

# Weighbatch

## LS-xxx-SGL Single Phase Loader

### Operating Manual

Software Version 1.20



# Table of Contents

|                                       |           |
|---------------------------------------|-----------|
| <b>INTRODUCTION</b>                   | <b>4</b>  |
| <b>AT THE VERY LEAST, READ THIS !</b> | <b>5</b>  |
| <b>SPECIFICATION</b>                  | <b>6</b>  |
| Spare part Numbers                    | 6         |
| <b>PRINCIPLE OF OPERATION</b>         | <b>7</b>  |
| <b>SAFETY</b>                         | <b>9</b>  |
| <b>INSTALLATION</b>                   | <b>10</b> |
| <b>SETUP</b>                          | <b>11</b> |
| Entering Setup                        | 11        |
| Maximum Fill Time                     | 11        |
| Auxiliary Input Mode                  | 11        |
| Blowback Delay Time                   | 12        |
| <b>OPERATION</b>                      | <b>13</b> |
| Starting the Loader                   | 13        |
| Stopping the Loader                   | 13        |
| Alarm                                 | 13        |
| <b>MAINTENANCE</b>                    | <b>14</b> |
| Daily:                                | 14        |
| Monthly:                              | 14        |
| <b>TROUBLESHOOTING</b>                | <b>15</b> |
| <b>WARRANTY</b>                       | <b>16</b> |
| Service                               | 16        |
| Warranty Procedure:                   | 16        |
| <b>CIRCUIT BOARDS AND MODULES</b>     | <b>17</b> |
| Control Board                         | 17        |
| Power supply                          | 17        |
| Motor Switching                       | 17        |

# Introduction

This manual describes the installation and operation of the Weighbatch LS-250-SGL Single Phase Loader. While we have taken care in designing your Loader to make it easy to use we encourage you to read this manual to fully understand how it operates and to benefit from the experience of ourselves and previous users.

This manual contains information of use to everybody who uses the Loader but is written particularly for the person who installs it, sets it up and probably teaches others how it is to be used.

Not everyone likes reading manuals. If you are the sort of person who likes to try first and ask questions later please read the short section **“At the very least, Read This!”**.

The instructions in this manual are designed for the Loader as a stand alone unit. If you have other Weighbatch products using your Loader, such as the Weighbatch Mini Blend, the manuals accompanying these products should be read in conjunction with this manual.

## How this manual is organised

The manual is grouped into four main areas. The first group (Read This, Specification, Principle of Operation and Safety) is a general introduction to the Loader and how it works.

The next group (Installation and Setup) describes how the Loader is installed and made ready to operate.

The next group (Operation and Maintenance) describe the day-to-day operation of the Loader and any regular maintenance requirements.

The final group (Troubleshooting, Warranty, Circuit Boards) we hope you don't need to refer to very often. It covers what to look for when things go wrong and how to get things fixed.

## If it doesn't work !

If you experience any problems with your unit, please refer to the **Operating** and then **Trouble Shooting** sections of this manual. We have attempted to cover the most likely problems. This will help you gain a better understanding of the Loader and may result in a quicker solution than going straight to your supplier.

# At the very least, Read This !

Ok, a single phase vacuum loader is not rocket science and you probably can install and run it with your eyes closed but there are a few things we would like to draw your attention to.

- If you have a filter blowback fitted (LS-250-SGL-B) then this needs to be connected to the factory air supply with a 6mm air line. The maximum pressure of the air supply must be less than 10 Bar. If it is greater than this then the Loader must be supplied through a pressure regulator.
- The Loader is turned on and off with the two buttons on the front of the control panel.
- The alarm light will flash if the Loader does not fill with material to the full sensor within the programmed fill time. This defaults to 30 seconds. It can be changed. Refer to the **Setup** section.
- If you have the filter backflush option fitted this operates at the start of each loading cycle. It will operate the first time you turn the loader on and can be quite startling if you have not heard it before. **Be Prepared !**

