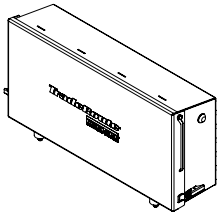
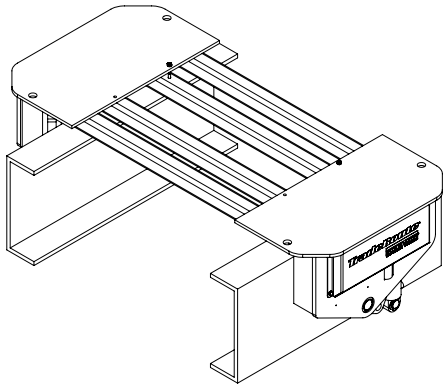
TradeRoute™

HL Series
Version 1.02

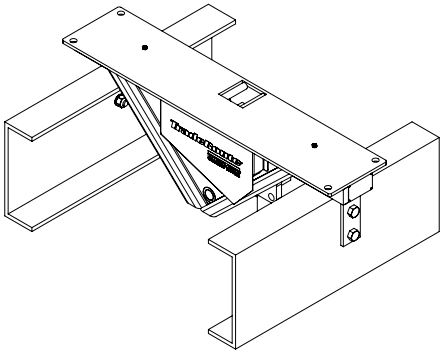
Operation Manual



Electronic Weigh Center



Double Assembly



Single Assembly

June 6, 2025

RICE LAKE WEIGHING SYSTEMS

PN 132554 Rev F

All information contained within this publication is, to the best of our knowledge, complete and accurate at the time of publication. Rice Lake Weighing Systems reserves the right to make changes to the technology, features, specifications and design of the equipment without notice.

The most current version of this publication, software, firmware and all other product updates can be found on our website:

www.ricelake.com

Revision History

This section tracks and describes manual revisions for awareness of major updates.

Revision	Date	Description
D	November 25, 2024	Established revision history
E	February 18, 2025	Updated images
F	June 6, 2025	Updated wiring diagrams

Table i. Revision Letter History

Contents

Rice Lake continually offers web-based video training on a growing selection of product-related topics at no cost. Visit www.ricelake.com/webinars

1.0 Introduction

TradeRoute is manufactured with top quality components and is engineered using the latest technology to provide exceptional operating features and reliability to last for years to come.

Please read this manual completely before attempting to use the system. Although the onboard system has been designed for easy set up and use, a thorough understanding of this manual will ensure that the maximum benefit is received from the system.

TradeRoute can be used to turn almost any truck or trailer into a weighing unit. This manual deals specifically with the operation of TradeRoute. However, the installation and operation of the onboard system for other applications is very similar.

Manuals and additional resources are available on the Rice Lake Weighing Systems website at **www.ricelake.com**

Warranty information can be found on the website at **www.ricelake.com/warranties**

Notes

Size / Model # _____

Serial # _____

Date Purchased _____

Unit ID # _____

1.1 Safety

Safety Definitions:

***DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.*

***WARNING:** Indicates a potentially hazardous situation that, if not avoided could result in serious injury or death. Includes hazards that are exposed when guards are removed.*

***CAUTION:** Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.*

***IMPORTANT:** Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.*

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

WARNING

Failure to heed may result in serious injury or death.

Do not allow minors (children) or inexperienced persons to operate this unit.

Do not operate without all shields and guards in place.

Do not jump on the scale.

Do not use for purposes other than weight taking.

Do not place fingers into slots or possible pinch points.

Do not place hands or any body part underneath the scale at any time. The scale could be lowered at any time, crushing body parts.

Do not use any load bearing component that is worn beyond 5% of the original dimension.

Do not exceed the rated load limit of the unit.

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

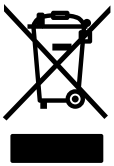
Before opening the unit, ensure the power cord is disconnected from the outlet.

Keep hands, feet and loose clothing away from moving parts.

Some procedures described in this manual require work inside the indicator enclosure. These procedures are to be performed by qualified service personnel only.

Always obey the standards and regulations placed on the transportation and handling of the product you are delivering for your jurisdiction.

1.2 Disposal



Product Disposal

The product must be brought to appropriate separate waste collection centers at the end of its life cycle.

Proper separate collection to recycle the product helps prevent possible negative effects on the environment and to health, and promotes the recycling of the materials. Users who dispose of the product illegally shall face administrative sanctions as provided by law.

Battery Disposal

Dispose of batteries at appropriate waste collection centers at the end of their life cycle in accordance with local laws and regulations. Batteries and rechargeable batteries may contain harmful substances that should not be disposed of in household waste. Batteries may contain harmful substances including but not limited to: cadmium (Cd), lithium (Li), mercury (Hg) or lead (Pb). Users who dispose of batteries illegally shall face administrative sanctions as provided by law.

WARNING: Risk of fire and explosion. Do not burn, crush, disassemble or short-circuit lithium batteries.

1.3 FCC Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

1.4 Overview

IMPORTANT: Do not place any tools under the scale. When lowered, the scale could be damaged.
Do not overload the scale system. This can cause damage to the scale and the vehicle. Always obey the weight restrictions placed on the vehicle and roads.

1.4.1 Electronic Weigh Center

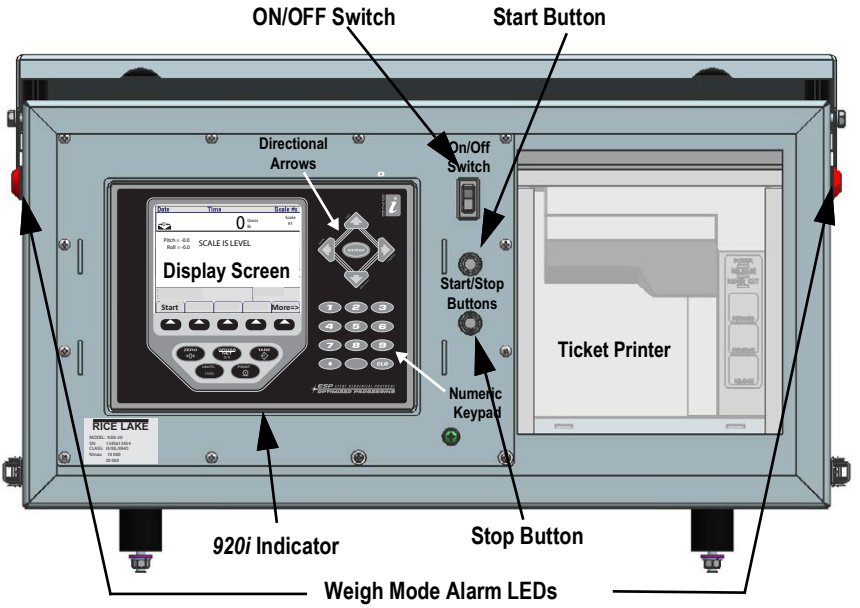


Figure 1-1. Electronic Weigh Center

The electronic weigh center houses the *920i*® indicator and ticket printer. Figure 1-1. shows the layout of the control box. Figure 1-2 shows a close-up of the *920i* indicator.

The LEDs on the outside of the control box flash when the unit is in weigh mode.

IMPORTANT: Before transporting ensure the LEDs are NOT flashing.

Throughout this section, the user will be asked to press the start or stop buttons, enter keystrokes into the indicator or read the display.

A description of the important keys and buttons are shown on the following pages.

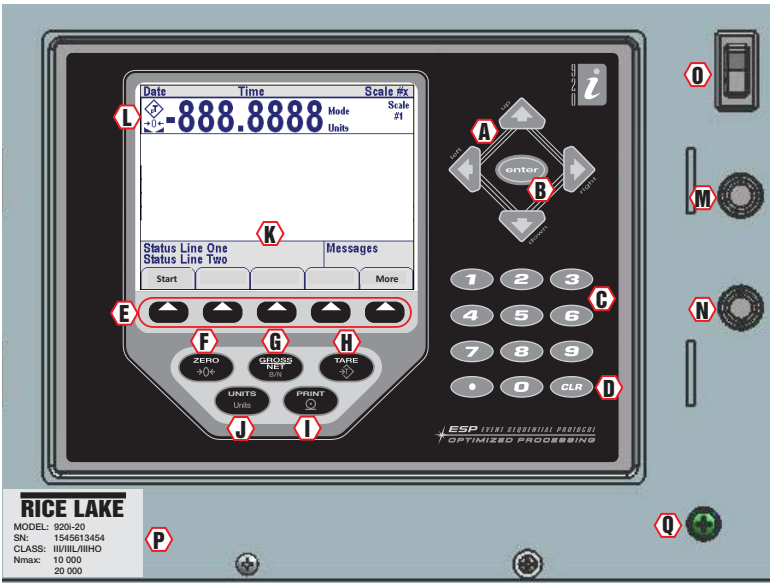


Figure 1-2. 920i Indicator

Item	Key/Display	Description
A	Directional Arrows	Moves cursor to needed area and update values.
B	Enter	Enters data put in from keypad.
C	Keypad	Allows input of numbers and text.
D	Clear Key	Clears last entry from keypad.
E	Softkeys	See Section 2.2.
F	Zero Key	Zeroes the scale.
G	Gross/Net Key	Toggles between gross and net when tare is present.
H	Tare Key	Non-functional
I	Print Key	Print summary report (if reports are enabled).
J	Units	Non-Functional
K	Display Area	Data input field and messages.
L	pT	Preset Tare indication.
	→0←	Center of zero indication.
	◣◢	Standstill indication, no motion.
M	Start Button	Begins weighing transaction; prints ticket header.
N	End Button	Ends weighing transaction; prints ticket details.
O	Power Switch	Turns electronic weigh center on or off.

Item	Key/Display	Description
P	SN Label	Contains serial number and other important information about scale.
Q	Setup Switch	Remove screw to access the configuration switch for calibration and seal for weights and measures approval.

1.4.2 Weigh Mode Alarms

Trade *Route* is equipped with an LED alarm to alert the operator when the scale is in the weigh position. When in weighing mode, the LEDs will flash to indicate the load cells are engaged, and the operator should lower the weigh modules to the transport mode prior to transporting the scale. The alarm LEDs are located on the side of the control box on trailer mounted units. When the scale is lowered into the transport position the software automatically turns the alarm LEDs off.

