FlexWeigh Systems 107, 108 and 109

Bulkweigher
Version 1

Operation Manual

920i FlexWeigh Systems

RICE LAKE®
WEIGHING SYSTEMS

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Contents

1.0 Introduction . . . 1
- 1.2 Standard Features . . . 2
- 1.3 Button Functions . . . 2
- 1.4 Operation Menu Softkeys . . . 3

2.0 Installation . . . 4
- 2.1 Unpacking and Assembly . . . 4
- 2.2 Enclosure Disassembly . . . 4
- 2.3 Cable Connections . . . 4
- 2.4 Cable Grounding . . . 8
- 2.5 Parts Kit Contents . . . 8
- 2.6 Option Cards . . . 8

3.0 Setup Menu . . . 10
- 3.1 Entering the Setup Menu . . . 11
- 3.2 Setting the System Time and Date . . . 12
- 3.3 Modifying the Setup Password . . . 13
- 3.4 Enabling/Disabling Additional Data Fields . . . 14
  - 3.4.1 Delay After Fill . . . 14
  - 3.4.2 Delay After Discharge . . . 14
  - 3.4.3 Discharge Delay . . . 14
  - 3.4.4 Slow Cycle Time . . . 14
  - 3.4.5 Draft Subtotals . . . 14
- 3.5 Test Digital I/O . . . 15
- 3.6 Abort Cycle . . . 15
- 3.7 Presets . . . 15
- 3.8 Preact . . . 16

4.0 Sequence of Operation . . . 17
- 4.1 Sequence of Operation for System 107 . . . 17
  - 4.1.1 Setup . . . 17
  - 4.1.2 Operating Sequence . . . 18
- 4.2 Sequence of Operation for System 108 (Receiving Mode) . . . 19
  - 4.2.1 Setup . . . 19
  - 4.2.2 Operating Sequence . . . 20
- 4.3 Sequence of Operation for System 109 (Shipping/Receiving Mode) . . . 21
- 4.4 End Cycle . . . 21
- 4.5 Manual Abort Mode . . . 21
  - 4.5.1 System 107 Shipping Mode of Operation . . . 21
  - 4.5.2 System 108 Receiving Mode of Operation . . . 21
  - 4.5.3 Accumulator Streaming . . . 21
- 4.6 Audit Trail Print . . . 22

5.0 Appendix . . . 23
- 5.1 Error Messages . . . 23
  - 5.1.1 Weigh Hopper Overfill . . . 23
  - 5.1.2 Lower Surge Backup . . . 23
  - 5.1.3 Printer Error . . . 23
  - 5.1.4 Gate Error . . . 23
  - 5.1.5 Error Recovery . . . 23

5.2 Options 24
5.3 FCC Statement 24
5.4 Product Dimensions 25
5.5 Replacement Parts 26
6.0 Limited Warranty 28
7.0 Compliance 29

1.0 Introduction

This manual is intended for use by service technicians and operators responsible for installing and operating the FlexWeigh Bulkweigher Systems 107, 108 and 109. The *920i*® with custom programming can serve three different systems based on inputs that are wired when built.

Additional information on the actual hardware features of the 920i are explained in the 920i Installation and Operation Manual (PN 67887) and is included with this product.

Safety Signal 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. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

WARNING

Failure to heed could result in serious injury or death.

Failure to heed may result in serious injury of death.

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

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

Do not operate without all shields and guards in place.

Do not step on the unit.

Do not jump up and down on the scale.

Do not use for purposes other then weight taking.

Do not place fingers into slots or possible pinch points.

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

Do not use this product if any of the components are cracked.

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.

Do not use near water.

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

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

1.1 Overview

Three Flexweigh systems are supported by custom software.

- **920i *Flexweigh Systems 107*** is a shipping mode bulkweigher, designed for basic shipping mode bulkweighing applications. In shipping mode, a scale is loaded and discharged repetitively until the accumulated total meets or exceeds the preset target.
- **920i *Flexweigh Systems 108*** is designed for basic receiving mode bulkweighing applications. In receiving mode, a scale is loaded and discharged repetitively until there is no more product to receive.
- **920i *Flexweigh Systems 109*** allows the user to select between shipping or receiving modes of operation.

1.2 Standard Features

The FlexWeigh Systems 107, 108 and 109 comes with the following standard features:

- Fill and discharge sequence controls
- Fill and discharge gate monitoring
- Printer available checking
- Weigh and surge hopper overfill monitoring
- Accumulated weight streaming

Note

The iRite program and source code that make up the 920i FlexWeigh 107, 108 and 109 are property of the manufacturer. Modifications to this program and equipment must be performed by Rice Lake Weighing Systems. For more information on the iRite compiler utility program, refer to the 920i Installation and Operation Manual (PN 67887) and is included with this product.

1.3 Button Functions

Front Panel Button	Function
E-Stop	Stops the filling process and removes power from the relays. It also puts the process into a paused state
Start/Resume	Starts the filling process from a paused state. Requires that the E-Stop is in a run position
End Cycle	Initiates completion of final draft
Ship/Recv	Selects between shipping mode or receiving mode operation on the Flexweigh 109 model

Figure 1-1. Front Panel Button Functions

1.4 Operation Menu Softkeys

Operation menu softkeys are defined to provide the flexibility of operator functions for specific applications. Softkey assignments are listed on the tabs shown at the bottom of the LCD display. Softkey functions are activated by pressing the arrow keys below the softkey tabs. They are password protected and offer access to the following:

- Presets
- ID 1
- ID 2
- Setup menu

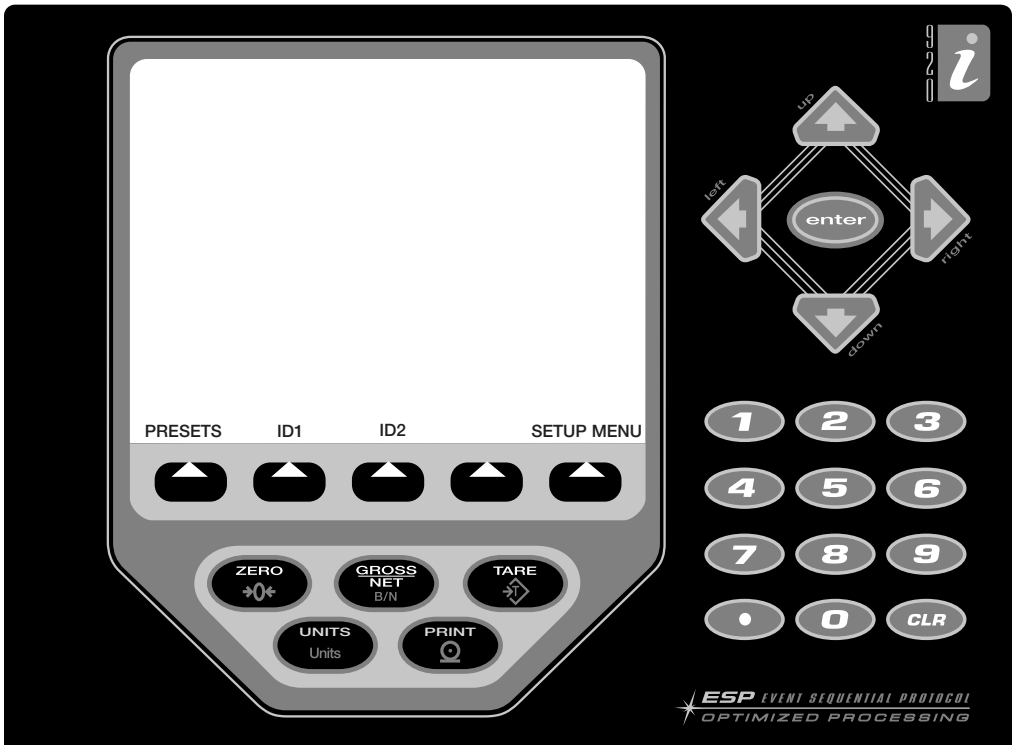

Figure 1-2. 920i Front Panel

The softkeys shown on the display are determined by the indicator configuration and program.

Softkey	Description
Presets	Allows operators to key in parameters prior to running the unit (see Section 3.7)
ID1 and ID2	Allows operators to log an extra data field. A softkey will appear on the main screen to allow the operator to enter more data (e.g: formula, ID truck, container, operator) (see Section 3.4)
Setup Menu	Allows operators to set configuration and time and date parameters (see Section 3.1)

Figure 1-3. Operation Menu Softkeys

2.0 Installation

This section describes procedures for setting up the FlexWeigh Systems 107, 108 and 109 to weigh.

CAUTION

Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.

The supply cord serves as the power disconnect for the unit. The power outlet supplying the indicator must be installed near the unit and be easily accessible.

WARNING

The FlexWeigh System has no on/off switch. Before opening the unit, ensure the power cord is disconnected from the power outlet.

2.1 Unpacking and Assembly

Immediately after unpacking, visually inspect the unit to ensure all components are included and undamaged.

The shipping carton should contain a FlexWeigh Systems 107, 108 or 109 unit and this manual. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

2.2 Enclosure Disassembly

The FlexWeigh Systems 107, 108 or 109 must be opened to install option cards and to connect cables for installed option cards. Ensure power to the indicator is disconnected, then open the enclosure.

