables, or nylon straps to remove the scale from the crate bottom.

**TWO TYPES of EYE BOLTS**

**Closed Gap Eyebolts**

- Open Gap Eyebolts (***NOT USED***)
- Lifting Hooks (***NOT USED***)



**C A U T I O N**

**DO NOT use hooks or unclosed eyebolts.**

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

5. Set the scale so that the interface cable exits in a direction where it can be protected.
   - If possible, use a cable protector to reduce 'trip' hazards and to protect the interface cable from being damaged.
   - The scale is shipped with the threaded legs of the feet up tight against the load cells.
6. Remove the plugs at the corners of the scale.
7. Level the scale using a screwdriver to turn the threaded “leg” of the foot assembly.
8. Wire the scale cable to the proper type instrument, as shown in section 2.3 Platform Interface Cable Wiring (below).

# 2.3. Platform Interface Cable Wiring

| WIRE COLOR | FUNCTION |
|---|---|
| Black | (—) Excitation |
| Red | (+) Excitation |
| Yellow | Shield |
| Green | (+) Signal |
| White | (—)Signal |

## *2.3.1. Calibration Steps*

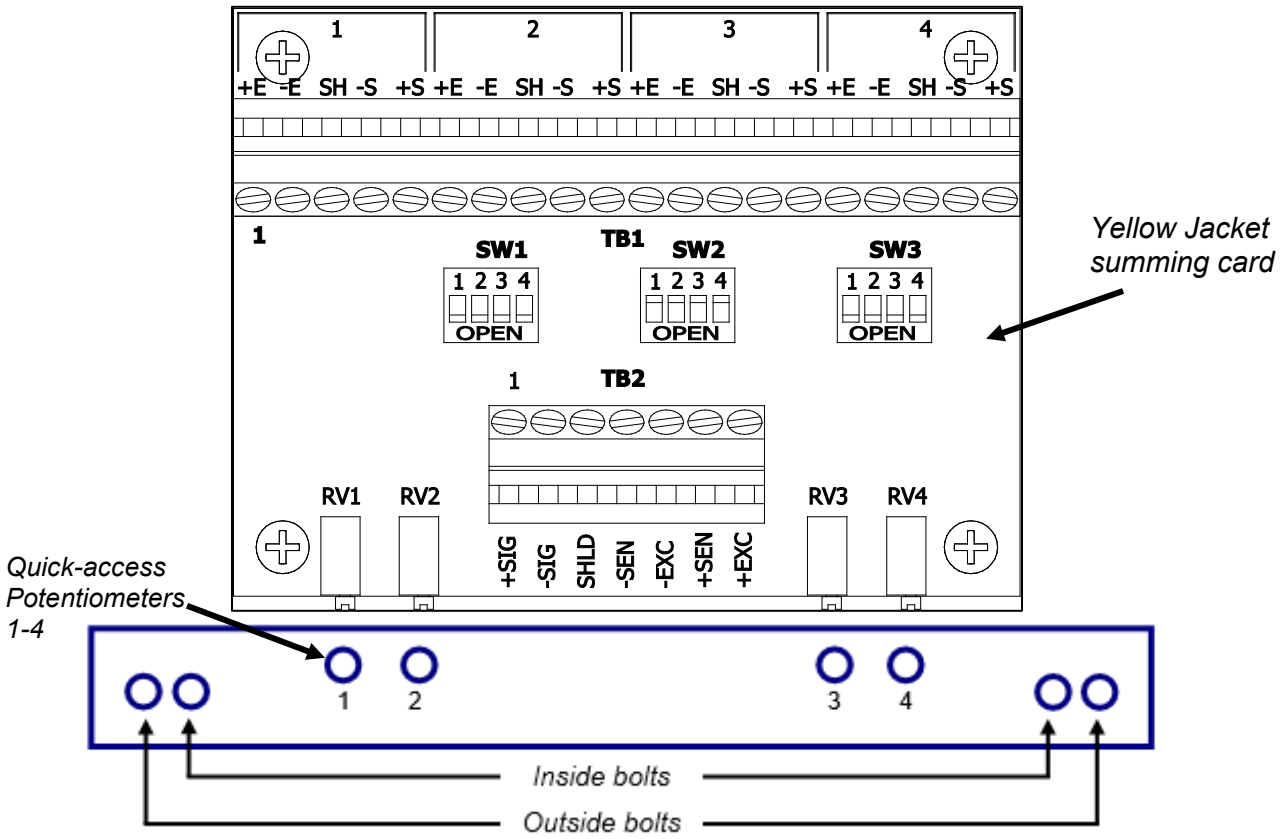
Adjust the analog interface instrument to the platform.