An optional in-cab alarm LED with 35 foot cable that can be mounted in the cab is available from Rice Lake Weighing Systems, PN 131811.

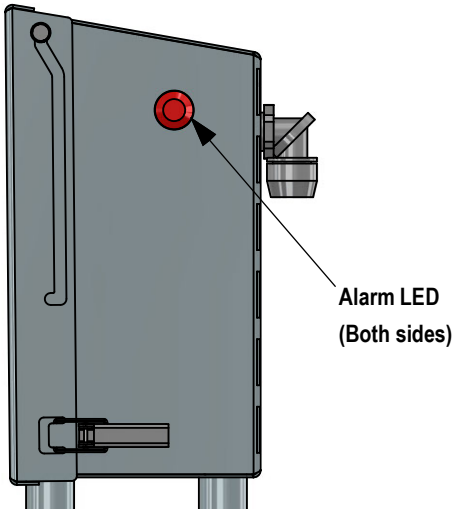


Figure 1-3. Alarm LED Location on the Electronic Weigh Center

2.0 Setup

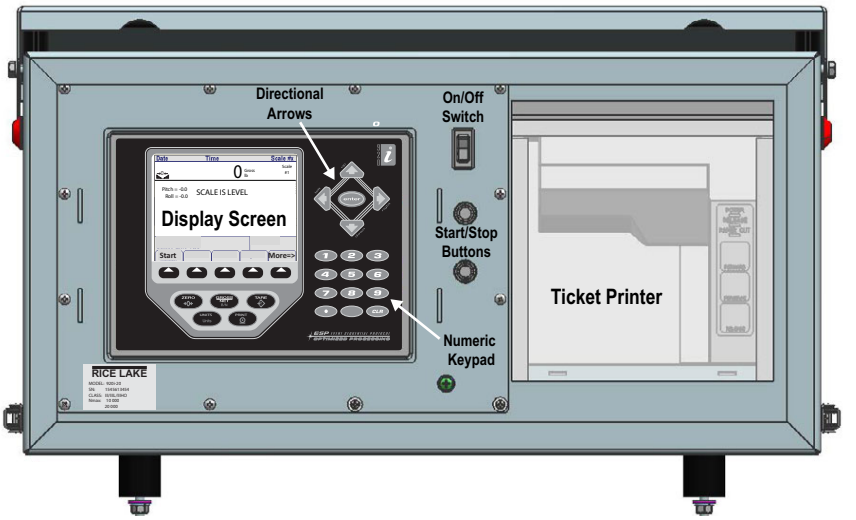


Figure 2-1. Electronic Weigh Center

NOTE: The electronic weigh center should be given at least 15 minutes to warm up in cold weather before using.

2.1 Menu Layouts

2.1.1 Start Menu

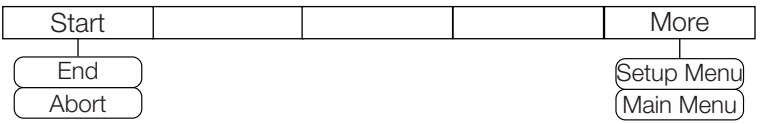


Figure 2-2. Softkey - Start Menu

Softkey	Options	Description
Start		Press to begin weighing.
	End	Ends weighing cycle and returns to main menu.
	Abort	Cancels weighing cycle and returns to main menu.
More		Forwards to setup menu.
	Setup Menu	See Setup Menu, Section 2.1.2.
	Main Menu	Returns display to main menu.

NOTE: Start softkey will not allow weighing in the transport mode.

2.1.2 Setup Menu

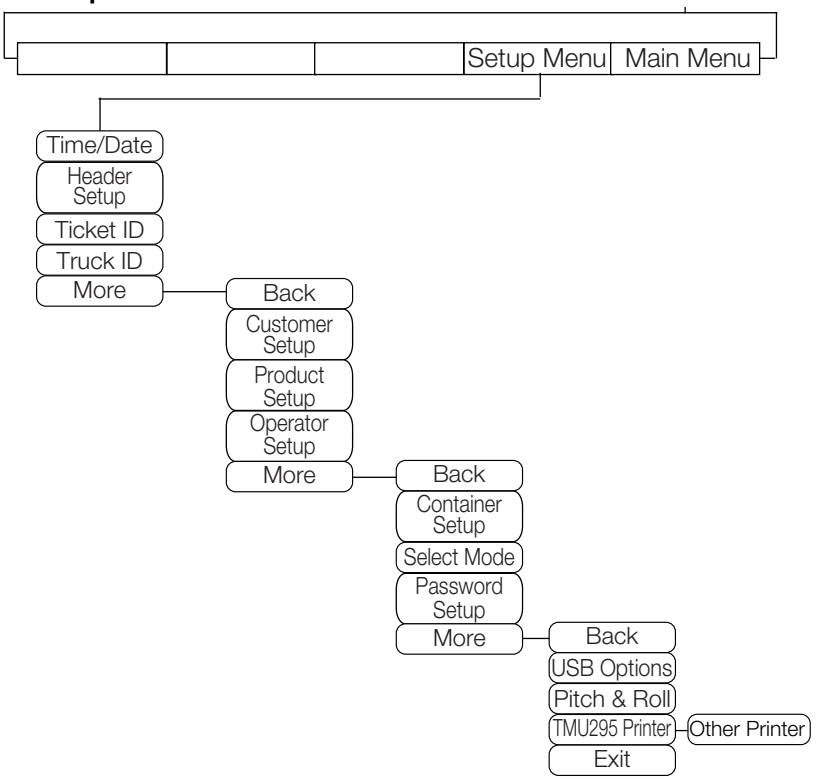


Figure 2-3. Setup Menu Layout

Softkey	Options	Description
Time and Date Section 2.2.1	00:00am/pm 00/00/0000	Sets the system time and date.
	Cancel	Returns to setup menu without saving changes.
Header Setup Section 2.2.3	Header 1-4	Sets up headers that print to ticket.
	Exit	Returns display to previous menu.
Ticket ID Section 2.2.4	ON/OFF	Prints “Ticket ID field” when ON. Increments by one number.
	Current Ticket	Use keypad to enter a starting ticket number.
	Exit	Returns display to previous menu.

Softkey	Options	Description
Truck ID Section 2.2.5	ON/OFF	Prints “Truck ID field” when ON.
	Set Current	Enter the truck ID that the weighing system is currently installed on, up to 25 characters.
	Exit	Returns display to previous menu.
Customer Setup Section 2.2.6	ON/OFF	Displays and prints “Customer ID field” when ON.
	New	Allows the supervisor to add a new customer, up to 25 characters.
	Delete	Database of saved customer IDs will prompt selection of ID to delete.
	Exit	Returns display to previous menu.
Product Setup Section 2.2.7	ON/OFF	Displays and prints “Product ID field” when ON.
	New	Allows the supervisor to add a new product.
	Delete	Database of saved product IDs will prompt selection of ID to delete.
	Exit	Returns display to previous menu.
Operator Setup Section 2.2.8	ON/OFF	Displays and prints “Operator ID field” when ON.
	New	Allows the supervisor to add a new operator, up to 25 characters.
	Delete	Database of saved operator IDs will prompt selection of ID to delete.
	Exit	Returns display to previous menu.
Container Setup Section 2.2.9	ON/OFF	Displays and prints “Container ID field” when ON.
	New/Edit	Allows the supervisor to add/edit container and tare weight.
	Delete	Database of saved operator IDs will prompt selection of ID to delete.
	Exit	Returns display to previous menu.
Select Mode Section 2.2.10	Program or Weighing Mode that scale will weigh in.	
	Single	Select when weighing one product at a time
	Batch	Select when more than one product will be weighed per load.
	Pickup Tare	Allows a tare to be set prior to weighing.
	Target Option	Used with Single Mode; allow for a target amount to be set when weighing.
Password Setup Section 2.2.11	Select a password for setup menu.	
	Home	Places cursor at the beginning of the line of digits.
	Cancel	Returns to previous menu without saving changes.
	End	Places cursor at the end of the line of digits.
USB	Only operates with USB device installed.	
	Upload/ Download	Standard USB functionality
	Contrast	Change the screen contrast
	Clear Transactions	Clears the transaction database
	Exit	Returns to previous menu
Pitch & Roll	For factory use only.	

Softkey	Options	Description
TM-U295 Printer	TM-U295 Other Printer	TM-U295 includes the release commands Other printer includes 5<CR><LF> instead of release commands
Back		Returns to previous screen.
More		Advances to next screen.
Exit		Returns to main menu.

2.1.3 Printed Tickets

Trade *Route* can be set up to print the information below on each ticket using the Epson® TM-U295 printer. Configuration of the ticket is performed in the setup menu.

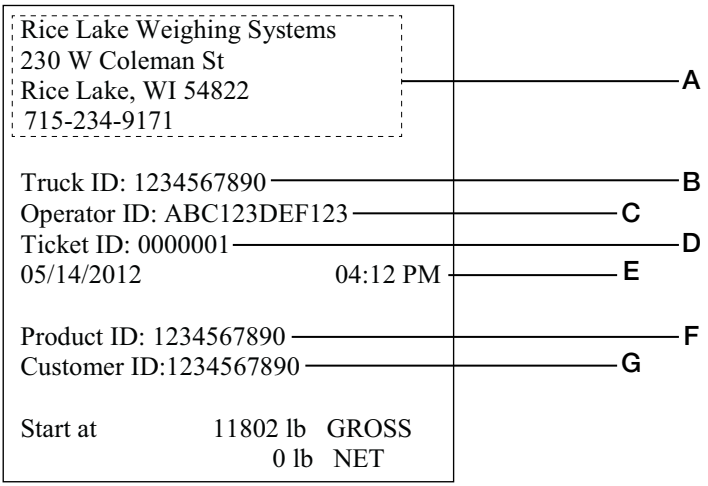


Figure 2-4. Ticket Specifications

A – If turned on in the setup menu, header 1, 2, 3 and 4 information.

B – If turned on in the setup menu, truck ID.

C – If turned on in the setup menu, operator ID.