2.3 Cable Connections

The FlexWeigh Systems 107, 108 and 109 provide eleven cord grips for cabling into the indicator. The parts kit includes cord grip plugs to prevent moisture from entering the enclosure. Install these plugs into all cord grips that will not be used in your application.

Use the cable grounding instructions for wiring into the indicator.

Note

An additional adhesive label (PN 121108) is included in the parts kit and can be installed at the installer's discretion indicating correct terminal block numbering.

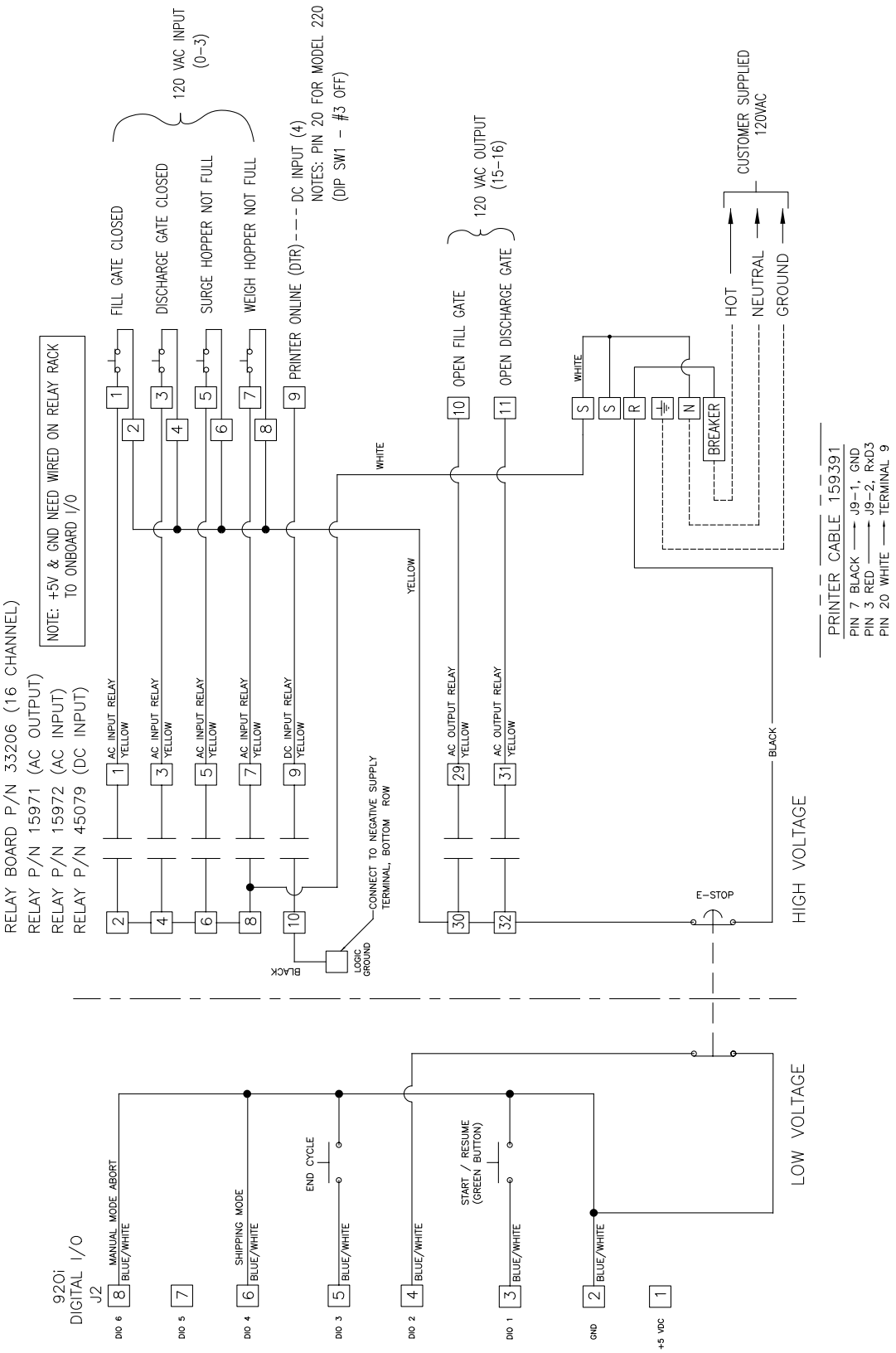

Figure 2-1. 920i Flexweigh System 107 Bulkweigher Block Wiring Diagram

Note ***Circuit breaker = 4 A. All wires are 18 AWG unless otherwise specified. Dashed lines represent field wiring.***

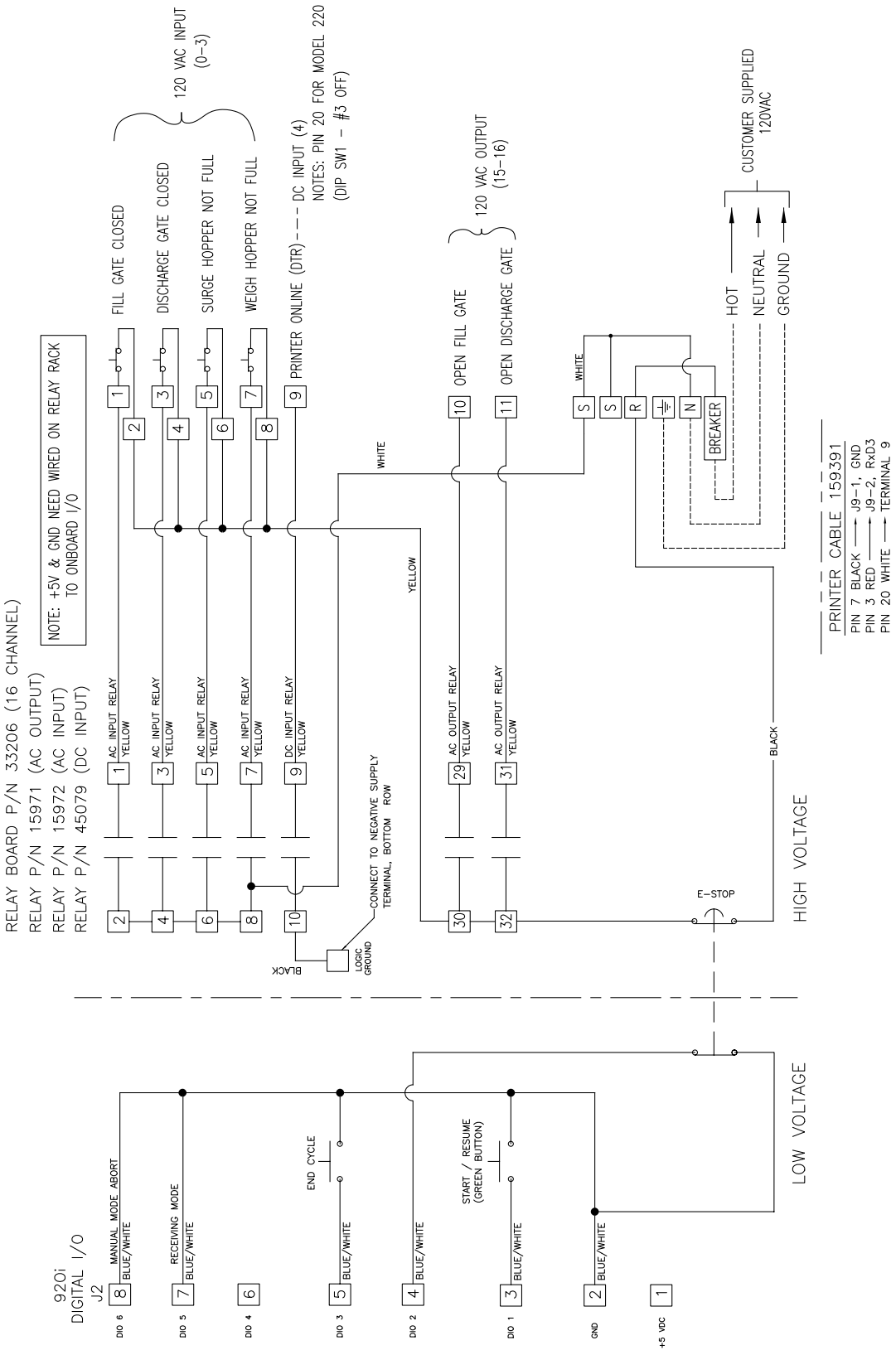

Figure 2-2. 920i Flexweigh System 108 Bulkweigher Block Wiring Diagram

Note ***Circuit breaker = 4 A. All wires are 18 AWG unless otherwise specified. Dashed lines represent field wiring.***

