LOADRITE™ LR920

USER GUIDE

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Contents

1 THE LOADRITE LR920 WEIGHING SYSTEM

The Loadrite LR920 weighing system measures the weight of loads lifted by front loading garbage trucks.

The heart of the system is the LR920 indicator, which provides a keypad for entering instructions and an LCD screen to display weights and messages.

The indicator has internal memory which stores settings and data even when switched off.

The LR920 is installed in the cab of the truck and is connected to sensors on the lifting arms.

1.1 LOADRITE LR920 CONSOLE

Main Operating Keys

1.2 WEIGHT MEASUREMENT

The LR920 indicator (console) measures the sensors as the container is raised and lowered. The indicator converts the sensor signals into a weight reading and displays the value.

An electronic trigger device mounted on the lift arms ensures that the weight measurements are taken at the same position each time.

The weight of the forks and arms are zeroed out when the system is calibrated so that only the weight of the payload is displayed.

When the Nett (contents) weight of a bin is displayed, it can be added to the truck total.

1.3 DISPLAY

The LR920 display gives instructions and information, along with the measured or total truck weight.

The display is backlit for ease of operation in low light conditions.

To turn on or off the display lighting

▪ Press the 7 key.

1.4 KEYPAD

The table below shows the special functions that the keys have in addition to their numeric values used for entering data.

KEY	NAME	DESCRIPTION
EXIT	Exit	Exits the operation without changing the data and to put the system into "Stand-By" mode
ADD	Add	Adds the current load to the running total.
ZERO 0	Zero	Used to enter the number 0 and to Zero the weighing system
DATA	Data	Access the data menu. This menu is used to access and amend data.
BIN SIZE	Bin Size	Used to select the bin size
CLEAR TOTAL	Clear Total	Clears the short total
CLEAR ENTRY	Clear Entry	Clears the entry when entering data or changing settings
ENT	Enter	Enter key for accepting data or changes
↓ ↑	Arrows	Arrows used to navigate through the menu
•	Decimal Point	Used to enter the decimal point
1	One	Used to enter the number 1
2	Two	Used to enter the number 2
3	Three	Used to enter the number 3
4	Four/ Recall	Used to enter the number 4 and to recall a weight
5	Five	Used to enter the number 5
6	Six / Menu	Used to enter the number 6 and to access the menu

KEY	NAME	DESCRIPTION
7	Seven / Light	Used to enter the number 7 and to turn on or off the backlight
8	Eight / Clock	Used to enter the number 8 and to display the clock
9	Nine / Long Total	Used to enter the number 9 and to display the long total

1.5 INDICATOR LIGHTS

The LR920 provides four indicator lights positioned below the display.

The left light flashes when a weight is measured. The 2nd light comes on when the Nett weight of a container is measured and displayed.

The other two lights are not typically used.

WEIGH ● NETT ● ● ●

1.6 TRIGGER

To ensure consistent and accurate measurement, the LR920 system incorporates a position sensor (trigger) which initiates the weight measurement as the lifting arms are raised and lowered.

1.7   SWITCHING ON

The LR920 is normally connected so that it powers on with the ignition of the truck. It can be put into a 'Stand-by' mode by pressing the ![EXIT key] key when Ready is displayed. When in Stand-by, pressing any key returns to 'Ready'.

On power up, the upper display shows a sequence of check messages and then the Ready message.

2   WEIGHING - OVERVIEW

When ready to weigh, the LR920 displays **Ready** on the display. If the arms are not in the correct position to start the weighing cycle, the display will show the message **Arms Up**.

There may be other information on the display, depending on the mode of operation.

The total weight is shown on the bottom line of the display.

2.1   BEFORE WEIGHING A LOAD

Before weighing, for optimum accuracy make sure that:

- The display shows **Ready**.
- The container (bin) is fully back on the forks.
- The forks are level.
- The truck is on level ground.
- The correct bin size is entered *(only for Strain-Link systems)*.