# Specification

| Parameter              | Value                   | Condition                        |
|------------------------|-------------------------|----------------------------------|
| Power supply           | 240 VAC, 1kW<br>10A max |                                  |
| Air supply             | 10 Bar max              |                                  |
| Loading rate           | 1200 kg/hr              | 4m hose<br>950 kg/m <sup>3</sup> |
| Weight (loader)        | 11 kg                   |                                  |
| Weight (hose)          | 1.0 kg/m                |                                  |
| Dimensions (l,w,h, mm) | 270 x 400 x 670         |                                  |

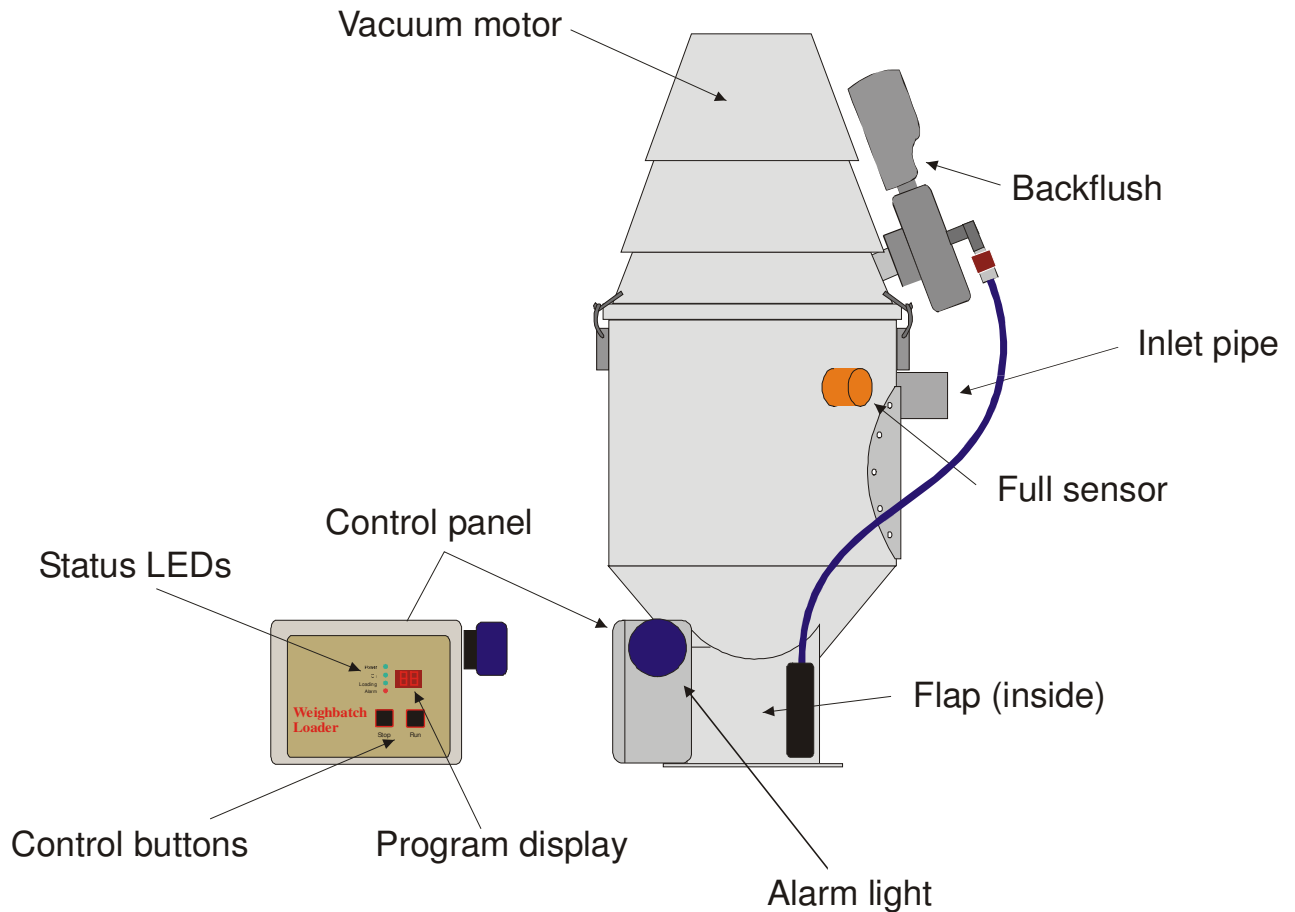
## Spare part Numbers

| Part No | Description                      |
|---------|----------------------------------|
| 260100  | 1 ph vacuum motor, 230V          |
| 260110  | 1 ph motor brush set             |
| 300025  | Power supply 15V, 30W, micro     |
| 303450  | VCL - Vacuum loader board        |
| 331020  | Prox sensor 30mm capacitive      |
| 331025  | Prox.sensor, Inductive, M12      |
| 340025  | Solid State Relay, 1ph, 240V, 5A |

## LS-250-SGL-B Additional Parts

| Part No | Description                |
|---------|----------------------------|
| 202020  | Sol body Nugget 40 Norgren |
| 204020  | Vacuum valve 3/4"          |

# Principle of Operation



When the Vacuum Motor is turned on, air is drawn through the Loader. The Loader sucks material into the body of the Loader.

The cyclone effect and mesh filter within the Loader allows the air to pass through the Loader and leaves the material behind.

When the material reaches the Full Sensor the Loader is full of material. The Loader stops sucking and allows the material to fall out through the flap at the bottom of the Loader.

As the material from the body of the Loader drains through the bottom flap it forces the flap open. While the area below the Loader remains full the flap is held open by the material. This flap has a proximity switch fitted to it, which indicates the flap is open and the area below the Loader is full.