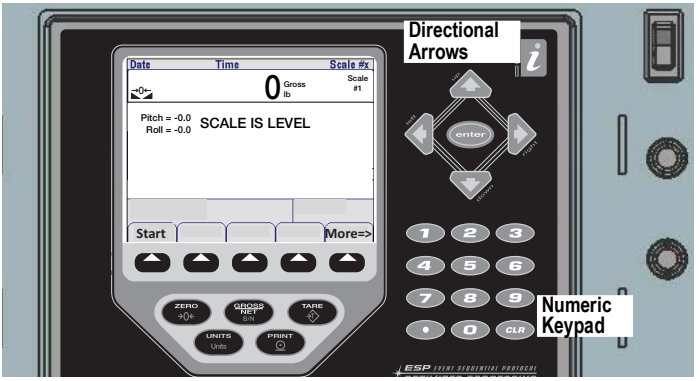
D – If turned on in the setup menu, sequential ticket number.

E – Time and date always print.

F – If turned on in the setup menu, product ID.

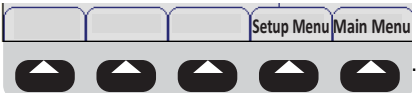
G – If turned on in the setup menu, customer ID.

2.2 Setup Menu Options



1. Startup Screen
2. Turn electronic weigh center on by moving the ON/OFF switch to the ON position (see 1.).
3. When the home screen appears, press 

.

   Display shows 

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4. Press Setup Menu. A list of options will be available.

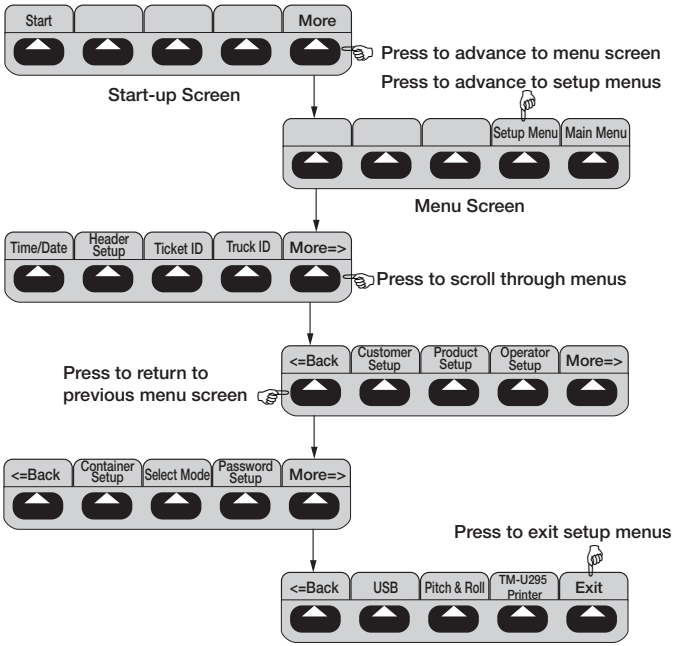


Figure 2-5. Setup Menu Options

2.2.1 Date and Time

The *920i* has a built-in time and date clock that automatically adjusts for leap years. The real time clock will run even if power is removed from the indicator. There is a battery inside the indicator that will keep the clock running continuously while there is no power to the indicator.

Setting Time/Date

1. Press Time/Date.
2. Use the directional arrows to enter current time and date.
3. Press enter to return to setup menu.
4. Press More=> until Exit is displayed.
5. Press Exit to return to main menu.

NOTE: Press Cancel to exit without saving any changes.

2.2.2 Entering Letters and Symbols

1. Press the up directional arrow to enter the alphabetical display. There will be a cursor highlighting a symbol.
2. Using directional arrows, move the cursor to select letters and symbols. Press enter to place letter/symbol into header line.

NOTE: Numbers can be added at the same time using the numeric keypad.

Pressing CLR will clear the letter/number before the cursor; to move the cursor use left/right directional arrows.

3. When header line is complete, arrow down until cursor is in header line and press enter to save information.

Letters/Symbols

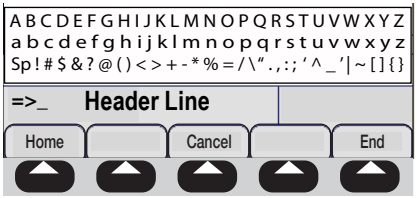


Figure 2-6. Enter Header Information

NOTE: Pressing Home will place cursor at the beginning of the header line.

Pressing End will place cursor at the end of the header line.

Pressing Cancel will exit to the previous menu without saving.

2.2.3 Header Setup

Up to four headers can be added to your printed ticket. Headers typically are used for customer name, address, city/state and zip code, and phone number

1. Press Setup Headers. Display will show Header One | Header Two | Header Three | Header Four | Exit.
2. Press desired header softkey and enter information (see Section 2.2.2).
3. Repeat for each header line that requires information.
4. When all rows are done, press Exit to return to setup menu.

2.2.4 Ticket ID

When printing a ticket, a sequential ticket ID number can be assigned.

1. Press Ticket Id. Display will show 

- To turn *Ticket ID* On/Off, press On/Off.
- To enter a *Ticket ID*, press Current Ticket and enter information (see Section 2.2.2).

2. Press Exit to return to setup menu.

2.2.5 Truck ID

A truck ID number can be assigned and printed on each ticket.

1. Press Truck Id. Display will show 

- To turn *Truck ID* On/Off, press On/Off.
- To set up a *Truck ID*, press Set Current and enter information (see Section 2.2.2).

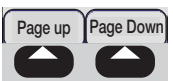
2. Press Exit to return to setup menu.

2.2.6 Customer Setup

With the customer database turned on, the *920i* allows for the selection of a customer name or number (up to 25 alphanumeric characters) during a weighing transaction. Up to 50 customers can be stored in the standard electronic weigh center.

1. Press Customer Setup. Display will show 

- To turn *Customer* On/Off, press On/Off.
- To enter a *Customer*, press New and enter information (see Section 2.2.2).
- To delete a *Customer*, press Delete. A list of current customers will display. Use the up/down directional arrows to select the customer to be deleted and press enter. Press Exit to return to the previous menu.

NOTE: Use 

to display other pages if required.

2. Press Exit to return to setup menu.

2.2.7 Product Setup

With the product ID database turned on, the *920i* allows for the selection of a product name or number (up to 25 alphanumeric characters) during a weighing transaction. Up to 50 products can be stored in the standard electronic weigh center.

1. Press Setup Products. Display will show On/Off | | New | Delete | Exit.

- To turn *Product* On/Off, press On/Off.
- To enter a *Product*, press New and enter information (see Section 2.2.2).
- To delete a *Product* press Delete. A list of current customers will display. Use the up/down directional arrows to select the customer to be deleted and press enter. Press Exit to return to the previous menu.

NOTE: Use Page up | Page Down ***to display other pages if required.***

2. Press Exit to return to setup menu.

2.2.8 Operator Setup

With the operator database turned on, the *920i* allows for the selection of an operator name or number (up to 25 alphanumeric characters) during a weighing transaction. Up to 50 operators can be stored in the standard electronic weigh center.

1. Press Operator Setup. Display will show On/Off | | New | Delete | Exit.

- To turn *Operator* On/Off, press On/Off.
- To enter an *Operator,* press New and enter information (see Section 2.2.2).
- To delete an *Operator,* press Delete. A list of current operators will display. Use the up/down directional arrows to select the operator to be deleted and press enter. Press Exit to return to previous menu.

NOTE: Use Page up Page Down ***to display other the pages if required.***

2. Press Exit to return to setup menu.

2.2.9 Container Setup

With the container database turned on and used in the pick up tare mode, the *920i* allows for the selection of the container name or number with an associated tare weight value (up to 25 alphanumeric characters) during a weighing transaction. Up to 50 containers can be stored in the standard electronic weigh center.

NOTE: Only valid in Pickup Tare Mode.

1. Press Container Setup. Display will show On/Off New/Edit Delete Exit.

- To turn *Containers* On/Off, press On/Off.
- To enter a *Container,* press New and enter container information (see Section 2.2.2). After pressing enter to accept, the display will ask for a container weight. Using the numerical keypad, enter the weight and press enter.
- To delete a *Container,* press Delete. A list of current containers will display. Use the up/down directional arrows to select the container to be deleted and press enter. Press Exit to return to the previous menu.

NOTE: Use Page up Page Down ***to display other the pages if required.***

2. Press Exit to return to setup menu.

2.2.10 Select Mode

Trade *Route* provides four programs to choose from as the selected mode.

- **Single** – Standard weighing, pick-up or deliver a single product and print weight ticket.
- **Batch** – Multi-product weighing, pick-up or deliver multiple products and print weight ticket.
- **Pickup Tare** – Container pick up, using keyboard or stored tare weights to pick up "skip" type containers and print weight ticket of container contents.
- **Target Option** – Single setpoint weighing, identify single target weight for delivery of

product. The relay sends a signal to turn off the pump when the target weight has been achieved.

1. Press 

. Display will show 

.

NOTE: Target Option is only available in Single Mode.

2. Press softkey for desired mode. Display will show:
3. Run Mode: Mode Selected
4. Press 

to return to setup menu.

2.2.11 Password Setup

The password setup allows you to create a unique password to enter into the setup menu.

1. Press 

. To enter a password, enter information (see Section 2.2.2).

3.0 Operation

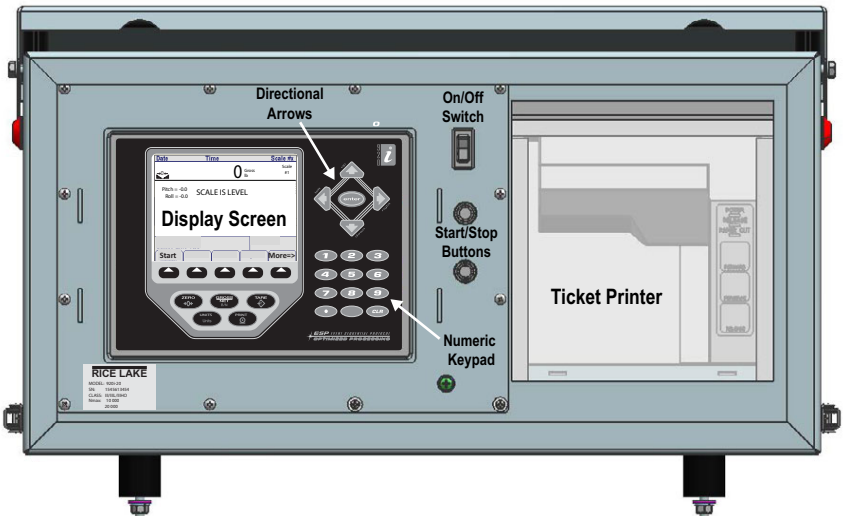


Figure 3-1. Electronic Weigh Center

NOTE: The electronic weigh center should be given at least 15 minutes to warm up in cold weather before using.