2.2   WEIGHING A LOAD

To weigh a load

(Weights shown are examples only)

Raise the container through the weighing zone (The LR920 displays **Weighing**). If necessary, level the container to prevent material spillage. As you raise the load past the weighing zone, the LR920 beeps and the left hand light flashes to show that the weight has been measured.	**Weighing Total 1220** WEIGH ☀ NETT △ △ △
The LR920 will either show the **Lifted** message, or show the actual combined container and material weight. This is configured at installation. Continue to lift the container and empty it in the normal way.	**Lifted** WEIGH ☀ NETT △ △ △

Lower the container to the ground. As it passes through the weighing zone, the LR920 will again show the **Weighing** message. When the weighing is complete, the left hand light will flash. The Nett weight is then displayed (the second light will turn on).	**Nett** **220** WEIGH NETT
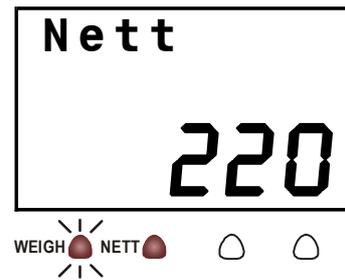
✏️ While the Nett weight is displayed, the NETT light will be on.

In the picture above, the weight is 220kg.

While the NETT light remains on (for a few seconds), you can:

▪ Press [ADD] to add the displayed weight to the running totals.

▪ Press [ZERO 0] to zero the measuring system.

These functions are described separately later in this manual.

If you don't press a key, the LR920 beeps and prompts you to take action. If after a further delay, you do not press a key, the LR920 discards the just measured weight and goes back to the Ready state.

2.3   ENTERING BIN SIZES

(Only necessary for Strain-Link systems)

The LR920 uses the size of the bin (container) as part of the weight calculation. There are up to 9 different bin sizes available (numbered 1 to 9) which are set-up at the time of the system configuration.

To enter the bin size, press the [BIN SIZE] key and then the number key of the bin required. Enter the bin size BEFORE lifting the bin.

The bin sizes for your system can be entered below.

Bin Size #	Actual size

3 TOTAL

The LR920 displays each weight measured and the running total as you add Nett weights.

The Total is normally used to record the payload of the truck.

The LR920 displays Total on the bottom line of the display.

To clear the Total

Press **CLEAR TOTAL** (normally done at the land fill).

The indicator clears the Total and then displays: **Cleared Total**

```
Cleared
Total
               0
WEIGH○  NETT○    ○    ○
```

The LR920 may also be configured to request the weighbridge weight be entered after the Total is cleared. If prompted, enter the weighbridge total value and press **ENT**.

3.1 LONG TOTAL

In addition to the normal Total, a Long Total is recorded. The Long Total is normally used to record the total hauled for a day or week.

To display the long total

(Weights shown are examples only)

Press **9**

The Long Total is displayed while the **9** key is held down, and for a few seconds after it is released.

```
Long Tot
192340

WEIGH○  NETT○    ○    ○
```

To clear the long total

(Weights shown are examples only)

While the Long Total is displayed, press **ENT** The LR920 prompts you to confirm that you do want to clear.	**Long Tot Clear?** **23400** WEIGH◯ NETT◯ ◯ ◯
Press **ENT** to confirm. The indicator clears the Long Total and then displays:	**Long Tot Cleared** WEIGH◯ NETT◯ ◯ ◯
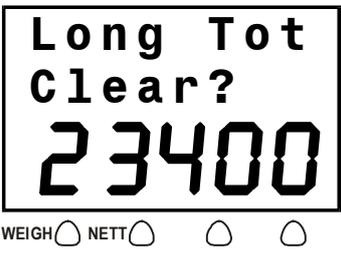
4 ZEROING THE LR920

When you raise empty forks through the weighing zone, the indicator should display zero (if the LR920 is configured to display weights as the load is lifted). However, due to changes in the lifting arms (mainly caused by temperature), a small zero error may occur. This is mostly automatically compensated for by the LR920 when the empty weight of the container is measured.