The bottom flap is lightly weighted so that when the material falls away from the Loader the flap will close indicating that the Loader is no longer full. While the loader is sucking material this flap is held shut by the vacuum within the Loader.

## Filter and Backflush

A fabric filter prevents dust and fine material from passing through the vacuum motor. In order to lessen the clogging of this filter the LS-250-SGL-B model Loader backflushes the filter with compressed air at the start of each load. A small compressed air reservoir is discharged into the

lower cavity of the motor housing in a short pulse. This shakes the filter fabric and loosens any material.

### **Full Sensor**

A capacitive proximity sensor is used to detect when the loader has filled with material. Use of this sensor allows for more efficient use of the Vacuum Pump since the Loader can stop loading when full rather than loading for a set time. The sensor also allows the generation of “Not Filling” alarms.

### **Control Buttons**

Two buttons are used to control the Loader. One button turns the Loader On, one turns it Off. These buttons are also used in programming the Loader.

### **Status LEDs**

Four Status LEDs show the current status of the Loader. The top green LED indicates power is connected. The second green LED indicates whether the Loader is On. The third green LED indicates if the flap is closed, ie. if the Loader is empty. This LED will flash on and off when the Loader is loading. The bottom red LED indicates an alarm condition for the Loader.

### **Program Display**

The Loader can be programmed with various options such as “Maximum Fill Time”. The two character display is used during programming. A list of these options is given in the **Setup** section.



# Safety

**The following is a list of safety points that should be adhered to at all times:**

Follow the normal safety provisions for working with compressed air (LS-250-SGL-B).

Treat your Loader with the respect you give any other electrical machinery in your plant.

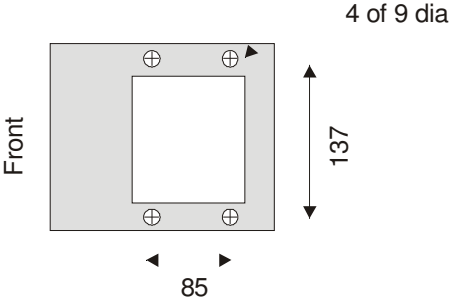
Ensure all material is free from foreign objects.