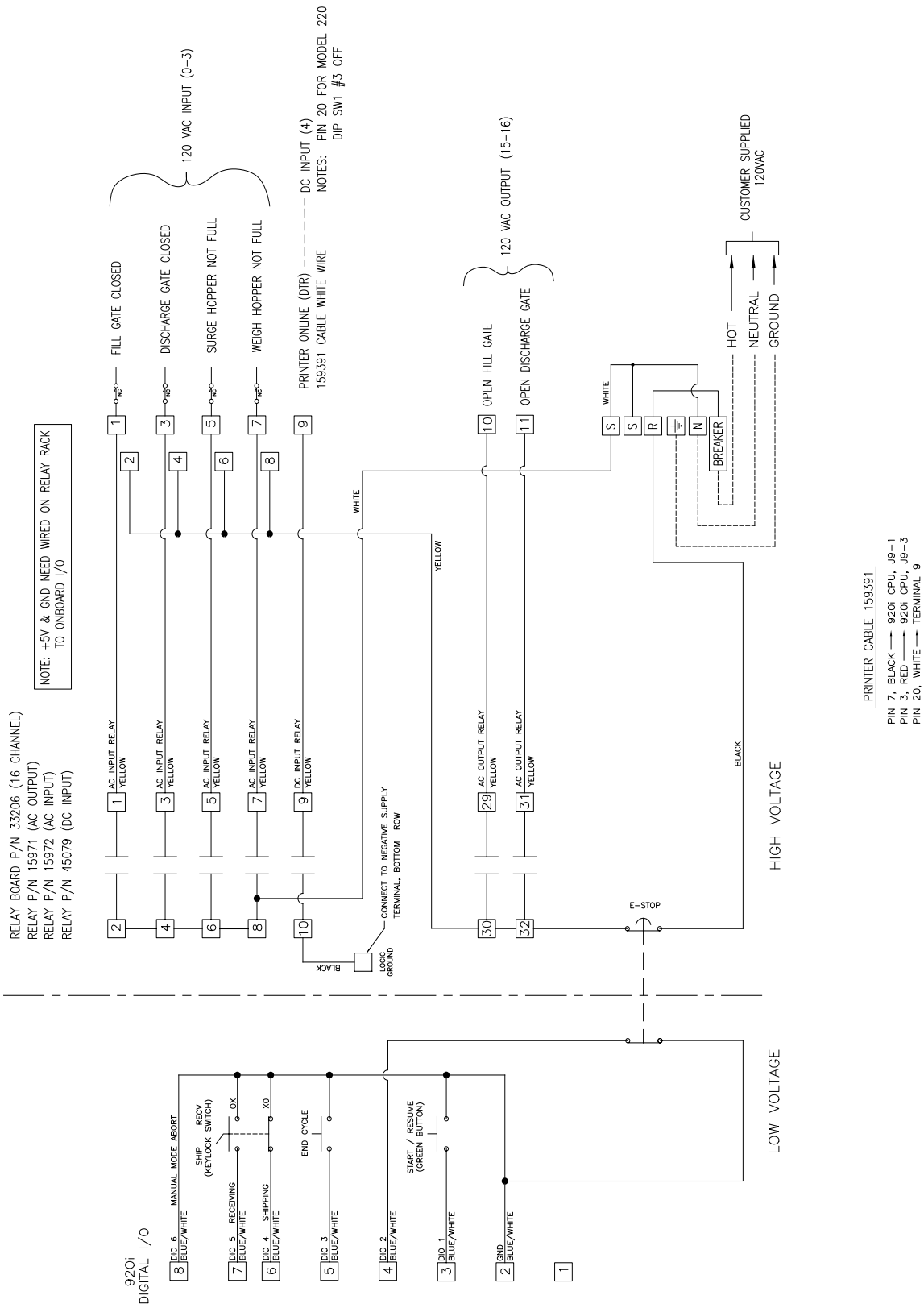

Figure 2-3. 920i Flexweigh System 109 Bulkweigher Block Wiring Diagram

Note ***Circuit breaker = 4 A. All wires are 18 AWG unless otherwise specified. Dashed lines represent field wiring.***

2.4 Cable Grounding

Cables routed through the cord grips should be grounded against the indicator enclosure. Follow cable grounding instructions in the 920i Installation and Operation Manual (PN 67887) which is also included with this product.

2.5 Parts Kit Contents

Table 2-1 lists the parts kit contents for the FlexWeigh Systems 107, 108 and 109.

Part No.	Description	Qty.
14626	Kep nuts, 8-32NC	6
15133	Lock washers, No. 8, type A	6
15631	Cable ties (4 single A/D, 6 dual A/D)	4
15665	Reducing glands for 1/2 NPT cord grips	11
15887	6-position screw terminal for load cell connection (1-single A/D, 2-dual A/D)	1
19538	Cord grip plugs (10-single A/D, 9-dual A/D)	10
94422	Capacity Label (1-single A/D, 2-dual A/D)	1
53075	Cable shield ground clamps	6
70599	6-position screw terminals for J2 and J10	2
71125	3-position screw terminal for J11	1
71126	4-position screw terminal for J9 and optional keyboard connection	2
121108	Label, Terminal Block Identification	1

Table 2-1. Parts Kits Contents (PN 121143)

Note ***See Figure 5-2 on page 26 for a complete list of replacement parts.***

2.6 Option Cards

Table 2-2 list the available option cards that are used in the FlexWeigh Systems 107, 108 and 109. The single channel A/D card can be installed in slot 1 and the 24 channel I/O card in slot 2.

Slot	Type
1	Single Channel A/D Card
2	24 Channel I/O Card

Table 2-2. Option Card Locations

Digital I/O Ports

Slot	Bit	Description	Input/Output
0	1	Start/resume	Input
0	2	E-Stop/run switch	
0	3	End cycle button	
0	4	System 107 shipping mode	
0	5	System 108 receiving mode	
0	6	Manual mode abort	
2	1	Fill gate closed	Input
2	2	Discharge gate closed	
2	3	Lower surge hopper not full	
2	4	Weigh hopper not overfilled	
2	5	Printer online	
2	6-9	Unused	Off
2	10	Slow cycle alarm (option)	Output
2	11	Gate alarm (option)	
2	12	Scale overfill alarm (option)	
2	13	Lower surge backup alarm (option)	
2	14	Printer alarm (option)	
2	15	Open fill gate	
2	16	Open discharge gate	

Table 2-3. Digital I/O Assignments

Serial Ports

Port	Input	Output	Setup
1	Open	Open	9600 baud 8 bit None
2	Open	Open	115200 baud 8 bit None
3	Command	Printer	9600 baud 8 bit None CR/LF
4	Command	Remote display	9600 baud 8 bit None CR/LF

Table 2-4. Serial Port Setup

3.0 Setup Menu

This section describes the various setup parameters for the FlexWeigh 107, 108 and 109 Systems.

A password protected supervisor mode is provided to support configuration of the application, setting time and date, or changing the password. To enter configuration mode, press the Setup Menu softkey on the unit. If a non-zero password is in effect, the operator is prompted to enter the password. Key in the password and press the enter key to enter the supervisor mode.

A default password of BLANK or 0 is defined for the system. Setting the password value to zero disables password checking.

The password is valid as long as the operator remains in setup mode. After that time, the password must be re-entered when entering the supervisor mode.

In setup mode, a list of items is presented. Use the more and back softkeys to select a category and use the corresponding softkey to access the selected item.

Softkey Function	Default	Description
Delay after fill	3 seconds	Specifies the delay after fill (in seconds) to allow the scale to settle and the gate to mechanically close. At the end of this time delay, the gate closed switch is checked. If not closed, the system enters into an error condition. No further operation is allowed until the condition is cleared.
Delay after discharge	3 seconds	Specifies the delay after discharge in seconds to allow the scale to settle and gate to mechanically close. At the end of this time delay, the gate closed switch is checked. If it is not closed, the system enters into an error condition. No further operation will be allowed until the condition is cleared.
Slow cycle timer	45 seconds	Specifies the period of time allowed to complete a fill or discharge cycle. The purpose of the slow cycle timer is to detect starved or blocked product flow. If a fill or discharge cycle is started that does not complete within the selected slow cycle time period, a slow cycle alarm is displayed and a slow cycle alarm output is turned on. The system remains in a slow cycle alarm state until the fill or discharge cycle is completed, until the end cycle switch input is turned on, or until a manual mode switch input is turned on.
Time		Set system time and date. In configuration mode, select the clock item. Select either the time item or the date item. The indicator prompts *Enter new time* (hhmm) or *Enter new date* (mmddyy). Enter the new time in 24 hour format or enter the new date in the specified format (no separators) and press enter.
Date		
Password	*********	To change the password, select the Password item in configuration mode. The indicator prompts *Key in new password*. Key in the new password and press enter. The indicator prompts *Rekey new password* to verify. Key in the new password again and press enter. If valid, the indicator momentarily displays *Password accepted*.
Enabling ID#1 and ID#2		Allows the operator to log an extra data field. A softkey appears on the main screen that allows the operator to enter more data (formula, ID truck, container, operator).
Test Digital I/O		Refer to Section 3.5 for detailed information on these functions.
Discharge Delay	3 seconds	The Discharge Delay softkey specifies the length of time in seconds that discharge output remains on after the discharge has reached empty weight. The default time is 3 seconds. To change the default, enter the new time and press enter to save the value.
Draft Subtotals		Specifies the number of drafts between the subtotal printout.
Abort Cycle		Press the Abort Cycle softkey to abort the current batch.

Table 3-1. Setup and Configuration Parameters

3.1 Entering the Setup Menu

Note ***The front panel E-stop button must be in the stopped position (pushed in) to enable the following keypad entries.***

1. Press the **Setup Menu** softkey on the main menu screen and the system performs one of the following actions.
   - If a system password is entered, proceed to Step 2
   - If no system password is entered, the ***Setup Menu Main Screen*** displays (Figure 3-2)
2. Press the **Setup Password** softkey. The system prompts with ***Enter Password***.