- Adjust all the corners to within **one (1) division of each other at 25% of rated capacity**.

Follow the appropriate instrument service manual to ensure a proper calibration.

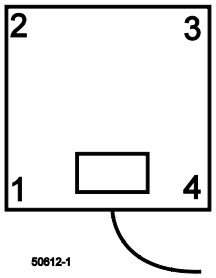
### STEPS

1. Remove the two inside bolts on the side of the scale and remove access panel, exposing the quick-access potentiometers.
   - Total number of turns is **twenty.**




2. Identify the platform corner numbers.

3. Place a concentrated weight (**25%** of platform capacity) on corner #1, then move it to #2, #3 and #4, noting the displayed reading on each corner.




**If corners *do* require adjustment, complete the following steps:**

1. Remove the outside bolts on the quick access plate. This removes the J-box cover.

2. Safely lift scale on its end with forklift or heavy pry bar.

3. In order to adjust the potentiometers, the **DIP switches** are set as follows:
   **SW1 = OPEN** **SW2 = CLOSED** **SW3 = OPEN**

   The factory default settings have these switches set to bypass the potentiometers.

4. Center the four **Junction Box Potentiometers** by turning the adjustment screw **counter-clockwise position** until a clicking sound is heard, then turning each of them back **clock-wise ten (10) turns**.

5. Identify the lowest reading, and then place the concentrated weight on this corner.
6. Place the concentrated weight on the corner displaying the lowest weight.
7. Turn the adjustment on the potentiometer clockwise (CW) to the displayed weight so it reads the same as the highest reading.
8. Repeat this procedure while rechecking all corners until they are equal.

**Important Note:** *When moving the weight(s) from corner to corner,* ***DO NOT*** *zero the scale. The purpose is to adjust the corners to be the same, and not to perform a correct calibration.*

9. Perform a zero-reference check with an unloaded platform.
10. Repeat the corner test to ensure all readings are the same before proceeding.
11. Replace J-box cover with outside bolts, replace quick-access cover with inside bolts, and perform final calibration using the appropriate instrument's service manual.

**If corners *do not* require adjustment, complete the following steps:**

1. Remove all weights.
2. Zero the instrument.
3. Perform a final calibration with test weights.
4. Follow the appropriate instrument service manual to ensure a proper calibration.

# Section 3: Installing Accessories

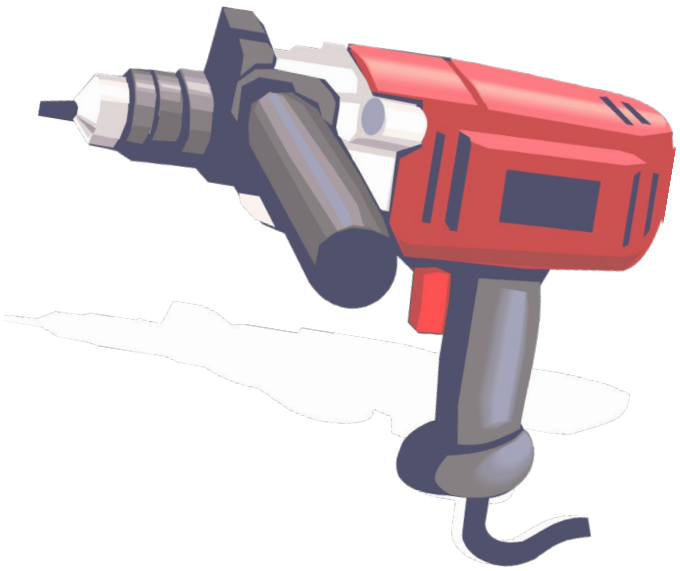
## 3.1. Installing Bolt-Down Plates

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

### STEPS

1. Place the platform into the correct position.
2. Place the bolt-down plate under the foot. The plate edge extends out from under the scale.
3. Drill **two (2) 7/16"** attachment holes using a hammer drill.
4. Insert anchors with the nut and washer already on them.
5. Tap the anchor into the hole, then tighten the nuts securely.
6. Repeat this process for each plate.