Do not modify your Loader without consulting Weighbatch.

Only use Weighbatch supplied spares or recommended parts if you are replacing any parts.

# Installation

The Loader is supplied with a probe and 3 meters of hose. The Loader must be mounted above the hopper it is feeding and the hose and probe connected to the Loader. The flange detail for the loader is shown below.



FLANGE DETAIL:  
200 x 160 external,  
110mm square opening,  
4 of 9 dia holes at 137 \* 85

The Loader should be bolted to the hopper lid using M6 bolts with “nyloc” or other vibration proof fastenings. If you are mounting the Loader on a Weighbatch hopper the hopper lid will already have the mounting holes installed.

## Power

The Loader requires a single phase electrical supply of 220 Volts at 50 Hz. The Loader is supplied with 3 meters of cord and has a New Zealand plug which may need to be changed.

## Air Supply

For the LS-250-SGL-B, the filter blowback function of the Loader requires compressed air. The maximum pressure for the air supply must be less than 10 Bar. If the factory air pressure is greater than this the Loader must be connected to a pressure regulator. Connection to the Loader is by 6mm plastic air line.

# Setup

The Loader has a number of set-up parameters used to alter the way the it performs. During normal operation it will not be necessary to access these parameters and care is necessary when viewing or editing them.

## Entering Setup

Press the **Stop** button and hold. After a couple of seconds the two character display on the control panel will light up and show:



Continue to press the **Stop** button for a further 5 seconds. The control panel display will show something like:



The character on the left indicates the parameter being programmed. These are:



- the maximum fill time,



- the auxillary input mode,



- the blowback delay time,

This character is changed by pressing the **Stop** button. After 3 presses the display will go back to blank and the programmed values will be saved.

The character on the right is the parameter value. These are described below. This value is changed by pressing the **Run** button.

## Maximum Fill Time



This parameter is the maximum time allowed for the Loader to fill with material before the alarm output is turned on. The time is given by the displayed value multiplied by 10 seconds. The default value is 30 seconds.

## Auxillary Input Mode



The Loader control board has an auxillary input which can be used to override the normal running of the Loader. For example this could be used with a low level sensor in the material bin so that the Loader would not attempt to suck if the bin was empty. The values are:

- 0 = Auxillary input not used (default)
- 1 = Loader sucks only when auxillary input is ON
- 2 = Loader sucks only when auxillary input is OFF

## Blowback Delay Time

**d2** This parameter controls the delay time (in seconds) between the filter blowback pulse and the starting of the vacuum motor. For the LS-250-SGL without blowback it can be set to zero.

# Operation

Your Loader has been programmed for typical use and can be used immediately without further programming. To change your Loader set-up refer to the **Setup** section. It is important to document any changes done to this standard setup.

## Starting the Loader

- Ensure that your Loader has power and air connected to it.
- Turn the power on with the switch mounted on the right hand side of the Loader control box. The Power On indicator light on the front panel should now be on.
- Press the **Run** button to start the Loader. The Loader will now start sucking and will continue to load material as required.

## Stopping the Loader

Press the **Stop** button to stop the Loader.

## Alarm

The Loader has a programmed Maximum Fill time. If the Loader sucks for longer than this time without filling with material the alarm light will be turned on. The alarm light will continue to flash until the Loader is stopped or until it manages to complete a fill within the maximum time.

# Maintenance

## Daily:

- Inspect internal filter and clean as required.

## Monthly:

- Inspect motor brushes. Replace when worn (approx 12 months @ 10 loads per hour).

# Troubleshooting

There are very few things that can go wrong with the Loader. This section describes typical problems and their solution.

## No Power

The green Power On LED on the control panel does not light and the Loader does not work at all.

Typically caused by a blown fuse. The fuse is located within the connection block for the incoming mains power within the control panel.

## Very Slow Filling

The Loader runs as expected but sucks poorly causing Not Filling alarms.