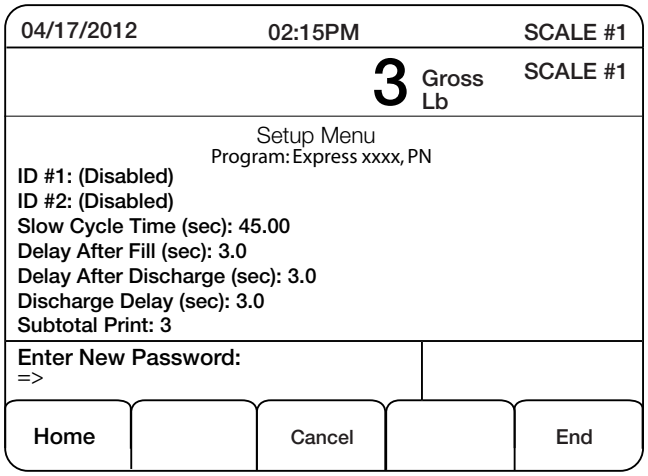

Figure 3-1. Setup Menu Enter Password

3. Enter the password and press the **Enter** key on the 920i. The system checks the entered value against the system password and performs one of the following actions:
   - If the password is valid, the ***Setup Menu Main Screen*** displays (Figure 3-2)
   - If the password is invalid, ***Invalid password*** displays momentarily and display exits the operation

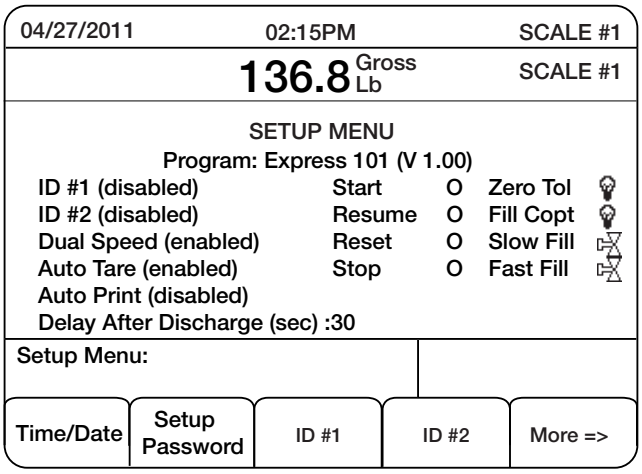

Figure 3-2. Setup Menu Main Screen

3.2 Setting the System Time and Date

Use the following steps to set up the system time and date.

1. From the ***Main Setup Menu Screen***, press the **Time/Date** softkey.

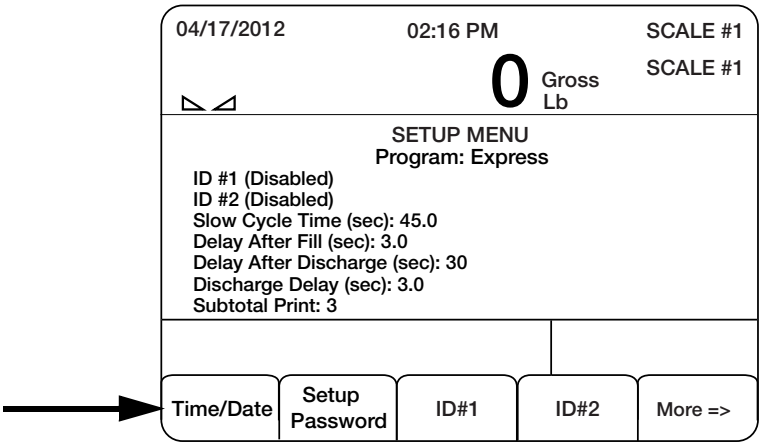

Figure 3-3. Select Time/Date Softkey

2. Use the arrow keys on the 920i and the numeric keypad to modify the time and or date.
3. Press the **Enter** key to save the settings.

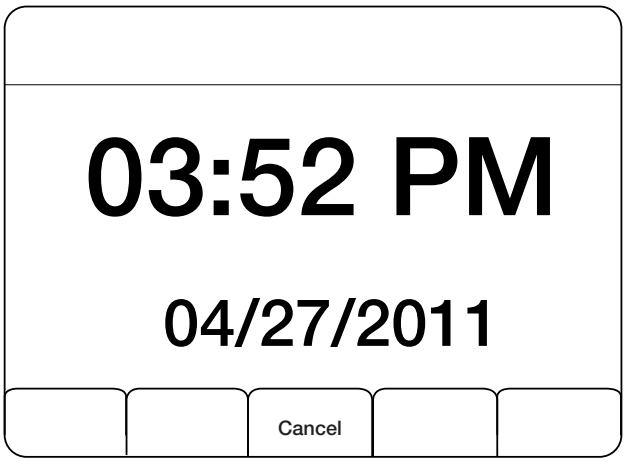

Figure 3-4. Time and Date Main Screen

Note ***The Cancel softkey can be pressed at any time to exit this sequence without saving any changes.***

3.3 Modifying the Setup Password

Use the following steps to modify the setup password.

1. From the ***Main Setup Menu Screen***, press the **Setup Password** softkey.
2. The system prompts, ***Enter New Password***.

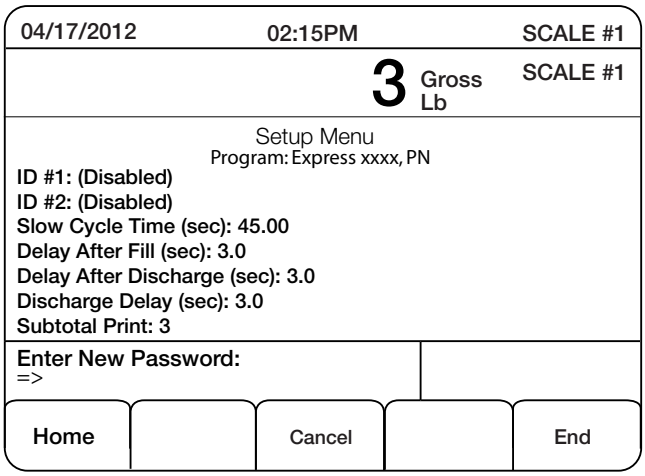

Figure 3-5. Enter New Password

3. Enter the new password and press the **Enter** key.
4. The system prompts ***Re-enter password*** to verify.
5. Re-enter the password and press the **Enter** key again. The system performs one of the following actions.
   - If the passwords match, the system displays ***Password Changed.***
   - If the passwords do not match, the system displays ***Passwords Did Not Match*** and exits the operation.

3.4 Enabling/Disabling Additional Data Fields

Use the following steps to enable or disable additional data fields.

1. From the ***Main Setup Menu Screen***, press the **Setup Password** softkey (Figure 3-2 on page 11).

Note ***A setup password is not required if it has never been set or if you are already in Setup mode.***

2. Press the **ID #1** or **ID #2** softkey. The system displays ***Enable ID #1 or ID #2*** while displaying **Yes** or **No** softkeys or ***Disable ID #1 or #2***.

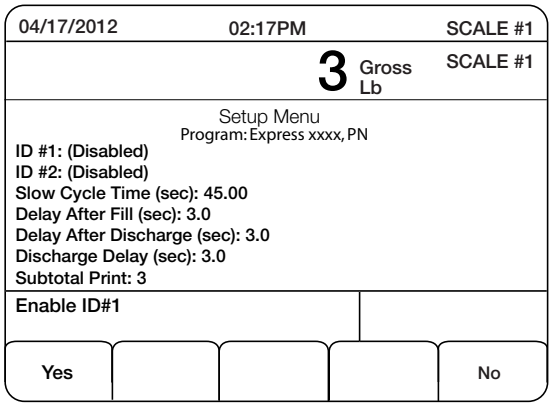

Figure 3-6. Enabling IDs

3. The operator does one of the following:

   Press the **Yes** softkey, the system prompts ***Enter Extra Data #1 Name***. Enter the name and press the **Enter** key on the 920i. A new data field appears on the main display and as a softkey so that the operator can change it. To enter alpha characters, press the **Up** navigation key to access a pop up alphabet.

   Press the **Yes** softkey and this returns the operator back to Step 1.

3.4.1 Delay After Fill

The Delay After Fill softkey specifies the delay after fill in seconds to allow the scale to settle and the gate to mechanically close. At the end of this time delay, the gate closed switch is checked. If not closed, the system enters an error condition. No further operation is allowed until the condition is cleared. The default is 3.0 seconds. To change the default, enter the new time and press enter to save the value.

3.4.2 Delay After Discharge

The Delay After Discharge softkey specifies the delay after discharge in seconds to allow the scale to settle and the gate to mechanically close. At the end of this time delay, the gate closed switch is checked. If it is not closed, the system enters an error condition. No further operation will be allowed until the condition is cleared. The default is 3.0 seconds. To change the default, enter the new time and press enter to save the value.

3.4.3 Discharge Delay

The Discharge Delay softkey specifies the length of time in seconds before the gate opens and the scale starts discharging.

The default time is 3.0 seconds. To change the default, enter the new time and press enter to save the value.