To zero the LR920

(Weights shown are examples only)

With empty forks, raise the arms until the left light flashes and the `Lifted` message appears. Lower the arms until the second light comes on.	**Lifted** WEIGH ◯ NETT ● ◯ ◯
Press **ZERO 0** The LR920 performs the zero adjustment and displays a confirmation message.	**Zeroed** WEIGH ◯ NETT ◯ ◯ ◯
The LR920 then returns to the 'Ready to Weigh' state.	**Ready** **0** WEIGH ◯ NETT ◯ ◯ ◯
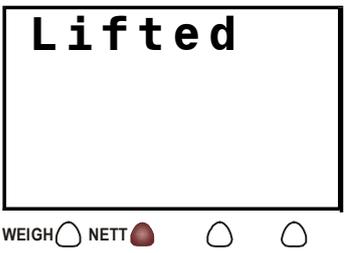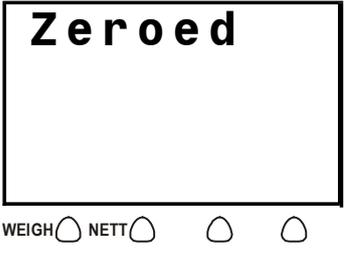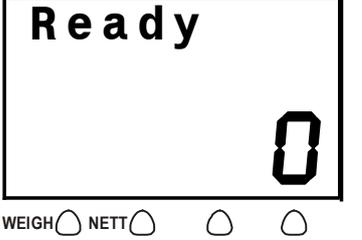
4.1 LARGE ZERO ERROR

If, while zeroing, there is a large zero error (displayed weight greater than 5% of full scale), the LR920 asks you to confirm that the forks are empty. Press **ENT** (yes) to confirm forks are empty, or press any other key if not.

Depending on your response, the indicator displays `Zeroed` or `Not Zeroed`.

5   ADDING AND RECALLING

5.1   ADDING A WEIGHT

The ADD function adds the Nett weight to the short and long total.

To add a new Nett weight

1. Lift and lower the arms so that the NETT light is on. (The bottom line of the display shows the Nett weight.)

2. Press ![ADD]. The LR920 updates the totals.

Timeout

After the container has been lowered to the ground, if the Nett weight is not added within a short period of time it will time out. Before the weight times out, the LR920 will prompt to **Add?**.

5.2   AUTOMATIC ADDING OF WEIGHTS

The LR920 has an option (configured at installation) to automatically accept Nett weights and ADD them to the totals.

If Automatic Add is enabled, then the measured weight will be automatically added a short time after it is displayed. There is no need to press any buttons.

NOTE: The Automatic Add function will only operate when the arms have gone back to the 'dump' position during the cycle. This helps to ensure that only valid bin emptying cycles are added.

Refer to page 20 for details on the `No Dump` error message.

5.3   RECALLING LAST NETT WEIGHT

The recall function recalls and displays the last Nett weight if it has timed out. Recalling is equivalent to lifting the same weight again, however it will only work if the previous Nett weight timed out.

To recall the previous Nett weight
(Weights shown are examples only)

Press ![4] (![RECALL icon] is the **RECALL** icon). The LR920 displays the previous weight and the NETT light comes on.	**Nett** **220** WEIGH ◯ NETT ● ◯ ◯
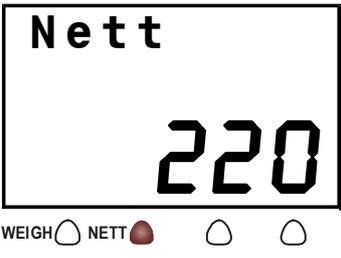
6   ADDITIONAL DATA

If this feature is enabled, the LR920 allows you to enter up to three user-defined numbers, which provide additional information to the weight data.