Typically caused by a clogged filter. Clean the filter. If fitted, check that the backflush is pulsing at the start of each cycle. Check the air connection. This can also be caused by a badly adjusted probe which attempts to suck too much material and not enough air. Ensure that there is a continuous flow of material without plugging and surging. Check the flap is closing fully.

## Not Stopping at Full Sensor

Loader is loading as expected but does not stop when material reaches the Full sensor.

Check that the sensor is operating correctly. There is a light on the sensor which indicates the presence of material. It should be off at the start of a cycle and should turn on when material reaches the sensor. Adjust the sensitivity as required with the small screw in the rear of the sensor. If the sensor cannot be adjusted it should be replaced. Check the sensor input LED on the control board.

## Not Starting with Flap Closed

Loader is turned On but does not start when flap is closed.

Check that the flap sensor is operating correctly. The light on the sensor should come on when the flap is closed and turn off when it opens. If it does not come on check with a screw driver and adjust the sensor closer to the flap weight if required. Check the sensor input LED on the control board.

## Stopping after 5 Seconds

The Loader runs as expected but stops loading after 5 seconds and before the material reaches the full sensor.

Check the full sensor is operating correctly. Refer **Not Stopping at Full Sensor**.

# Warranty

## Service

Weighbatch machines carry a limited parts warranty as stipulated in Weighbatch's Terms and Conditions of Sale.

If your service request is not covered by this warranty you will be charged for parts, time and disbursements accordingly.

This manual is set out to cover most situations but should you require further assistance please call your supplier. Quote the model number of your Loader (LS-250-SGL or LS-250-SGL-B) when requesting service. In the case of a fault with the unit, please describe clearly the symptoms of the problem.

## Warranty Procedure:

If you believe the fault is a warranty problem you need to advise Weighbatch as soon as possible and supply the following details of the fault:

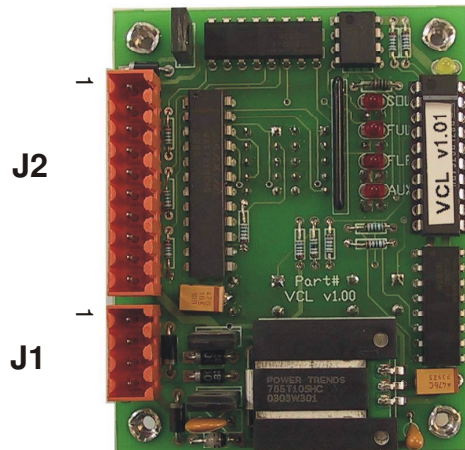
- Company Name
- Contact Name
- Date Fault Occurred
- Model Number
- Your machine name/number
- Description of Fault (Please describe accurately nature of fault)
- Description of circumstances when fault occurred (throughput of your machine etc)



# Circuit Boards and Modules

## Control Board

The Loader is controlled by a single circuit board (VCL) pictured below.



All connections to the board are through the two connectors.

| Connector J1 |                                  |
|--------------|----------------------------------|
| Pin          | Use                              |
| 1            | Power 0V                         |
| 2            | Blowback output (15V, 500mA max) |
| 3            | Alarm output (15V, 500mA max)    |
| 4            | Power +15V                       |

| Connector J2 |                                   |
|--------------|-----------------------------------|
| Pin          | Use                               |
| 1            | Motor run 0V                      |
| 2            | Motor run output (15V, 500mA max) |
| 3            | Auxillary input (NPN)             |
| 4            | Auxillary +15V                    |
| 5            | Full sensor 0V                    |
| 6            | Full sensor input (NPN, N/C)      |
| 7            | Full sensor +15V                  |
| 8            | Flap sensor 0V                    |
| 9            | Flap sensor input (NPN, N/O)      |
| 10           | Flap sensor +15V                  |

## Power supply

The Loader is powered by a 15V power supply. The supply has universal input, 40W output.

## Motor Switching

The vacuum motor is switched by a zero crossing solid state relay. Omron RM1A23A25.