3.4.4 Slow Cycle Time

Specifies the period of time allowed to complete a fill or discharge cycle. The purpose of the slow cycle timer is to detect starved or blocked product flow. If a fill or discharge cycle is started that does not complete within the selected slow cycle time period, a slow cycle alarm is displayed and a slow cycle alarm output is turned on.

The system remains in a slow cycle alarm state until the fill or discharge cycle does complete, until the end cycle switch input, until the reset switch input, or until a manual mode switch input.

3.4.5 Draft Subtotals

Specifies the number of drafts between the subtotal printout.

3.5 Test Digital I/O

Press the **Test Digital I/O** softkey to test and toggle through any of the softkeys to manually control the selected I/O.

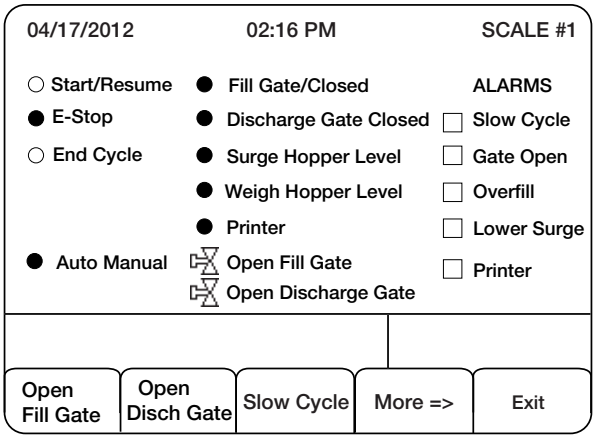

Figure 3-7. Test Digital I/O

3.6 Abort Cycle

Press the **Abort Cycle** softkey to abort the current batch.

3.7 Presets

Press the **Presets** softkey to display the presets menu for draft weight, empty weight, preact weight, and target weight.

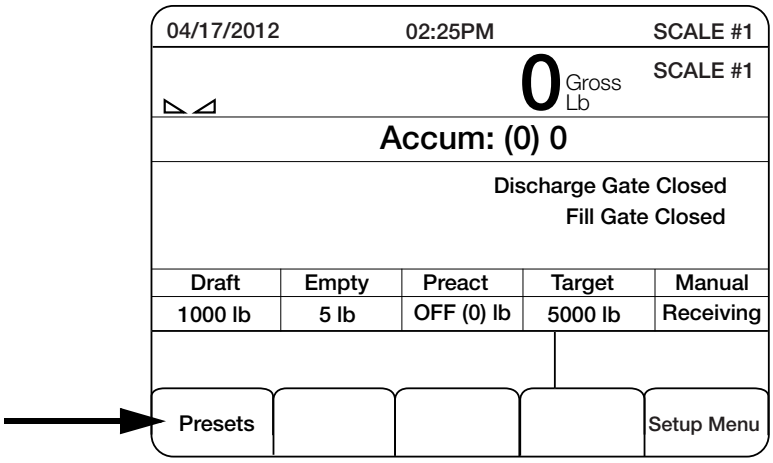

Figure 3-8. Enter Preact Weight

The preset softkeys displays.

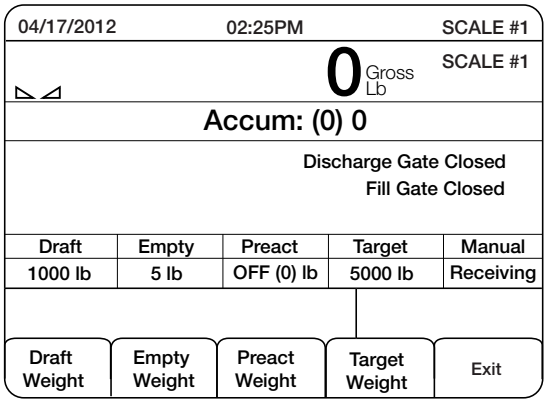

Figure 3-9. Presets Softkeys

Press one of the softkeys and enter a desired weight value pressing **enter** to save that value.

3.8 Preact

Preact provides some scale overfill protection on the first draft of a cycle when the upper garner may be full and the surge of flow on the first draft might be overwhelming. The preact value entered may be exceptionally large and is the fixed value in effect on every first draft that occurs after pressing Start or after recovering from a stop by pressing Resume. On subsequent fills during the cycle, the preact self learns and makes large auto preact adjustment corrections of 50% whenever the final fill weight is more than 2% of the fill weight preset.

Press the Preact Mode softkey to access that screen. Select a preact option. Press the **Preact** Mode softkey to toggle between *ON, OFF,* and *LEARN*.

Enter the preact weight by pressing the Preact Weight softkey. Press **Enter** to save that selection.

4.0 Sequence of Operation

While all three systems operate much the same way, there are subtle differences between their setup and in the actual operating sequence. For that reason, this manual has been divided into three sections to address each system.

4.1 Sequence of Operation for System 107

The following instructions explain a basic setup and sequence of operation for the 920i Flexweigh Systems 107 Bulkweigher.

4.1.1 Setup

The Flexweigh Systems 107 (Shipping Mode) is designed for basic shipping mode bulkweighing applications. In shipping mode, a scale is loaded and discharged repetitively until a desired accumulative weight is achieved. Use the following steps to set up the operating sequence for System 107.

The front panel E-Stop button must be in the stopped position (pushed in) to enable any of the following keypad entries.

If the load-out target, fill weight, discharge weight, target weight, draft weight, empty weight, preact weight*, ID#1, or ID#2 settings need to be changed, use the following steps:

1. Push the E-Stop button in.
2. Press the **Presets** softkey to display the presets menu for draft weight, empty weight, preact weight, and target weight.
3. Press one of the following softkeys and enter a desired weight value:
   - Draft weight
   - Empty weight
   - Preact weight*
   - Target weight
   - Load-out target weight
   - Fill weight
   - Discharge weight
4. Press the **Exit** softkey when finished to return to the main screen.
5. Press the **ID** softkey to enter the ID number setup if the IDs are to be changed.
6. To disable an ID, press the corresponding **ID Off** softkey.
7. To enable an ID key in the ID number, press the corresponding **ID On** softkey.
8. To change an ID value key in the new ID number, press the selected New ID softkey.
9. Press the **Exit** softkey when finished to return to the main screen.

   *Preact: Preact may be selected as off, fixed, or learned. The learned preact is a design that provides some scale overfill protection on the first draft of a cycle when the upper garner may be full and the surge of flow on the first draft might be overwhelming. The preact value entered may be exceptionally large and is the fixed value for every first draft that occurs after pressing **Start** or after recovering from a stop by pressing **Resume**. On subsequent fills during the cycle, the preact self learns and makes automatic adjustment corrections of 50% whenever the final fill weight is more than 2% of the fill weight preset.

4.1.2 Operating Sequence

Use the following steps to run through an actual operating sequence.

1. Ensure that the E-Stop button is in the out position and preset and ID# data entry are inhibited.
2. Press the **Start/Resume** button.
3. The system checks for the following inputs to all be in initial ON state: fill gate closed, discharge gate closed, surge hopper not full, weigh hopper not overfilled, printer online. If any inputs fail the initial start test, an appropriate error message flashes and the sequence faults to Step 2.
4. The system clears the indicator display of the accumulated total weight and draft count remaining for view from the previous cycle*.
5. The system prints the ticket header with the time and date and ID#1 and ID#2, if enabled.
6. The system turns on the fill output and keeps it on until the draft preset weight is achieved.
7. The system turns off the fill output, and pauses during delay after fill.
8. When the delay after fill elapses, the fill gate closed input is checked. If it is open, the system is stopped in the gate error state.
9. The system then waits for the scale to come out of motion and captures the full weight*.
10. While the printer is online, the system prints the full weight.
11. The system turns on discharge output and keeps it on until the scale weight drops below the empty weight preset.
12. The system turns off the discharge gate output after discharge delay, and pauses during the delay after discharge state.
13. When the delay after discharge state elapses, check the discharge gate closed input. If not closed, the system is stopped in the gate error state.
14. The system waits for the scale to come out of motion and captures the empty weight*.
15. The system prints the empty weight.
16. The system increments the draft number, calculates the draft weight (full minus empty), adds it to the accumulator, and prints the draft number and draft weight.
17. The system updates the display with the new accumulated weight and draft number.
18. If the accumulated weight is within one draft weight preset of the target weight, the system automatically recalculates the final draft weight preset. If the difference between the current accumulated weight and target weight is less than half the draft weight preset, change the draft weight preset to the current difference and begin the final draft.

    If the difference between the current accumulated weight and target weight is more than half the draft weight preset, automatically divide the current difference in half and begin the next draft weight preset of that value.
19. Repeat Step 6 through Step 18 until the accumulated weight equals or exceeds the target weight.
20. The system checks that the printer is online. If not, the system is stopped in the printer offline error state.
21. The system prints total accumulated weight, time and date, and ID#1 and ID#2, if not disabled.
22. The system returns to the idle state.

If at any time during the sequence the printer goes offline, the printer offline error state will be shown.

4.2 Sequence of Operation for System 108 (Receiving Mode)

The following instructions explain a basic sequence of operation for the 920i Flexweigh Systems 108 (Receiving Mode operation).

4.2.1 Setup

The Flexweigh Systems 108 (Receiving Mode) is designed for basic receiving mode bulkweighing applications. In receiving mode, a scale is loaded and discharged repetitively until there is no more product to receive. Use the following steps to set up the operating sequence for System 108.