**NOTE:** *If ramps are **not** installed and bolt-down plates are needed, then a full set of four bolt-down plates is required.*



# 3.2. Installing Ramps

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

## STEPS

1. Place the ramp in position, then lift and set the platform feet into the bolt-down plate holes.
2. Drill the **two (2) 7/16" holes** using a hammer drill. Insert the anchors with the nut and washer already on.
3. Tap the anchor into the hole, then tighten the nuts securely.

## IMPORTANT TIPS

- If two ramps are installed, then no other bolt-down plates are needed.
- If only one ramp is installed, then a set of two bolt-down plates is necessary.
- Only two ramps (total) may be installed on opposite sides of a scale platform.

# 3.3. Installing Bumper Guards

Bumper Guards help protect the platform from direct hits from forklift traffic. The guards are slightly higher than the scale and help deflect the forks.

## STEPS

1. Place the bumper guard into a position so it protects the platform from non-scale traffic.
   - Place the bumper guard so it does not touch or interfere with the platform's movement.
2. Drill the 7/16" fastening holes using a hammer drill.
3. Insert the anchors with the nut and washer already on it.
4. Tap the anchor into the hole.
5. Tighten the nuts securely.

# Section 4: Parts Replacement

## 4.1. Load Cell Replacement Steps

1. Cycle-down the power to the instrument, and then unplug the unit.
2. Remove potentiometer cover.
3. Lift the platform end with a forklift or heavy pry bar, using wood blocks for safety.
4. Remove J-box cover.
5. Disconnect the failed load cell cable(s) at the junction box.
6. Loosen the gland bushing and tie a string or wire to the end of the cable to act as a pull wire.
7. Place wire markers on the cable ends.
8. Masking tape is an effective alternative
9. Disconnect the faulty load cells wires from the terminal block.
10. Remove the load cell mounting bolts with a **3/4" socket**.
11. Remove the load cell, pulling the cable through the scale while leaving the pull string/wire in the scale.
12. Remove the foot assembly from the old cell, then install it onto the new load cell.
    - Use anti-seize on the threads.
13. Disconnect the pull string/wire from the old cell's cable, then attach to the new cell's cable end.
14. Pull the cable from the new cell through to the junction box.
15. Mount the cell to the scale platform.
    - Torque it to **90 ft/lbs**, using anti-seize on the mounting bolts.
16. Connect the load cell wires into the junction box, then tighten the box gland bushing(s).
17. Lower the scale to the surface removing the safety blocks.
18. Distribute the scale's weight evenly by all four (4) feet.
19. Recalibrate the unit as necessary.

# 4.1. Load Cell Replacement Steps, Continued

**IMPORTANT NOTE:** *See* **Appendix I** *for specific load cell color code and wiring information.*

## *4.1.1. Load Cell Specifications*

| DESCRIPTION | SPECIFICATION |
|---|---|
| Material | **Mild Steel** |
| Rated Output | **3mV/V** |
| Impedance | **350 ohm** |
| Safe Overload | **150%** |
| Compensated Temperature Range | **-10° C to 40° C** |
| Safe Operating Temperature Range | **-10° C to 40° C** |

## 4.2. Junction Box Replacement Steps

1. Remove power to the instrument.
2. Open the platform access cover, then the junction box cover.
3. Loosen all gland bushing nuts.
4. Place wire markers on all the load cell cable ends.
5. Disconnect the load cells' wires from the terminal blocks.
6. Disconnect the homerun wires.
7. Remove the PCB, clean the junction box, then install the new PCB.
8. Reconnect all load cell and home-run wires to the new PCB.
9. Tighten all gland bushing nuts.
10. Replace the junction box cover, and torque all screws to **18-20 in/lbs**.
11. Recalibrate the unit as necessary, including corner adjustments.
12. Replace the platform access cover.

## 4.3. Foot Assembly Replacement Steps

1. Lift the platform end with a forklift or heavy pry bar using wood blocks for safety.
2. Using a standard screwdriver, unscrew the foot assembly.
3. Replace the Foot Assembly, using anti-seize on the screws attaching to the load cell.
4. Lower the scale to the surface removing the safety blocks.
5. Distribute the scale’s weight evenly by all four (4) feet.