NOTE: When the truck is going to be shut down, power down the control box prior to turning off the truck.

IMPORTANT: Raise the platform prior to turning the system on. The indicator may reset itself if turned on prior to raising the platform and using hydraulics.

Turn off the system prior to lowering the platform. The indicator may reset itself if turned on prior to raising the platform

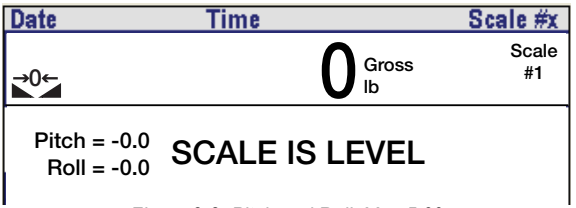


Figure 3-2. Pitch and Roll, Max 5.9°

1. Park truck on a level surface.
2. Raise scale platform into weighing position. LEDs on each side of the electronic weigh center should flash when in weighing position.
3. Turn the electronic weigh center on by pressing power switch up (see Figure 3-1.). See following sections for weighing modes.

3.1 Single Weigh Mode

Standard weighing – pick up or deliver a single product and print weight ticket.

1. Select single weigh mode. See Section 2.2.10.
2. Enter product ID and customer ID if being used.

NOTE: Operator can be changed at any time. See Section 2.2.8.

3. Insert ticket into the ticket printer.
4. Press Start. The *920i* will print:

```
Rice Lake Weighing Systems
230 W Coleman St
Rice Lake, WI 54822
715- 234-9171

Truck ID: 1234567890
Operator ID: ABC123DEF123
Ticket ID: 0000001
05/14/2012                    04:12 PM

Product ID: 1234567890
Customer ID:1234567890

Start at          11802 lb  GROSS
                      0 lb  NET
```

Figure 3-3. Initial Ticket Printout

5. The *920i* will go into net mode automatically when the start button is pressed. The *920i* display will show “0” weight with the NET mode illuminated.
6. Unload or load the amount as desired.

NOTE: The delivery hoses, chutes, conveyors, etc. should be in the storage position before pushing the end button.

7. When the displayed weight has stabilized, press End. The printer will print out the amount unloaded or loaded.

```
Rice Lake Weighing Systems
230 W Coleman St
Rice Lake, WI 54822
715- 234-9171

Truck ID: 1234567890
Operator ID: ABC123DEF123
Ticket ID: 0000001
05/14/2012                  04:12 PM

Product ID: 1234567890
Customer ID:1234567890

Start at          11802 lb  GROSS
                      0 lb  NET

Amount Unloaded

                   5670 lb
```

```
Rice Lake Weighing Systems
230 W Coleman St
Rice Lake, WI 54822
715- 234-9171

Truck ID: 1234567890
Operator ID: ABC123DEF123
Ticket ID: 0000001
05/14/2012                  04:12 PM

Product ID: 1234567890
Customer ID:1234567890

Start at          11802 lb  GROSS
                      0 lb  NET

Amount Loaded

                   5670 lb
```

Figure 3-4. Unloaded and Loaded Ticket Printouts

8. Lower the platform to disengage the scale. Visually check to see that the scale is down completely. The cab alarm LED will turn off when the scale is in transport mode.

3.1.1 Target Option

Single setpoint weighing – identify single target weight for delivery of product. The relay sends a signal to turn off the pump when the target weight has been achieved.

NOTE: Only available in the single weigh mode.

When selected, a target amount can be set to be loaded/unloaded.

1. Select single weigh mode. See Section 2.2.10.
2. Enter product ID and customer ID if being used.
3. Insert ticket into the ticket printer.
4. When Start is pressed, indicator will prompt for a target amount to be entered.
5. Using the numerical keypad, enter required weight and press enter to return to weigh screen.
6. Unload or load the target amount.
7. Display will prompt Press [End] Softkey. Press End to complete ticket.

3.2 Batch Weighing Mode

Multi-product weighing – pick up or deliver multiple products and print weight ticket.

NOTE: Requires product IDs for product being loaded or unloaded.

1. Select product ID and customer ID, if being used.
2. Insert ticket into the ticket printer.
3. Press Start. If no product ID has been selected the *920i* will prompt, Enter: No Product Selected.
4. The *920i* will then go into net weighing mode showing "0" weight.
5. Connect the delivery hoses. Unload or load the amount as desired. Then disconnect the hoses and place into storage.

NOTE: The delivery hoses, chutes, conveyors, etc. should be in the storage position before pushing the end button.

6. Stop loading or unloading. Return the delivery system to the storage position and wait for the weight to stabilize.
7. Press End. Indicator will ask: Do You Want To Do Another Product
8. Press Yes to enter a new product. The product ID field is cleared; if customer ID is selected it will remain stored.
9. Press Product and select the product to load.
10. To continue weighing, press Start.
11. Repeat steps 5-10 to load all required product.
12. When last product has been loaded/unloaded, press End.
13. When indicator prompts: Do You Want To Do Another Product, press No.

14. The *920i* will print the following and return to normal weigh mode, removing product ID and customer ID from memory.

```
Rice Lake Weighing Systems
230 W Coleman St
Rice Lake, WI 54822
715- 234-9171

Truck ID: 1234567890
Operator ID: ABC123DEF123
Ticket ID: 0000001

05/14/2012                  04:12 PM
Customer ID:1234567890

Product ID: XXXXXX          10000 LB
Product ID: YYYYYY          12000 LB
Product ID: ZZZZZZZ         15000 LB


Total Product:              37000 LB
```

Figure 3-5. Batch Ticket Printed

IMPORTANT: Steps must be followed exactly as shown in this manual.

3.3 Pickup Tare Mode

Container pick up – using keyboard or stored tare weights to pick up "skip" type containers and print weight ticket of container contents.

NOTE: If using a stored tare, the container function must be turned on prior to weighing product. See Section 2.2.9.

1. Select product ID and customer ID, if being used.
2. Insert ticket into the ticket printer.
3. Once the scale is level, enter a tare with one of the following methods:

- Keyboard tare – manually enter the tare value via numeric keypad and press TARE. Display will show a minus net weight.
- Stored tare – press Container and use the directional arrows to choose a stored tare value from the database. Press enter to return to weigh screen. Display will show container and a minus net weight.
- Net weight will display. To view Gross weight the Gross/Net key must be pressed.

4. Load the container.
5. Press Weigh or the start button.
6. The amount loaded will print out as net weight.

```
Rice Lake Weighing Systems
230 W Coleman St
Rice Lake, WI 54822
715- 234-9171

Truck ID: 1234567890
Operator ID: ABC123DEF123
Ticket ID: 0000001
05/14/2012                    04:12 PM

Product ID: 1234567890
Customer ID:1234567890
Tare: Keyboard or "Id #"

Start at          11802 lb  GROSS
                   5000 lb  TARE

Amount loaded

                   6802 lb
```

Figure 3-6. Ticket Printout with Tare - End

4.0 Maintenance

4.1 Weekly

- Check entire scale for buildup of debris. If any debris is found under the scale frame or around the load cells, remove it immediately.
- Visually check all external cables and conduit for damage. Check and ensure the load cell cables are free to move with the load cell.
- Check hydraulic cylinders and lines for leakage and ensure they will not prevent the scale from moving freely. If a cylinder or hose is leaking, replace it as soon as possible. A leaking cylinder may cause the scale to settle and give inaccurate readings during a transaction.
- Raise and lower the scale to ensure the up/down alarm is working properly.
- Check the lockdown bolt adjustment.
- The lockdown bolts should be adjusted so that the hydraulic cylinders are extended a minimum of 1/8″ to maximum of 1/4″ when the system is locked down. The load cells should also be loose in the lockdown position.
- To adjust the lockdowns, loosen the jam nut on the lockdown bolt. With the jam nut loose adjust the lockdown bolts so that the cylinders are extended between 1/8″ and 1/4″. Check the load cell and ensure it is loose. If unable to achieve an adjustment where the cylinder is slightly extended and the load cell is loose, contact the scale dealer.