The front panel E-Stop button must be in the stopped position (pushed in) to enable any of the following keypad entries:

If the fill weight, discharge weight, preact weight*, draft weight, empty weight, ID#1, or ID#2 settings need to be changed, use the following steps.

1. Push the E-Stop button in.
2. Press the **Presets** softkey to display the presets menu for fill weight, preact weight, discharge weight and overfill weight.
3. Press one of the following softkeys and enter a desired weight value:
   - Draft weight
   - Empty weight
   - Discharge weight
   - Fill weight
   - Preact weight*
4. Press the **Done** softkey when finished to return to the main screen.
5. Press the **ID** softkey to enter the ID number setup if the IDs are to be changed.
6. To disable an ID, press the corresponding ID Off softkey.
7. To enable an ID, key in the ID number and press the proper ID On softkey.
8. To change an ID value, key in the new ID number and press the selected New ID softkey.
9. Press the **Exit** softkey when finished to return to the main screen.

*Preact: Preact may be selected as off, fixed, or learned. The learned preact is a design that provides some scale overfill protection on the first draft of a cycle when the upper garner may be full and the surge of flow on the first draft might be overwhelming. The preact value entered may be exceptionally large and is the fixed value for every first draft that occurs after pressing **Start** or after recovering from a stop by pressing **Resume**. On subsequent fills during the cycle, the preact self learns and makes automatic adjustment corrections of 50% whenever the final fill weight is more than 2% of the fill weight preset.

4.2.2 Operating Sequence

Use the following steps to run through an actual operating sequence.

1. Ensure that the E-Stop button is in the out position and Presets and ID# data entry are inhibited.
2. Press the **Start/Resume** button.
3. The system checks for the following inputs to all be in initial ON state: fill gate closed, discharge gate closed, surge hopper not full, weigh hopper not overfilled, printer online. If any inputs fail the initial start test, an appropriate error message flashes and the sequence defaults to step 2.
4. The system clears the indicator display of the accumulated total weight and draft count remaining for view from the previous cycle*.
5. The system prints the ticket header with the time/date and ID#1 and ID#2, if enabled.
6. The system waits for scale out of motion and captures the empty weight value*.
7. While the printer is online, the system prints the empty weight.
8. The system turns on the fill output and keeps it on until the draft preset weight has been achieved.
9. The system turns off the fill output, and pauses during delay after fill.
10. When the delay after fill elapses, the fill gate closed input is scheduled. If it is open, the system is stopped in the gate error state.
11. The system waits for scale out of motion and captures the full weight*.
12. The system prints the full weight.
13. The system increments the draft number, calculates the draft weight (full minus empty) adds it to the accumulator, and prints the draft number and draft weight.
14. The system updates the display with the new accumulated weight and draft number.
15. The system turns on discharge output and keeps it on until the scale weight drops below the discharge weight preset and the discharge delay elapses.
16. The system turns off the discharge gate output, and pauses during delay after discharge.
17. When delay after discharge elapses, check the discharge gate closed input. If it is not closed, the system is stopped in the gate error state.
18. Unless the end cycle button has been pressed during the cycle, the system returns to step 5 for the next draft. Pressing the E-Stop button and performing the end cycle push button routine is required to complete a cycle.

Note ***If at any time during the sequence the printer goes offline, the printer offline error state will be shown.***

4.3 Sequence of Operation for System 109 (Shipping/Receiving Mode)

The following instructions explain a basic sequence of operation for the 920i Flexweigh Systems 109 (Shipping /Receiving Mode operation). This system allows the user to select between shipping or receiving modes of operation depending on the user selected position of a front panel switch.

Changing the selection of the shipping/receiving switch during an ongoing bulkweighing process is disregarded and displays an error.

The only time switching between shipping and receiving modes is allowed is when the system is in the idle state between completing a bulkweighing process and pressing the **Start/Resume** button to initiate a new bulkweighing process.

4.4 End Cycle

An automatic cycle for either Systems 107 or 108 may be concluded at any time by pressing the E-Stop button.

The front panel E-Stop button must be in the stopped position (pushed in) to enable any of the following keypad entries.

1. Release the E-Stop button on the front of the unit and also press the **End Cycle** button.
2. The system turns on end cycle pressed flag.
3. The system checks that the printer is online. (If it is not, the system is stopped in the printer offline error state).
4. The system prints end cycle with a time and date stamp.
5. If the system is at steps 1 through 7 in the sequence, the system then advances to step 7 of the end cycle.
6. If the system had started a fill in the sequence, terminate the fill process and resume the sequence from that point:
   - Step 7 through Step 17 of the Systems 107 Bulkweighing (Shipping Mode)
   - Step 9 through Step 17 of the Systems 108 Bulkweighing (Receiving Mode)

   If the system has started a discharge in the sequence, resume the discharge from where it left off and continue through Step 18 of the sequence.
7. The system checks that the printer is online. If it is not, the system is stopped in the printer offline error state.
8. The system prints total accumulated weight, time and date, and ID#1 and ID#2 (if not disabled).
9. The shipping/receiving sequence is ended; the system returns to the idle state.

4.5 Manual Abort Mode

If the system has an optional manual/off/auto selector switch to allow changing from automatic to manual modes of operation, select the manual position for use only while the system is in an idle state. After completing an automatic cycle through all sequence steps and before pressing **Start** for a new automatic sequence, the system will immediately end the cycle and print end on the automatic cycle at that point.

4.5.1 System 107 Shipping Mode of Operation

If the system is set to manual during the filling cycle, the cycle is halted and aborted. The current accumulated total of draft net weights is the completion of the shipping cycle, after jumping to steps 15, 16, and 17 in sequence.

If the system is set to manual during the discharging cycle, the cycle is halted, and the current scale weight is recorded as the empty weight (step 14) and the cycle is aborted after performing steps 11-18, and then 22.

4.5.2 System 108 Receiving Mode of Operation

If the system is set to manual during the filling cycle, the cycle is immediately halted and aborted. The current weight is recorded as the full weight (step 12), jumps to steps 13-14, and then completes the cycle with a printed report.

If the system is set to manual during the discharge cycle, the cycle is immediately halted, and the final printed report is generated using the current accumulated total of draft net weights.

No automatic sequences or printing/recording capabilities are provided in the manual mode.

4.5.3 Accumulator Streaming

The current total received weight will be streamed to a remote display. It also streams in shipping mode.

4.6 Audit Trail Print

Record keeping is an important part of any system. The FlexWeigh Systems 107, 108 and 109 has the ability to be connected to a printer for retaining detailed records on batches, cycle runs, cycle paused, etc.

The preferred printer to integrate with the FlexWeigh Systems 107, 108 and 109 is the TMU-220 Tape Printer but will easily integrate with any strip printer.

Hook up the printer to the FlexWeigh Systems 107, 108 and 109 per printer manual instructions.

Shown below are tape samples that can be printed using the FlexWeigh Systems 107, 108 and 109 and the TMU-220 Tape Printer.

```
Start Cycle   6 04:31PM 04/27/2011
Id AB123 Location Rice Lake

End Cycle
 111.2 lb  04:31PM 04/27/2011

Start Cycle   7 04:32PM 04/27/2011
Id AB123 Location Rice Lake

Cycle Stopped  04:32PM 04/27/2011

Cycle Resumed 04:32PM 04/27/2011

End Cycle
 116.0 lb  04:32PM 04/27/2011

Start Cycle   8 04:32PM 04/27/2011
Id AB123 Location Rice Lake

Cycle Stopped  04:32PM 04/27/2011

Cycle Reset   04:32PM 04/27/2011
```

Batch Stopped & Resume & Reset Print

```
Sub Total      04:32PM 04/27/2011
Id AB123 Location Rice Lake
   7 cycles        755.8 lb
```

Sub Total Printout

```
Total          04:34PM 04/27/2011
Id AB123 Location Rice Lake
   9 cycles       1022.9 lb
```

Total Printout

```
Start Cycle   1 04:03PM 04/27/2011


End Cycle
 111.1 lb  04:03PM 04/27/2011

Start Cycle   2 04:03PM 04/27/2011


End Cycle
 104.9 lb  04:03PM 04/27/2011
```

No Extra ID Fields Running Batch Print

```
Start Cycle   3 04:07PM 04/27/2011
Id AB123 Location Rice Lake

End Cycle
 100.7 lb  04:07PM 04/27/2011

Start Cycle   4 04:07PM 04/27/2011
Id AB123 Location Rice Lake

End Cycle
 109.1 lb  04:07PM 04/27/2011

Start Cycle   5 04:07PM 04/27/2011
Id AB123 Location Rice Lake

End Cycle
 102.8 lb  04:08PM 04/27/2011
```

2 Extra ID Fields Running Batch Printout

Figure 4-1. Tape Printer Example

5.0 Appendix

The section provides additional information for the FlexWeigh Systems 107, 108 and 109.

5.1 Error Messages

The following error conditions are explained below.

5.1.1 Weigh Hopper Overfill

Weigh hopper overfill is detected if either the weigh hopper or high bindicator goes off or the scale weight exceeds the overfill weight preset during a fill cycle or at the start of a sequence.

It can also be detected if the weight increases after resuming after a weigh hopper overfill.