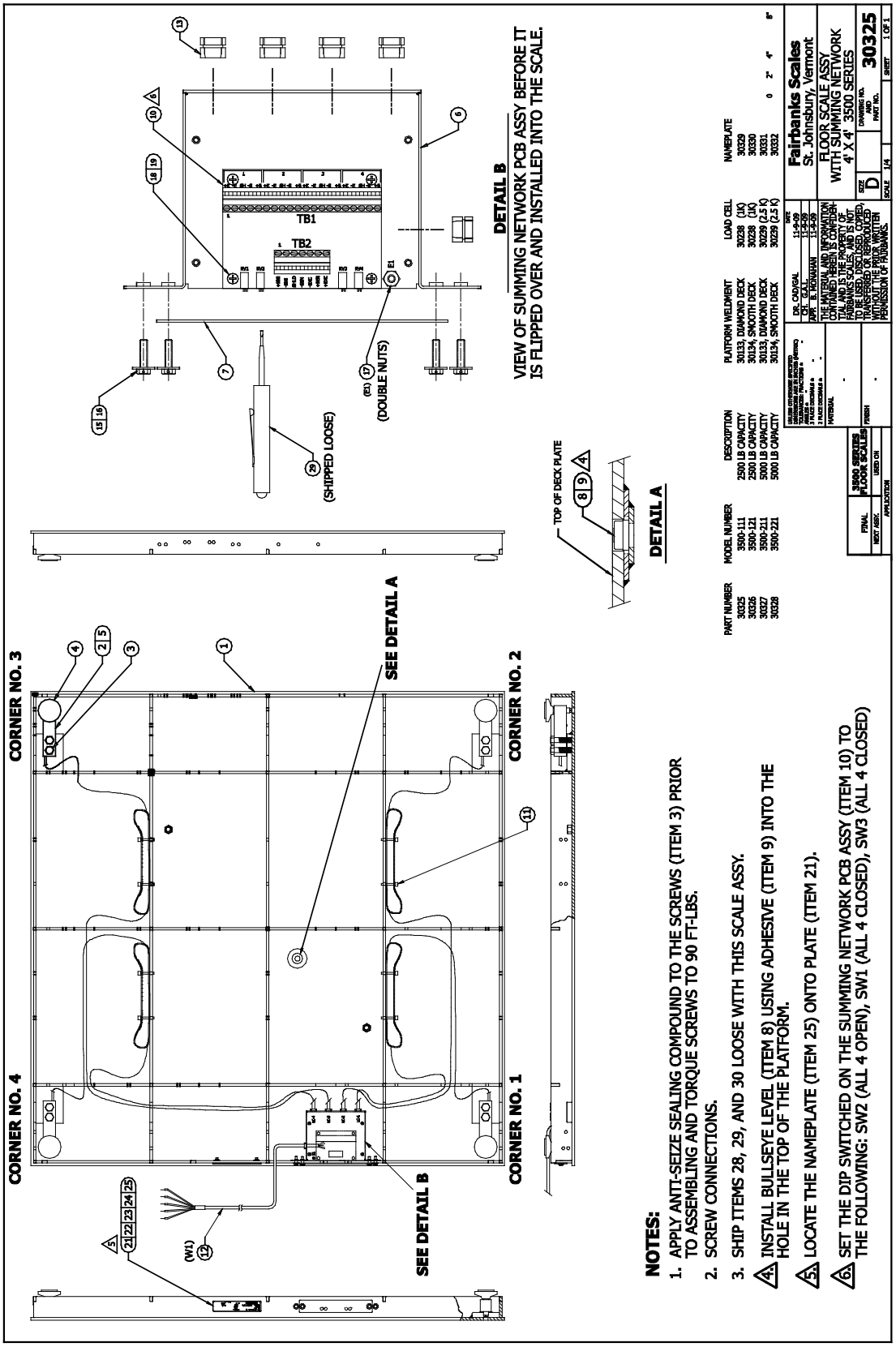
# Section 5: Parts

## 5.1. Parts List

| ITEM | PART NO. | DESCRIPTION | SCALE CAPACITIES |
|---|---|---|---|
| **1** | SEE APPENDIX II | PLATFORM WELDMENT | SEE APPENDIX II |
| **2** | SEE APPENDIX I | LOAD CELL | SEE APPENDIX I |
| **3** | 54502 | SCREW, CAP, HEX HD .50-20 X 1.75 | ALL |
| **4** | 63913 | FOOT | ALL |
| **5** | 66754 | SPACER PLATE, LOAD CELL SST | ALL |
| **6** | 30139 | BOX, JUNCTION | ALL |
| **7** | 30249 | PLATE, COVER | ALL |
| **8** | 11039 | BULLSEYE LEVEL | ALL |
| **9** | 15389 | ADHESIVE | ALL |
| **11** | 17814 | TIE, WIRE | ALL |
| **12** | 12838 | CABLE ASSY (30 FT. LONG) | ALL |
| **13** | 11020 | BUSHING, STRAIN RELIEF | ALL |
| **14** | -- | | ALL |
| **15** | 14828 | SCREW, SEALING SST 10-32 X .75 | |
| **16** | 11119 | WASHER, PLAIN, FLAT SST NO. 10 | ALL |
| **21** | 30251 | PLATE, NAMEPLATE | |
| **22** | 10106 | NUT, HEX 10-32 | ALL |
| **23** | 10311 | WASHER, PLAIN FLAT NO. 10 | |
| **24** | 11926 | ADHESIVE (PERMANENT TYPE) | ALL |
| **25** | SEE APPENDIX | NAMEPLATE | SEE APPENDIX |
| **28** | 12189 | SEAL WIRE | ALL |
| **29** | 28498 | SCREWDRIVER | |
| **30** | 51233 | MANUAL CD (26461) | ALL |

***See Appendix I for Load Cell wiring information.***
****** Product numbers 30155, 30156, 30215 and 30216 are not equipped with a summing network pcb..***

# 5.2. Parts Diagram



# 5.3. Accessories

## 5.3.1. Ramps and Bumper Guards

| SIZE | CAPACITY | RAMP | BUMPER GUARD |
|---|---|---|---|
| **4' x 30"** | 2,500 lbs | 30256 safety tread | 30639 |
| **4' x 30"** | 2,500 lbs | 30257 smooth tread | 30639 |
| **4' x 30"** | 5,000 lbs | 30256 safety tread | 30639 |
| **4' x 30"** | 5,000 lbs | 30257 smooth tread | 30639 |

## 5.3.2. Bolt-down Plates, Eyebolts and Hole Plugs

| SIZE | CAPACITY | BOLT-DOWN PLATES | EYEBOLTS | EYEBOLT PLUG |