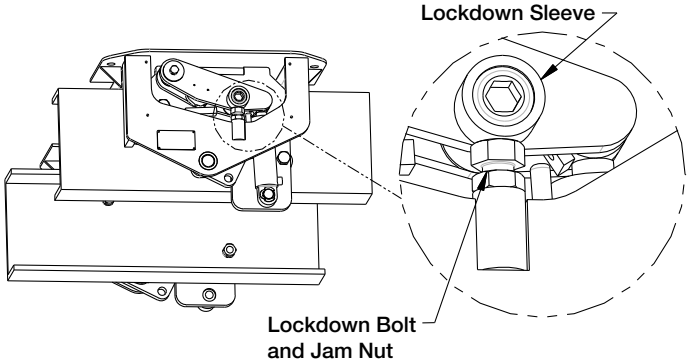


Figure 4-1. Adjust Lockdowns

4.2 Yearly

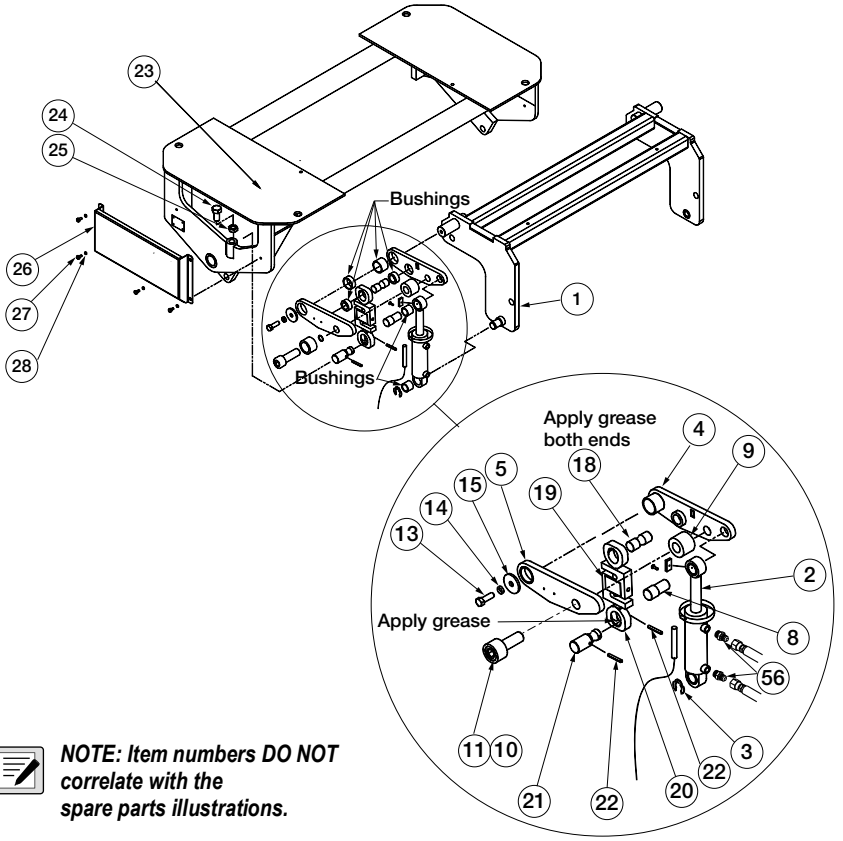
- Do all required weekly services checking all components of the system.
- Park the system on a slope (such as a steep approach), greater than seven degrees and raise the scale. Turn on the indicator and check to see if it shuts off in 10 seconds. If the indicator does not shut off, it may have a faulty tilt sensor. Consult a local scale dealer. This test must be done in all four directions: front low, rear low, right side low, and left side low.
- Disassemble each load cell location. Check all bushings for excessive wear and replace if

necessary. Grease the ends of the upper load cell pin and lower eyebolt when reassembling.

IMPORTANT: Use quality high-pressure grease.
Avoid bending or twisting the load cell wires.

4.3 Linkage Assembly/Disassembly

To perform service on any of the scale parts (e.g. load cell or bushings), the linkage assembly must be disassembled. The following procedure must be followed when disassembling any linkage.



NOTE: Item numbers DO NOT correlate with the spare parts illustrations.

Figure 4-2. Linkage Assembly/Disassembly (Double Cell Assembly Shown)

Tools required:

- 7/16″ wrench or socket
- 3/4″ wrench or socket
- 3/4″ hex allen wrench (ratchet preferred)

- 1/4″ roll pin punch
- Hammer
- Large flat head screwdriver
- 11/16″ wrench (required for hydraulics only)
- 5/8″ wrench (required for hydraulics only)

4.3.1 Disassembly Procedure

1. Remove load cell cover bolts (27) and lock washers (28) with 7/16″ wrench and remove load cell cover (26).
2. Remove retaining ring (3) from lower cylinder pin with flat-head screwdriver.
3. There are two roll pins (22) inserted through the lower load cell pin (21). Remove the roll pin at the end of the lower load cell pin that prevents the load cell assembly from jumping off the pin.
4. Loosen jam nut (25) on lockdown bolt (24) and turn lockdown bolt in with 3/4″ wrench.
5. Loosen socket-head cap screw (10, 11) with 3/4″ allen wrench.

NOTE: The cap screw and sleeve are pressed together and should not be separated. The sleeve will come out with cap screw.

6. Remove pivot-pin bolt (13), washer (15), and lock washer (14) with 3/4″ wrench.
7. Remove socket-head cap screw (10, 11) and lift arm spacer (9).
8. Remove outer lift arm (5).
9. Remove upper load cell pin (18) and load cell assembly (19 and 20).
10. Remove upper cylinder pin (8) and hydraulic cylinder (2).
11. Remove inner lift arm (4).
12. Remove lower load cell pin (21) only if required by removing the second roll pin (22) with roll pin punch and hammer.

NOTE: Do not remove any hydraulic hoses unless you have a qualified person to remove air from the system. The hydraulic lines do not need to be removed to disassemble the system.

13. Remove hydraulic fittings (56, 57) only if required with 11/16″ and 5/8″ wrenches.
14. Check all bushings for excess wear. Replace the bushings if necessary.
15. Bushings in the lift arms have been installed with Loctite®. The bushings may need to be heated to remove them.
16. Clean any Loctite that remains in the bushing locations.

4.3.2 Assembly Procedure

1. Install the new bushings into the lift arms using Loctite 603™. This product will retain the bushings and resist mild oil contamination.
2. Insert lower load cell pin (21) into lift plate (23).
3. Insert roll pin (22) to hold the pin in place with roll pin punch and hammer.

4. Assemble inner lift arm (4) onto pivot pin on base (1).
5. Assemble hydraulic cylinder onto lower cylinder pin on base (1).
6. Insert upper cylinder pin (8) through cylinder (2) into the inner lift arm (4).
7. Assemble load cell assembly (19 and 20) onto lower load cell pin (21).
8. Apply a thin film of grease onto ends of upper load cell pin (18).
9. Insert upper load cell pin (18) through upper eyebolt (20) into inner lift arm (4).
10. Assemble outer lift arm (5) loosely onto the three pins (pivot, upper load cell and upper cylinder).
11. Place lift arm spacer (9) between two lift arm plates and press outer lift arm fully onto the pins.
12. Insert cap screw (10, 11) and start threads – **do not tighten** – with 3/4″ allen wrench.
13. Insert pivot bolt (13), washer (15), and lock washer (14) into pivot pin and tighten with 3/4″ wrench.
14. Tighten cap screw (10, 11) with 3/4″ allen wrench.
15. Turn out the lockdown bolt (24) until cylinder is extended between 1/8″ and 1/4″ with 3/4″ wrench. Tighten the jam nut (25).
16. Insert roll pin (22) through the lower load cell pin (21) to prevent the load cell assembly from jumping off the pin with roll pin punch and hammer.
17. Insert retaining ring (3) on lower cylinder pin.
18. Assemble hydraulic fittings (56, 57) if required with 11/16″ and 5/8″ wrenches.
19. Attach load cell cover (26) with 1oad cell cover bolts (27) and lock washers (28) with 7/16″ wrench.

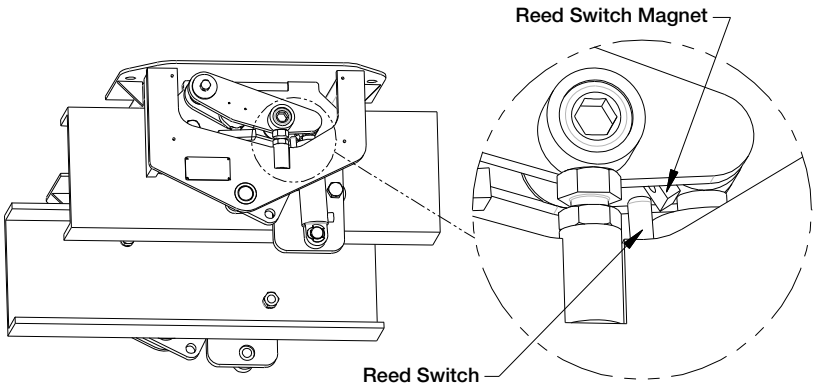


Figure 4-3. Reed Switch Location

5.0 Troubleshooting

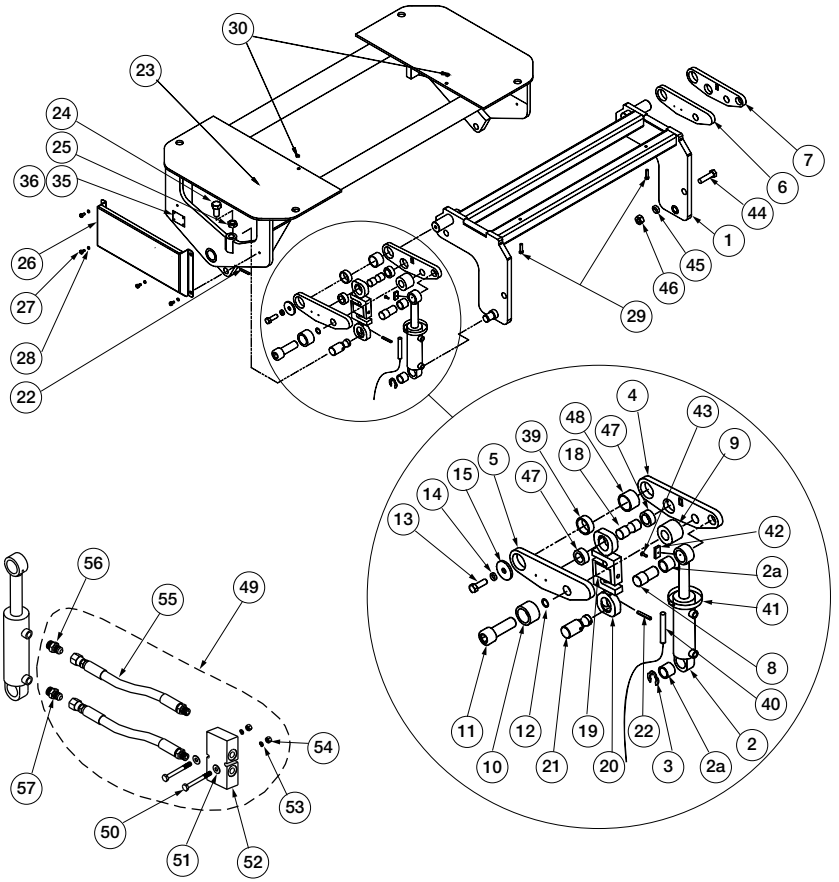
Symptom	Probable Cause	Action
The scale indicator will not power up.	Blown in-line fuse.	Replace in-line fuse, PN 126876. The fuse holder should be located near the battery or inside the cab.
	Truck voltage is less than 11 volts.	Repair faulty electrical system on truck. The panel requires at least 11 volts to operate properly.
Indicator turns off or resets in the middle of a transaction. OR End button will not function but start seems to work properly.	Low voltage to control panel. Indicator on, hydraulics in, use to raise body.	Check other electrical equipment that may be operating (air conditioning). The charging system on the vehicle may not be maintaining at least 11 volts.
The alarm LED stays on all the time.	The scale's up/down sensor may be damaged or not working.	Check that reed switch is oriented properly and not broken. (See Figure 4-3..) OR Make sure the magnet has not fallen off or been moved out of position. Scale up/down sensor PN127638
The system will not START, END or both.	Weight reading is not stable enough.	It may be too windy to get a stable weight. Check the motion light on the indicator. The system can only start and end when the light is out.
The weight reading on the indicator is unstable.	The circuit board in the control panel may be wet. If there is a junction box for the load cells on your system, check inside for moisture as well.	Dry any areas that are contaminated with moisture. Check for leaks and reseal.
	A load cell cable may be pinched or damaged.	Contact RLWS or a qualified dealer for support. Cutting the load cell cable will void the warranty. Special repair techniques are required.
The scale has a positive error when loading or a negative error when unloading.	Mechanical binding problem on scale.	Check all hydraulic hoses and conduit. They must be long and loose enough not to exert a force on the scale. Check all load cell covers to see that they are not bent or contacting the lift arm or cylinder.
The scale has a negative error when loading or a positive error when unloading.	Moisture is present somewhere in the electrical system.	Dry any areas that are contaminated with moisture. Check for leaks and reseal.