The operation is paused if this condition is detected before or during a fill operation. If this condition is detected during the sequence, it is recorded on the printed record.

5.1.2 Lower Surge Backup

Lower surge backup is detected if the lower surge or high bindicator goes off during the discharge cycle or it is off at the start of the sequence.

The operation is stopped if this condition is detected before or during a discharge operation. If this condition is detected during the sequence, it is recorded on the printed record.

5.1.3 Printer Error

The printer error condition is detected if an attempt is made to print data and the printer is either offline or in an error status that will not allow printing. The operation will be stopped.

The operation is paused if this condition is detected. If this condition is detected during the sequence, it is recorded on the print record when the ability to print is restored.

5.1.4 Gate Error

The gate error condition is detected if:

- Either gate is open when the sequence is started.
- The fill gate does not close within the specified delay after fill time.
- The discharge gate does not close within the specified delay after discharge time
- The discharge gate closed signal goes off during a fill operation.
- The fill gate closed signal goes off during a discharge operation.

5.1.5 Error Recovery

On entry to the stopped state, the fill and discharge outputs are set to off and all error conditions are checked.

Once in stopped state, the system remains stopped until all error conditions are cleared (all gate closed signals are on, the printer is online, and the lower surge not high signal is on). At that point the system enters into a paused state.

On entry to a paused state, the fill and discharge output are set to off. Press the **Start/Resume** button or the **Resume** softkey on the display.

All detected errors are printed along with their detected date and time.

If the resume was following a weigh hopper overfill error, the system resumes at Step 9 in System 108 instructions or Step 7 in System 107 instructions. All other resumes will be at the step they were recognized in.

5.2 Options

Several options are available with the 920i Flexweigh Systems Bulkweighers:

- Manual/off/auto selector — 3-position keylock
- Manual fill on/jog selector, spring jog
- Manual discharge on/jog selector, spring jog

Manual Mode Front Panel Push Button

- Manual fill

Maintained Return Buttons

- Fill — on/jog
- Fill — fast/slow

Optional Front Panel Event Pilot Lights

- Filling
- Discharging
- Printer error
- Surge backup
- Overfill error
- Gate error
- Slow cycle

5.3 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.