The specific data for the LR920 is set up at installation time. Examples for the labels attached to the data are:
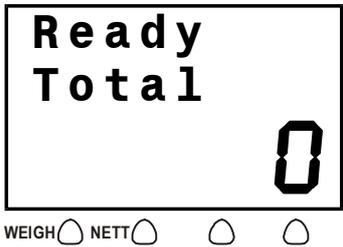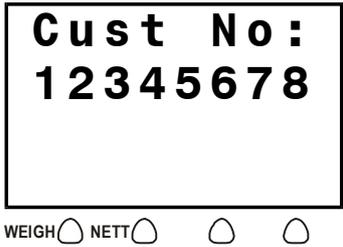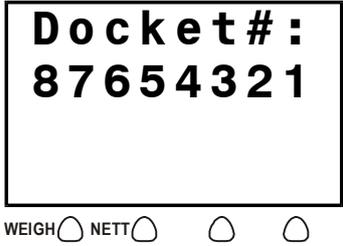
Cust No:

Docket#:

Bin No:

When you press the **DATA** key, the LR920 displays the three labels in sequence and you can enter the relevant numbers for the current load. The numbers can be up to 8 digits long.

This information can be printed or logged to an onboard computer, data logger, modem or other device (if fitted).

To enter additional data

(This explanation uses the example labels above)

When the LR920 is Ready, press **DATA**	**Ready** **Total** **0** WEIGH◯ NETT◯ ◯ ◯
The LR920 displays the first label (e.g. Customer No) and prompts you to enter a number. Enter a number (up to eight digits) and press **ENT**	**Cust No:** **12345678** WEIGH◯ NETT◯ ◯ ◯
The LR920 displays the second label (e.g. Docket No) and prompts you to enter a number. 3. Enter a number and press **ENT**	**Docket#:** **87654321** WEIGH◯ NETT◯ ◯ ◯

Enter the third number (e.g. Bin No) in the same way.	**Bin No:** **43215678** WEIGH◯ NETT◯ ◯ ◯
The LR920 then returns to the Ready to Weigh state.	**Ready** **Total** **0** WEIGH◯ NETT◯ ◯ ◯
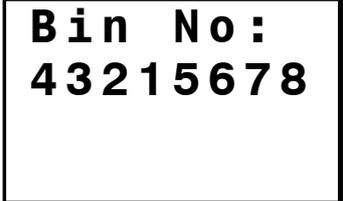
✏️ You may have one, two or three label / number pairs available depending on how the LR920 is set up at installation time.

7 USER MENU OPTIONS

The User menu (*UserMenu)* allows you to set the clock. It also provides access for Loadrite installers to calibrate and set up the LR920. Setup requires a security code to allow access to these functions.

7.1 MENU KEY

The same keys are used for all menu options as follows:

▪ To access the menu, press **6** .

▪ To obtain the next menu option, press the arrow keys.

▪ To accept an option, press **ENT** .

▪ To exit the menu, press **EXIT** .

▪ If you do not press a key, the LR920 returns to the Ready state after a short delay.

7.2 SETTING THE TIME AND DATE

The LR920 has an internal clock which can be used for inserting the time and date into recorded and printed data. You can also display the time and date on the upper display by pressing **8** (is the **TIME / DATE** icon).

To set the time and date

When the LR920 is Ready, press . **6** Press ⇩ and the display should show: To set the clock, press **ENT**	**UserMenu** **Clock?** WEIGH◯ NETT◯ ◯ ◯

The LR920 shows the current time and prompts you to enter the minutes. Enter the correct minutes using the number keys and press ENT (You can clear mistakes using the CLEAR ENTRY key.)	**11:31 Am** **Minutes** **31** WEIGH◯ NETT◯ ◯ ◯
Enter the correct hours using the number keys. Use ⇧ ⇩ to toggle AM/PM setting. When the hours are correct, press ENT	**11:31 Am** **Hour Am** **11** WEIGH◯ NETT◯ ◯ ◯
Enter the correct month using the number keys and press ENT	**24 Apr** **Month** **04** WEIGH◯ NETT◯ ◯ ◯
Enter the correct date using the number keys and press ENT	**24 Apr** **Date** **24** WEIGH◯ NETT◯ ◯ ◯
Enter the correct year using the number keys and press ENT	**24 Apr** **Year** **2010** WEIGH◯ NETT◯ ◯ ◯
Finally, the LR920 displays the complete time and date for a few seconds before returning to the Ready state.	
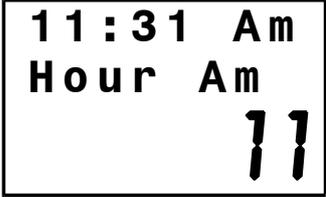
✏️ At any time while entering the time and date you can press EXIT ⏻ to return the LR920 to the Ready state without altering the current time and date.