Symptom	Probable Cause	Action
Printer is not functioning – nothing is being printed at all.	If the release light on the printer is flashing. this could indicate a low voltage to the printer.	The system requires at least 11 volts to operate properly. Your truck may need to be running to supply enough power OR The truck may have a faulty electrical system.
	The system may have lost communication with the printer.	Check that the DIP switch settings are set properly (1 on, 2 off, 3 off, 4 off, 5 off, 6 off, 7 on, 8 on, 9 off, 10 off). Power down and power up the system and try again.
	The print head may be jammed with paper.	Remove the print head cover and ribbon. Check for bits of paper stuck in the paper feed mechanism.
	The print head may be packed with dirt from operating in dusty conditions.	Remove the print head cover and ribbon. Blow out with air. If the printer is very dirty it may require service by a qualified technician.
The printer is printing unrecognizable characters.	The printer DIP switch settings are incorrect.	Turn the printer over and check that the small switches are set as follows: 1 on, 2 off, 3 off, 4 off, 5 off, 6 off, 7 on, 8 on, 9 off, 10 off.
	The power supply on the truck is excessively noisy.	Contact Rice Lake Weighing Systems. An in-line power filter may be necessary.
The printing on the ticket is faint or hard to read.	The printer's ink ribbon may need to be replaced.	Replace ribbon, PN 29583.
	The printer head may be damaged.	Requires service by a qualified technician.

IMPORTANT: If you suspect there is a problem inside the electronic weigh center that requires the weights and measures seal to be broken, you must contact Rice Lake Weighing Systems prior to breaking the seal, or have a qualified scale dealer break the seal.

Breaking the seal may violate the weights and measures approval of the scale.

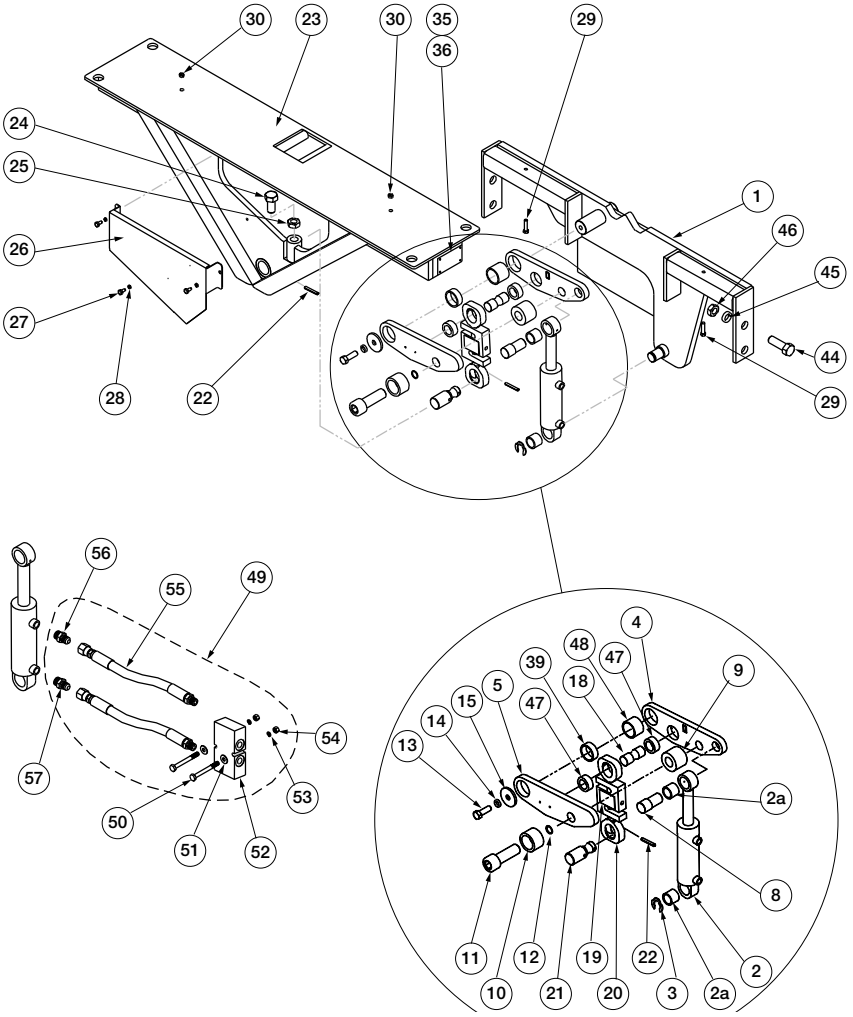
5.1 Double Assembly Repair Parts



Item	Part No.	Description	Qty
1	128592	Base Assy, Double Low	1
2	127183	Cylinder, Hydraulic 1.75 x 3.75	2
2a	126801	Bushing, Oil Lite 1-1/4 x 1 x 1	4
3	126942	Ring, Retaining External	2
4	127648	Lift Arm Assy, Low Profile	1
5	127649	Lift Arm Assy, Low Profile	1
6	127650	Lift Arm Assy, Low Profile	1
7	127651	Lift Arm Assy, Low Profile	1
8	127653	Pin, Upper Cylinder Low	2
9	127652	Spacer, Lift Arm Low	2
10	127662	Sleeve, Lift Arm Lockdown	2
11	127667	Screw Cap, 1-14UNSx3 Hex	2
12	126800	O-Ring,1 IN ID X 1-1/8 IN	2
13	14751	Bolt,1/2-13NCx1 Hex Head	2
14	15167	Washer,Lock 1/2 Regular	2
15	127663	Washer,Pivot Pin Low	2
18	127655	Pin, Upper Load Cell 15K	2
	127654	Pin, Upper Load Cell 10K	2
	128641	LC with eye bolts 15K	4
19	21412	Load Cell, SBM RL20001-T10	2
20	127643	Eyebolt, Machined 15K	4
	127673	LC with eye bolts 10K MAS	4
19	21444	Load Cell, SBM RL20000B	2
20	127163	Eyebolt, Machine 10K MAS	4
	128674	LC with eye bolts	4
19	21443	Load Cell, SBM RL20000B-5K	2
20	127163	Eyebolt, Machine 10K MAS	4
21	127657	Pin, Lower Load Cell 15K	2
	127656	Pin, Lower Load Cell 10K	2
22	126926	Pin,1 /4 x 2-1/4 Slotted 15K	4
	126965	Pin,1/4 x 1-3/4 Slotted 10K MAS	4
23	128609	Lift Plate, Double 15K	1
	128603	Lift Plate, Double 10K Low	1
24	126999	Screw, Cap 3/4-10 x 2 Hex	2
25	14686	Nut, Jam 3/4-10NC Hex	2
26	127664	Cell Cover Assy, Double	2
27	127007	Screw, Cap 1/4-20 x 1/2	8
28	15147	Washer, Lock 1/4 Regular	8
29	126925	Screw, Cap 1/4-20 x 2-3/4	2
30	14641	Nut,1/4-20NC Hex Steel	2

Item	Part No.	Description	Qty
35	16863	Label, Scale/Base	1
36	14905	Screw, Drive NO 4 x 3/8	2
39	126799	Bushing, Oil Lite 1.75" x 1.5" x 0.75"	1
40	127638	Sensor Assy, OBS Alarm	1
41	126840	Hose Clamp, No. 36 Band	1
42	127637	Kit, OBW Reed Switch	1
43	126980	Screw, Machine 10-32 x 1/2	1
44	126998	Screw, Cap 3/4-10 x 2-1/2	4
45	15181	Washer, Lock 3/4 Regular	4
46	126994	Nut, Hex 3/4-10 Grade 8	4
47	126804	Bushing, Oil Lite 1.5" x 1.25" x 0.5"	4
48	126802	Bushing, Oil Lite 1.75" x 1.5" x 2"	1
49	127603	Hardware Kit, Hydraulic	2
50	127031	Screw, Cap 1/4-20 x 2-1/4	2
51	81427	Washer, Flat 1/4 Steel	2
52	127083	Valve, Hydraulic Line Lock	1
53	15147	Washer, Lock 1/4 Regular	2
54	14641	Nut,1/4-20NC Hex Steel	2
55	127607	Hose Assy, Hydraulic Line	2
56	128242	Coupling, Hydraulic 6 MB	1
57	128286	Coupling, Hydraulic 1/32	1
	127638	Sensor Assy, OBS Magnetic Alarm	1
	127015	Cable Tie, 7.5" Black	4