5.3.1 Radio Certificate Numbers

- US: R68WIPORTG
- Canada: 3867A-WIPORTG

5.4 Product Dimensions

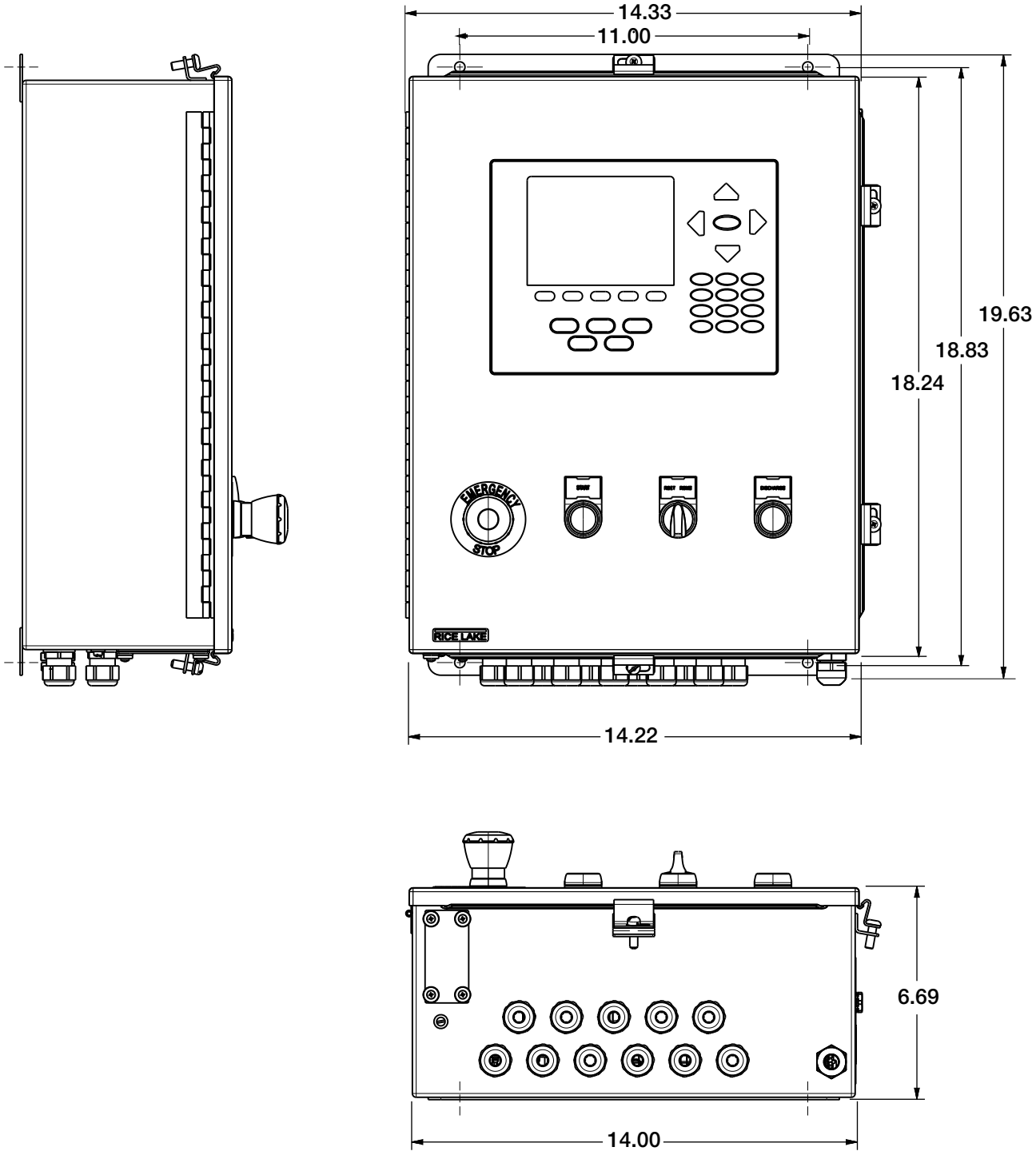

Figure 5-1. FlexWeigh Systems 107, 108 and 109 Enclosure Dimensions

5.5 Replacement Parts

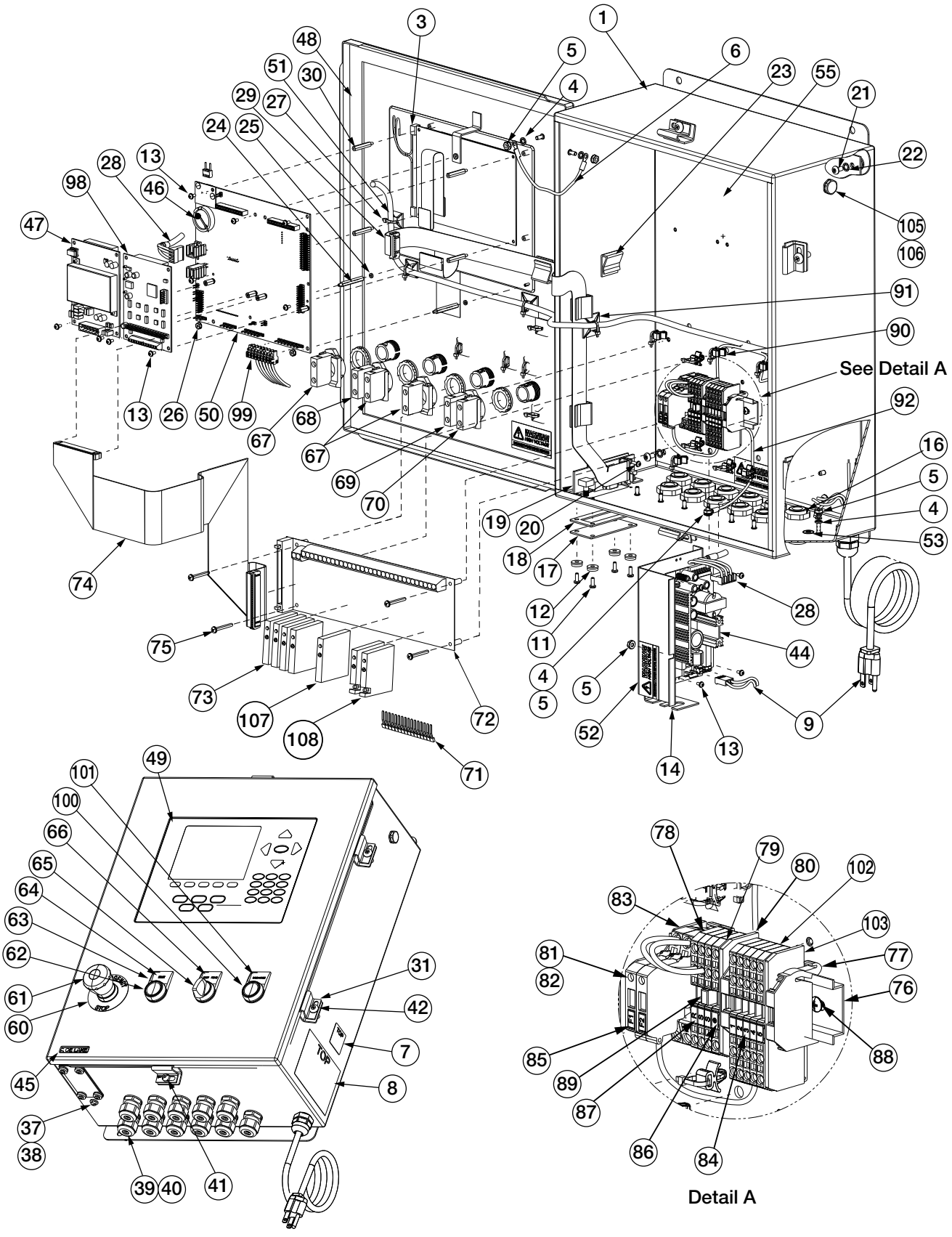

Figure 5-2. Replacement Parts Illustration

Item No.	Part No.	Description	Qty.
1	120426	Enclosure, Wall Mount	1
3	67614	Display, LCD Module, 920i	1
4	15134	Lock Washers, No 8, Type A	4
5	14626	Kep Nuts, 8-32NC Hex	4
6	15601	Ground Wire, 6 in w/No. 8	1
7	53308	Label, 1.25 x 1.25 8000T	1
8	53307	Label, 4.000 x 2.875	1
9	85202	Power Cord Assembly, 120 VAC	1
11	14845	Machine Screws, 6-32NC x 3/8	8
12	45042	Washer, Bonded Sealing SS	8
13	14822	Machine Screws, 4-40NC x 1/4	13
14	69538	Power Supply Bracket	1
16	15630	Locknuts, 1/2 NPT Black	11
17	67530	Interface Board Plate	1
18	67535	Interface Board Gasket	1
19	67869	920i Inteface Board	1
20	55708	Machine Screws, 4-40NC x 3/8	2
21	14875	Machine Screws, 10-32NF x 3/8	4
22	15140	Lock Washer, No. 10, Type A	4
23	46192	Flat Ribbon Cable Clamp	4
24	68661	Standoffs, Male-FEM, 4-40NC	2
25	69898	Nylon Washer ID 0.112	2
26	14618	Kep Nuts, 4-40NC Hex	2
27	15631	Cable Tie, 3 in Nylon	18
28	71431	Cable Assembly, 65W power	1
29	71436	Ribbon Cable Assembly, 28 in	1
30	67886	Standoffs, Long, Male 4-40NC	4
31	71739	Cinching Enclosure Clip	4
37	42640	Machine Screw, 1/4 - 28NF x 1	1
38	59250	Washer, .255 ID x .437 OD	1
39	30376	Sealing Ring, 1/2 NPT, Nylon	11
40	15628	Cord Grip, 1/2 NPT, Black	11
41	71455	Machine Screws, 1/4-28NF x .75	1
42	71447	Machine Screws 1/4-28NF	3
44	71333	920i Power Supply Board	1
45	68216	Metal Nameplate	1
46	69290	3V Coin Lithium Batter	1
47	67610	Single Channel A/D Card	1
48	68724	920i Cover Gasket	1
49	66502	Overlay, Membrane Switch	1
50	109549	920i CPU Board Assembly	1
51	15650	Cable Tie Mount 3/4 in	7
52	16861	Label, High Voltage	3
53	16892	Label, Earth Ground	1
55	120423	Back Panel Component	1

Item No.	Part No.	Description	Qty.
60	94274	Legend Plate, Emergency Stop	1
61	94273	Red Mushroom Switch	1
62	94277	Switch, Push Button Green	1
63	94316	Legend Plate Holder	3
64	114695	Legend Plate, Start	1
65	94298	3-Position Switch	1
66	120728	Legend Plate, Reset/Resume	1
67	94310	Contact Block	2
68	94311	Contact Block, Switch On	1
69	94312	Contact Block, Switch On	1
70	94313	Contact Block, Switch On	1
71	41035	16 Position Jumper Strap	1
72	33207	8-Channel Mounting Relay Board	1
73	15972	DC Output Relay Module	4
74	70780	50 Pin Flat Ribbon Cable	1
75	120762	Machine Screw, 6-32NC x 1 - 1/4	4
76	43636	DIN Rail	1
77	61141	Screwless WAGO End Stop	3
78	62964	WAGO Terminal Block	7
79	62966	WAGO Terminal Block	1
80	62968	Intermediate End Plate	3
81	62969	WAGO Fuse Terminal Block	2
82	54215	Time Delay Fuse, 3.15 amp	2
83	66190	Intermediate End Plate	1
84	62959	Label, WAGO Terminal Strip	1
85	65007	Label, WAGO Terminal Block	1
86	62967	Label, WAGO Terminal Block	1
87	66034	Label, WAGO Terminal Block	1
88	22087	Machine Screw, 6-32NC x 3/8	2
89	55337	Jumper, Series 280, Insulated	1
90	80590	Arrowhead Cable Tie Mount	8
91	15658	1 Inch Cable Tie Mount	2
92	121069	9 Inch Ground Assembly Wire	1
98	67608	Card, Digital I/O	1
99	77180	Conn, 8 Pos Screw Terminal	1
100	94276	Switch, Push Button	1
101	121037	Legend Plate, Discharge	1
102	62975	Plate, End Intermediate	1
103	62973	Block, Terminal WAGO 4	6
105	88733	Vent, Breather Sealed	1
106	88734	Nut, Breather Vent	1
107	45079	Relay Module	1
108	15971	Fused Relay Module	2
NS	54215	Fuse Between Din Rail/Relay Rack	1
NS	117901	Foam, Mixture High Density	1

Table 5-1. Replacement Parts List

6.0 Limited Warranty

Rice Lake Weighing Systems warrants that all Rice Lake Weighing Systems equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/ OEM and accepted by Rice Lake Weighing Systems. All systems and components are warranted against defects in materials and workmanship for two years.

Rice Lake Weighing Systems warrants that the equipment sold hereunder will conform to the current written specifications authorized by Rice Lake Weighing Systems. Rice Lake Weighing Systems warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, Rice Lake Weighing Systems will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, Rice Lake Weighing Systems will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to Rice Lake Weighing Systems for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment.
- Examination of such equipment by Rice Lake Weighing Systems confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; Rice Lake Weighing Systems shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than Rice Lake Weighing Systems or its duly authorized repair agents.
- Rice Lake Weighing Systems will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will Rice Lake Weighing Systems be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will Rice Lake Weighing Systems be liable for the cost of any repairs made by others.

These warranties exclude all other warranties, expressed or implied, including without limitation warranties of merchantability or fitness for a particular purpose. Neither Rice Lake Weighing Systems or distributor will, in any event, be liable for incidental or consequential damages.

Rice Lake Weighing Systems and buyer agree that Rice Lake Weighing Systems's sole and exclusive liability hereunder is limited to repair or replacement of such goods. In accepting this warranty, the buyer waives any and all other claims to warranty.

Should the seller be other than Rice Lake Weighing Systems, the buyer agrees to look only to the seller for warranty claims.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of Rice Lake Weighing Systems and the Buyer.

7.0 Compliance

EU DECLARATION OF CONFORMITY

EU-KONFORMITÄTSERKLÄRUNG
DÉCLARATION UE DE CONFORMITÉ

Rice Lake Weighing Systems
230 West Coleman Street
Rice Lake, Wisconsin 54868
United States of America

Type/Typ/Type: 820i and 920i series

English We declare under our sole responsibility that the products to which this declaration refers to, is in conformity with the following standard(s) or other regulations document(s).

Deutsch Wir erklären unter unserer alleinigen Verantwortung, dass die Produkte auf die sich diese Erklärung bezieht, den folgenden Normen und Regulierungsbestimmungen entsprechen.

Francais Nous déclarons sous notre responsabilité que les produits auxquels se rapporte la présente déclartion, sont conformes à la/aux norme/s suivante ou au/aux document/s normatif/s suivant/s.

EU Directive	Certificates	Standards Used / Notified Body Involvement
2014/30/EU EMC	-	EN 61326-1:2013, EN 55011:2009+A1:2010, EN 61000-6-1:1995, EN 61000-6-2:2007
2014/35/EU LVD	-	IEC 60950-1 ed.2
2011/65/EU RoHS	-	EN 50581:2012

Signature: Richard Shipman

Type Name: Richard Shipman

Title: Quality Manager

Place: Rice Lake, WI USA

Date: May 3, 2019

UK DECLARATION OF CONFORMITY

Rice Lake Weighing Systems
230 West Coleman Street
Rice Lake, Wisconsin 54868
United States of America

Type: 820i and 920i series

English We declare under our sole responsibility that the products to which this declaration refers to, is in conformity with the following standard(s) or other regulations document(s).

UK Regulations	Certificates	Standards Used / Approved Body Involvement
2016/1101 Low Voltage	-	IEC 60950-1 ed.2
2016/1091 EMC	-	EN 61326-1:2013, EN 55011:2009+A1:2010, EN 61000-6-1:1995, EN 61000-6-2:2007
2012/3032 RoHS	-	EN 50581:2012

Signature: Brandi Harder

Name: Brandi Harder

Title: Quality Manager

Place: Rice Lake, WI USA

Date: December 30, 2021

Form 0291 New 07/2021

Approved by: Quality Department

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