8   PRINT FUNCTIONS

When an LP950 printer is connected weight data can be printed as the LR920 makes measurements. Most print options can be set up at installation.

The data can be automatically printed when particular functions are performed as listed below.

On Power Up

LR920	Always printed

ADD performed

Weight	Optional
Sequence number	Optional
Time	Optional
User defined data 1	Optional
User defined data 2	Optional
User defined data 3	Optional

Clear short total

Total weight Optional	
User defined data 1	Optional
User defined data 2	Optional
User defined data 3	Optional
ID number (of truck)	Optional
Time and date	Printed if Total printed
User title (company name)	Printed if Total printed

Clear long total

Long total weight	Always printed
ID number (of truck)	Always printed
Time and date	Always printed

Zero performed

Weight zeroed	Always printed

8.1   RECEIPT PRINTING

The LR920 has an optional function that allows a customer receipt to be printed 'on command'. This function is useful if a docket needs to left with the customer when a bin is emptied.

When enabled, after a bin has been emptied and the weight Added to the truck Total, a receipt can be printed by pressing the '1' key on the LR920 keypad. Depending on options selected at installation, a docket similar to below will be printed:

```
-------------------

Sands Hauling

Bin Nett:   450kg

Bin Size: 1

Truck Number: 456

Date:  1 Jun 2010

Time: 12:30 pm

-------------------
```

9 SPAN CALIBRATION CORRECTION

This function allows small changes to be made to the LR920 calibration if the arms of the truck are modified or if no accurate test weight is available when the LR920 is calibrated at installation time.

The adjustment is carried out by entering the total of weights recorded at a weighbridge (scale house) over a period of time and the corresponding LR920 total.

To perform the adjustment you need to obtain a security access code from your Loadrite installer.

WARNING

The LR920 alters its calibration every time this function is used. It is important that you only use this function once with a given set of data. If the same weights are entered again, the LR920 will over correct and its accuracy will be seriously impaired.
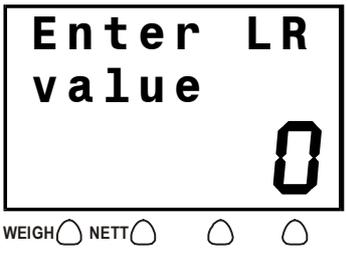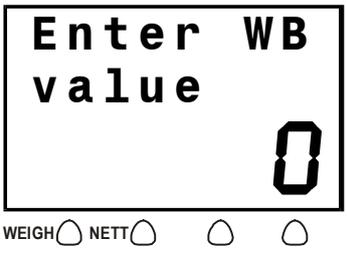

The method is explained below using an example.

A truck is loaded and then proceeds to a weighbridge (scale house). The totals for the loads in this example are as follows:

LR920	6000kg
Weighbridge	6200kg

To correct the calibration of the LR920

Press 6 Press ENT	**UserMenu** **Setup?** WEIGH◯ NETT◯ ◯ ◯
The LR920 prompts you to enter the security access code. Enter the access code and press ENT	**Access** **Code?** WEIGH◯ NETT◯ ◯ ◯

The LR920 prompts you to enter the Loadrite value for the weight. Enter the Loadrite weight (6000 in this example) and press **ENT**	**Enter LR value** **0** WEIGH◯ NETT◯ ◯ ◯
The LR920 prompts you to enter the weighbridge value. Enter the weighbridge weight (6200 in this example) and press **ENT**	**Enter WB value** **0** WEIGH◯ NETT◯ ◯ ◯
If the adjustment is within limits, the LR920 alters its calibration, briefly displays a value of scale factor and then returns to the Ready state. If the required adjustment is too large, the LR920 displays an error message and does not change its calibration.	**Ready** **0** WEIGH◯ NETT◯ ◯ ◯

Checking the adjustment

You can check the calibration adjustment by obtaining and comparing new Loadrite and weighbridge totals. If necessary, the calibration adjustment can be performed again using the new data.