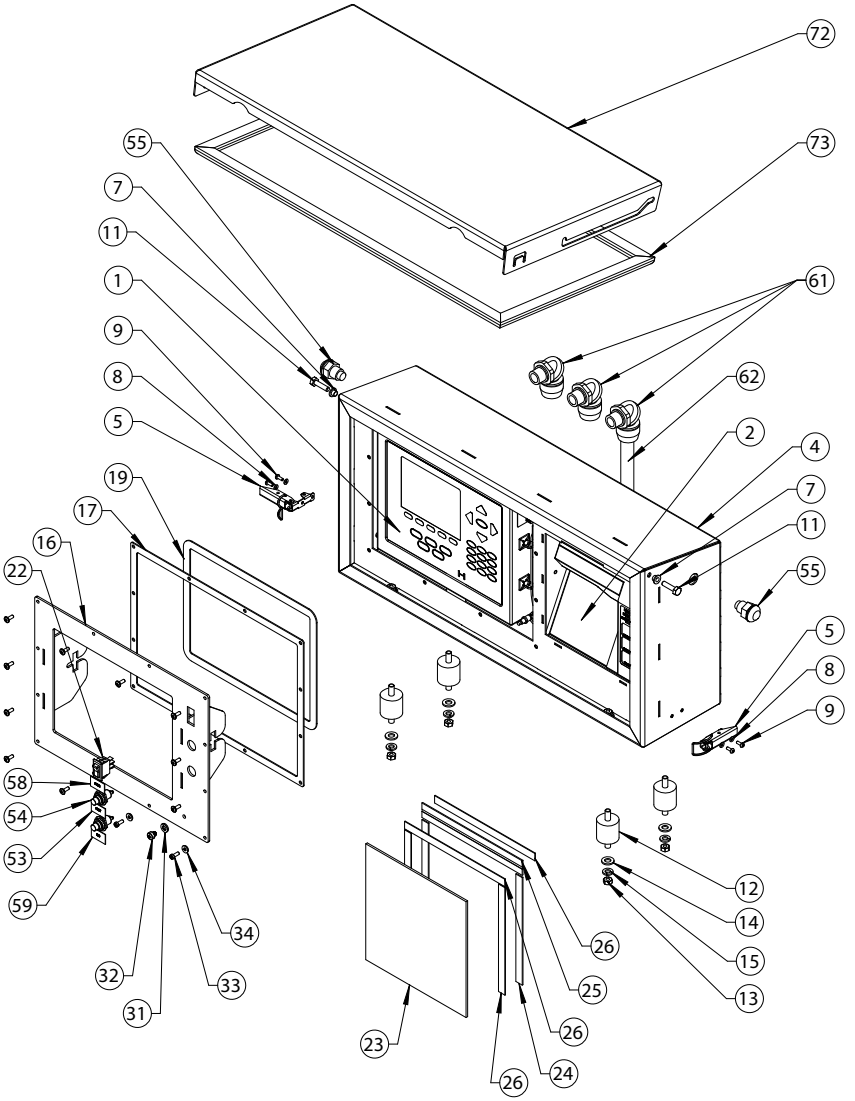
5.2 Single Assembly Repair Parts



Item	Part No.	Description	Qty
1	128659	Base Single Low Profile	1
2	127183	Cylinder, Hydraulic 1.75 x 3.75	2
2a	126801	Bushing, Oil Lite 1-1/4 x 1 x 1	4
3	126942	Ring, Retaining External	2
4	127648	Lift Arm Assy, Low Profile	1
5	127649	Lift Arm Assy, Low Profile	1
8	127653	Pin, Upper Cylinder Low	2
9	127652	Spacer, Lift Arm Low	2
10	127662	Sleeve, Lift Arm Lockdown	2
11	127667	Screw Cap, 1-14UNSx3 Hex	2
12	126800	O-Ring,1 IN ID X 1-1/8 IN	2
13	14751	Bolt,1/2-13NCx1 Hex Head	2
14	15167	Washer, Lock 1/2 Regular	2
15	127663	Washer, Pivot Pin Low	2
18	127655	Pin, Upper Load Cell 15K	2
	127654	Pin, Upper Load Cell 10K	2
		LC with eye bolts 15K	2
19	128969	Load Cell, S-Type 15K OIML	1
20	127643	Eyebolt, Machined 15K	2
		LC with eye bolts 10K MAS	2
19	21444	Load Cell, SBM RL20000B	1
20	127163	Eyebolt, Machine 10K MAS	2
		LC with Eye Bolts	2
19	21443	Load Cell, SBM RL20000B-5K	1
20	127163	Eyebolt, Machine 10K MAS	2
21	127657	Pin, Lower Load Cell 15K	1
	127656	Pin, Lower Load Cell 10K	1
22	126926	Pin,1/4 x 2-1/4 Slotted 15K	2
	126965	Pin,1/4 x 1-3/4 Slotted 10K MAS	2
23	128858	Lift Plate, Single 15K Low	1
	128660	Lift Plate, Single 10K Low	1
24	126999	Screw, Cap 3/4-10 x 2 Hex	1
25	14686	Nut, Jam 3/4-10NC Hex	1
26	128661	Cell Cover, Single	1
27	127007	Screw, Cap 1/4-20 x 1/2	3
28	15147	Washer, Lock 1/4 Regular	3
29	126925	Screw, Cap 1/4-20 x 2-3/4	2
30	126993	Nut,5/16-18NC Hex Steel	2
35	127066	Label, Scale/Base (OB10 & OB15)	1
	127067	Label, Serial Plate (OB5)	1
36	128136	Rivet, Blind Pop 1/8 Ø	4

Item	Part No.	Description	Qty
39	126799	Bushing, Oil Lite 1.75" x 1.5" x 0.75"	1
40	127638	Sensor Assy, OBS Alarm	1
41	126840	Hose Clamp, No. 36 Band	1
42	127637	Magnet, OBW Reed Switch	1
43	126980	Screw, Machine 10-32 x 1/2	1
44	126998	Screw, Cap 3/4-10 x 2-1/2	4
45	15181	Washer, Lock 3/4 Regular	4
46	126994	Nut, Hex 3/4-10 Grade 8	4
47	126804	Bushing, Oil Lite 1.5" x 1.25" x 0.5"	4
48	126802	Bushing, Oil Lite 1.75" x 1.5" x 2"	1
49	127603	Hardware Kit, Hydraulic	2
50	127031	Screw, Cap 1/4-20 x 2-1/4	2
51	81427	Washer, Flat 1/4 Steel	2
52	127083	Valve, Hydraulic Line Lock	1
53	15147	Washer, Lock 1/4 Regular	2
54	14641	Nut,1/4-20NC Hex Steel	2
55	127607	Hose Assy, Hydraulic Line	2
56	128242	Coupling, Hydraulic 6MB	1
57	128286	Coupling, Hydraulic 1/32	1
	127638	Sensor Assy, OBS Magnetic Alarm	1
	127015	Cable Tie, 7.5 " Black	4

5.3 Electronic Weigh Center Repair Parts



Item	Part No.	Description	Qty.
1	131662	Indicator, *920i* Plus, Univ	1
4	131714	OBW Enclosure, Electronic Weigh Center	1
5	127289	Latch, Toggle SS 802	1
7	131454	Shoulder Washer, Nylon	2
8	15129	Washer #6 Nylon Flat	4
9	14848	Screw, Machine, 6-32 NC x 3/8 Phillips Pan Head 18-8SST	4
11	128753	Screw, Cap 1/4-20 x 1 Hex	2
12	131458	Anti-Vibration Mount	4
13	126993	Nut Hex NC GR5 Pltd 1/4	8
14	111843	Washer, Plain 5/16 Type A Series N Steel Galvanized	8
15	15153	Washer, Lock 5/16 Regular Helical	8
16	131712	OBW Front Bezel, Indicator	1
17	131448	Gasket, Bezel/Front Plate	1
19	131447	Gasket, Indicator/Front Plate	1
22	128774	Switch, Rocker ON - None	1
23	131441	Printer Splash Shield	1
24	127108	Magnet,1/2 in x .06 Thick	2
25	127288	Hinge Plastic Continuous	1
26	127072	Foam,1/2 inch Adhesive	2
31	44676	Washer, Bonded, Sealing	1
32	42640	Screw, Mach 1/4-28 NF x 1/4 Phillips Drilled Filister Head	1
33	30623	8-32 Drilled Filister Head Screw	2
34	45042	Washer #8 SST/Rubber	2
40	132490	Power Cable	1
53	114695	Legend Plate, Start	1
54	127257	Switch, Push Button Sealed	2
55	128223	LED, Panel Mount Red	2
58	132469	Legend Plate, Power	1
59	132470	Legend Plate, End	1
61	127135	Conn, Non Metallic Liquid	3
62	132490	Power Cable	1
72	131933	Door, Enclosure OBW	1
73	131443	Gasket, Cover	1