|---|---|---|---|---|
| **ALL** | ALL | 63777 (Set of 4) | 70895 (2) | 70896 (2) |
| | | 63779 (Set of 2) | | |

# Appendix I: Load Cells

*Due to product obsolescence, the Yellow Jacket load cells have been updated to a different load cell manufacturer; however, the load cells are interchangeable with the original and replacement load cells.*

## *Original Load Cells*

| ITEM | PART NO. | DESCRIPTION | SCALE CAPACITY |
|---|---|---|---|
| **2** | **30238** | 1K lb Capacity Load Cell<br>350 Ohm, 3 mV/V, Plated Tool Steel | 2.5k |
| **2** | **30239** | 2.5K lb Capacity Load Cell<br>350 Ohm, 3 mV/V, Plated Tool Steel | 5k |

## *Replacement Load Cells*

| ITEM | PART NO. | DESCRIPTION | SCALE CAPACITY |
|---|---|---|---|
| **2** | **58925** | 1K lb Capacity Load Cell<br>350 Ohm, 3 mV/V, Plated Tool Steel | 2.5k |
| **2** | **12896** | 2.5K lb Capacity Load Cell<br>350 Ohm, 3 mV/V, Plated Tool Steel | 5k |

| WIRE COLOR | FUNCTION |
|---|---|
| **Black** | (–) Excitation |
| **Red** | (+) Excitation |
| **Yellow** | Shield |
| **Green** | (+) Signal |
| **White** | (–)Signal |

# Appendix II: Specifications

| PRODUCT NO. | SIZE | CAPACITY | PLATFORM WELDMENT | DECK |
|---|---|---|---|---|
| **30325** | **4' x 4'** | 2,500 lbs | 30133 | Diamond |
| **30326** | **4' x 4'** | 2,500 lbs | 30134 | Smooth |
| **30327** | **4' x 4'** | 5,000 lbs | 30133 | Diamond |
| **30328** | **4' x 4'** | 5,000 lbs | 30134 | Smooth |

| Device | Approvals |
|---|---|
| **Platform** | **NTEP CC# 10-008** |
| **Load Cell (Original)** | **NTEP CC# 06-079, Factory Mutual** |
| **Load Cell (Replacement)** | **NTEP CC# 95-172, Factory Mutual** |

# Yellow Jacket MS Floor Scale

## Installation Manual
## Document 51233

Manufactured by Fairbanks Scales Inc.

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