Notes to remember:

■   It is important that you only use this function once with a given set of data. If the same weights are entered again, the LR920 will over correct and its accuracy will be seriously impaired.
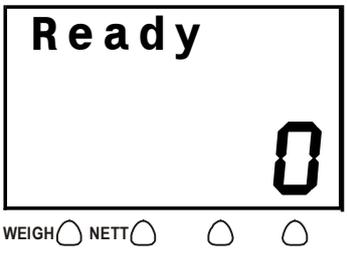
■   It is very important to measure the empty (Tare) weight of the truck when it has dumped its load. Stored Tares can be inaccurate and cause the system to be incorrectly calibrated.

10 ERROR MESSAGES

10.1 TRIGGER FAULT

The LR920 continually checks the function of the trigger device. If a fault occurs, the indicator displays the following message.

```
Trigger
Fault
```

If this occurs, contact your Loadrite dealer.

10.2 NOT DUMPED

This error message can occur when 'Automatic Adding' is enabled. For a weight to be automatically Accepted (added to the totals), the forks must go back to the dump position as part of the sequence. If they do not go back far enough, the following message is displayed.

```
No Dump.
Add?
        220
```

The operator can manually Accept (Add) the measured weight if valid.

Refer to page 11 for more details on Adding weights.

10.3 RELEASE CODE REQUIRED

This message appears typically on new systems that require a Loadrite Distributor to enter a Release Code after checking the system is correctly set up and calibrated. This process ensures the LR920 system will operate at its best performance.

The display will flash the message:

Contact Loadrite; for release code; Ph 1-800-665-860

Please contact your local Loadrite distributor (in Australia) and provide them the serial number on the back of the LR920 indicator console.

11 SPECIFICATIONS

Minimal Weighing Delay

Weighing delay is minimal, because the weighing function is carried out during a normal lift.

LR920 Power Requirements

Supply Voltage 12 to 32 Volts DC

Supply Current LR920 - 160mA typical, 350mA max.
LP950 printer - 50mA standby, 4A peak.

Automatic transient suppression exceeds relevant SAE specifications for DC automotive power supply transients.

Signal Inputs and Outputs

Sensor inputs   4 - 20mA (0-100%)

Trigger input Pulse width modulated 0 to 5V.

Serial communications   RS232 to printer and data logger.

Display / Keyboard

DisplayBacklit LCD.

Keyboard 20 backlit keys including numeric and special function keys.

Clock

Built in clock provides time and date.
Hours, minutes, AM/PM, day, month, year.

Physical

LR920 indicator protected to IP54.
Dimensions W 170mm, L 270mm, and H 90mm.
Weight - 2kg with mounting bracket
Rotary trigger   Protected to IP67

Available Options

LP950 printer: 24 column.

Remote ADD button: For operator convenience.

Interlock system: To disable weighing under defined machine conditions.

Optional features

A range of additional operating features can be enabled at installation time.

12   OUTPUT/INPUT CONNECTIONS

Transducer
1. Do not connect
2. Analog input 2. (from sensor amplifier)
3. Do not connect
4. +10 volt excitation
5. Analog input 1. (from sensor amplifier)
6. Shield
7. Ground

Power/Control
1. Negative supply (ground)
2. Positive supply
3. Remote button 2 (no present function)
4. Remote button 1 (add)
5. N.C.
6. Interlock
7. N.C.
8. Trigger Positive supply
9. N.C.
10. Rotary trigger
11. N.C.
12. N.C.
13. Ground output
14. Positive output supply
15. Ground output

Printer
1. Negative
2. Positive
3. +12V output (do not use)
4. N.C.
5. No function
6. Printer RS232 output
7. Printer busy
8. EDP RS232 input
9. EDP RS232 output
10. Ground
11. Reserved
12. N.C.