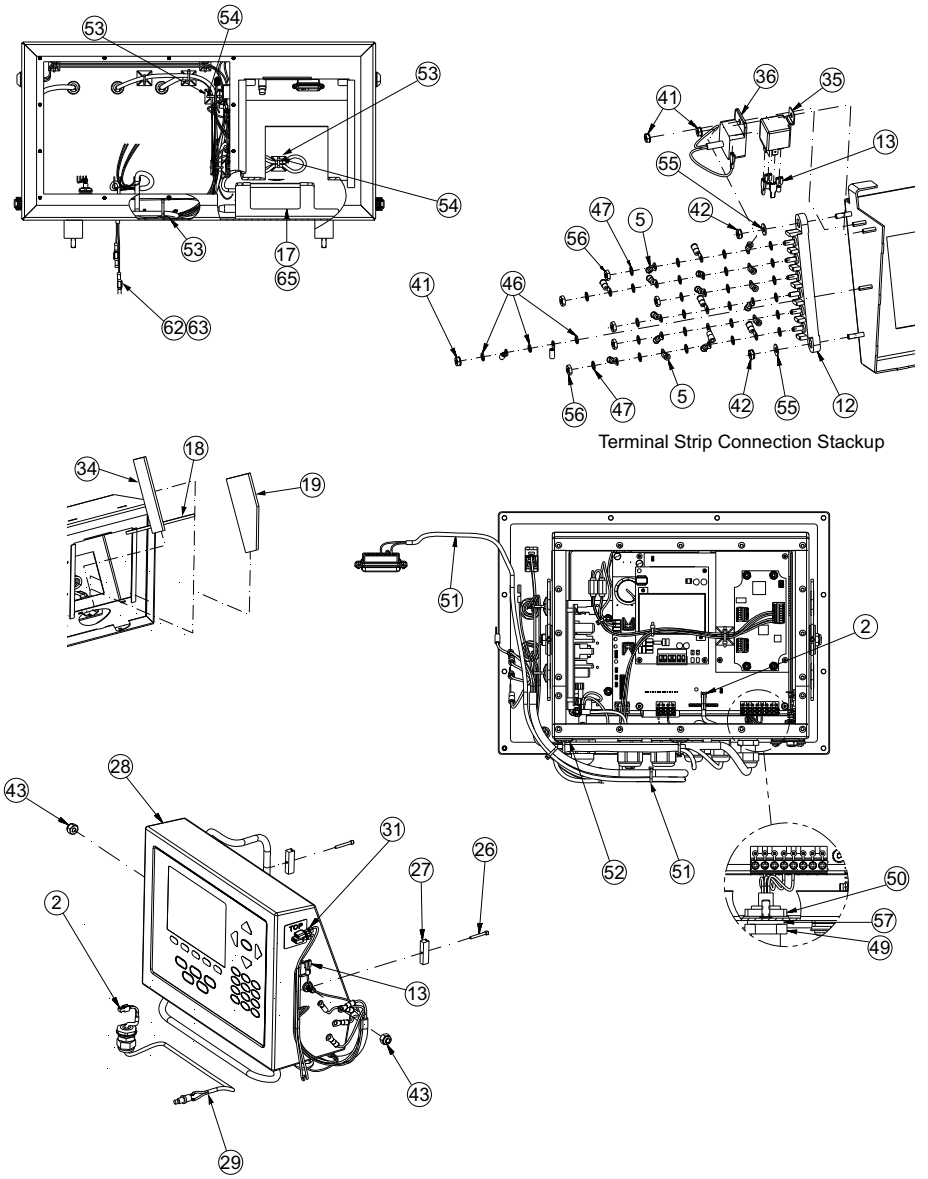
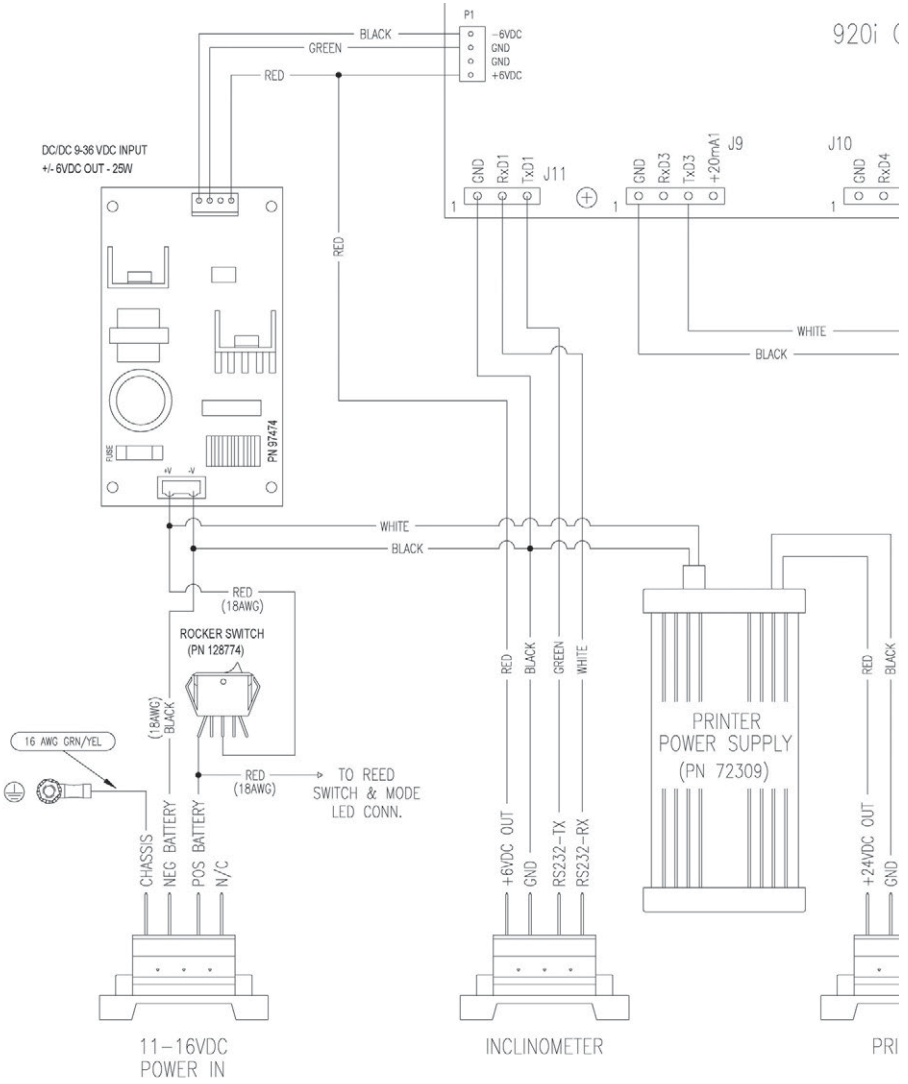
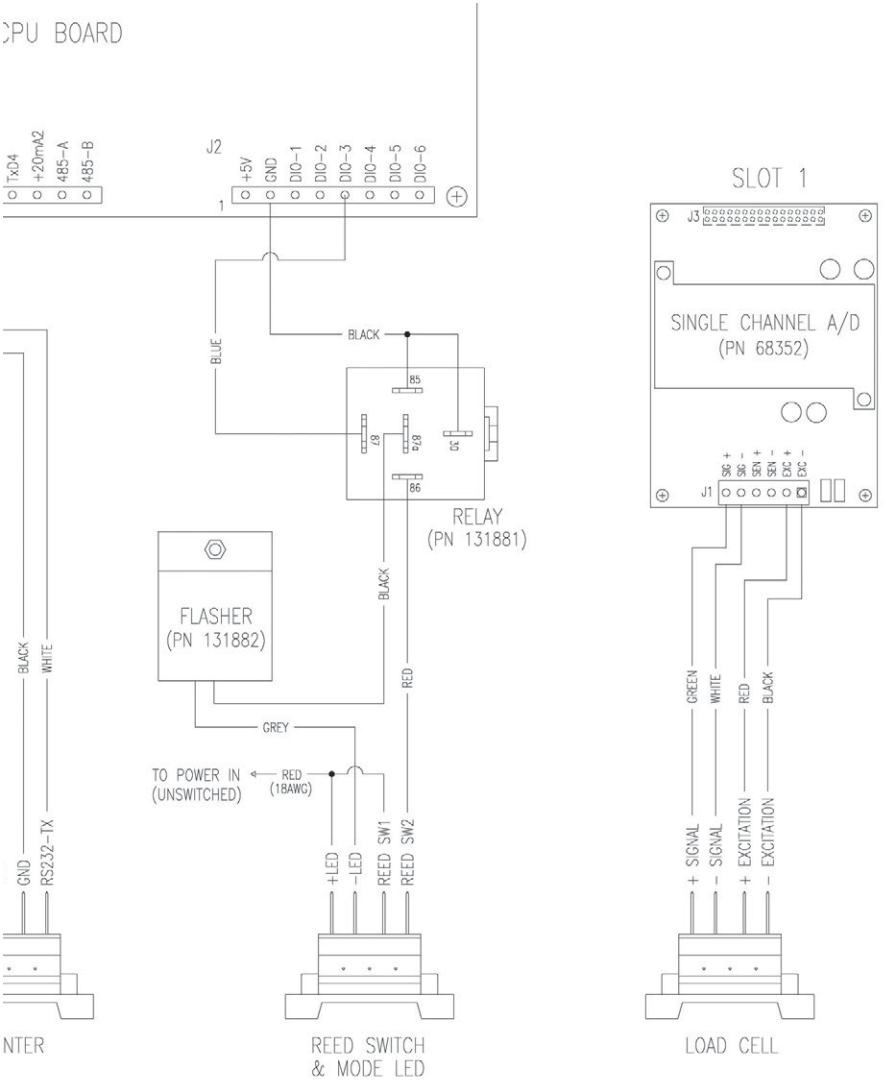


Figure 5-1 Indicator and Printer Assembly Parts Illustration

Item	Part No.	Description	Qty.
2	114695	Legend Plate, Start	1
3	126938	Screw, Machine 8-32 x 7/16	10
5	127038	Terminal Ring, Insulated	13
12	127402	Terminal Block, 6 Steel	1
13	128102	Terminal, 1/4" Female	5
17	131437	Clamp, Power Supply	1
18	131439	Foam Insert, Front	1
19	131440	Foam Insert, Side	1
26	131459	Screw, Cap 4-40 X 7/8 SHCS	2
27	131461	Mount Clamp	2
29	131667	Calibration Switch Assembly	1
30	131668	Printer Cable Assembly	1
31	131673	Power Switch Cable	2
34	131758	Foam Insert, LH Side	1
35	131881	12 VDC Automotive Relay Mini ISO	1
36	131882	12 VDC Automotive Flasher	1
41	14626	Nut, Kep #8-32NC Hex	3
42	14632	Nut, Kep #10-32 NF	2
43	14635	Nut, Lock 1/4-20 NC, Hex Nylon Insert, Steel Zinc Plated	4
46	15134	Internal Tooth No.8 Lock Washer	3
47	15140	Washer, Lock No. 10 Type A	25
49	15626	Cable Grip	1
50	15627	PG9 Lock Nut	1
51	15631	Cable Tie, 3 in Nylon	4
52	15650	Mount, Cable Tie 3/4 in Square Nylon	9
53	15658	Mount, Cable Tie	10
54	127257	Switch, Push Button for R26 and ST2-25	2
55	22062	No. 10 Washer Type A Plain	2
56	22065	No. 10 -20 Hex Nut	6
57	30375	Seal Ring, Nylon	1
62	54765	Female Terminal Connector, 1/4 x .032 22-18 AWG	2
63	57551	Male Terminal Connector, 1/4 x .032 22-18 AWG	2
64	65635	Epson TW 295 Ticket Printer	1
65	72309	Power Supply, Auto Plug 12 VDC	1
NS	99191	Decal	1

5.4 Electronic Weigh Center Wiring Diagram





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230 W. Coleman St. • Rice Lake, WI 54868 • USA USA: 800-472-6703 • International: +1-715-234-9171