# CE

### Electro-Magnetic Compatibility (EMC)

This product complies with Council Directive 89/336/EEC when installed and used in accordance with the relevant instructions.

Service and Technical Support

PLEASE CONTACT YOUR LOCAL DISTRIBUTOR

If unknown then fax: 44 (0) 1453 733311

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# User Guide.

# Weighlog 100 Weighing System

Calibration and Operation

Software Ref: UDJ600-5

.

## Contents

1. Overview		3
2. Maintaining Accuracy		
2.1 2.2	Machine requirements	5
3. Preliminary Checks		
3.1 3.2 3.3 3.4	Select Channel Check / Change Weighing Mode Check Zero Weight (Check Tare) Zero Weight (Tare)	6 6 7 8
4. Weighing		9
4.1 4.2	Dynamic Weighing Static Weighing	9 9
5. Reset Totals		
5.1 5.2	Reset Sub-total Reset Grand Total	10 10
6. Calibration		11
6.1	Weight Calibration	11
6.2	6.1.1 Display / Change Calibration Factor - 11 Calibration Procedure	12
6.3	6.2.1 Calibration Example - 13 Select Units	14
7. Faults		15

The Weighlog 100 is intended for use on skid-steer loaders, utility tractors with a loader attachment, wheel loaders, backhoe loaders (loader side only) and gas powered fork lifts.

It measures, displays and records the net weight lifted, normally based on sensing the lift system hydraulic pressure. Pressure sensing is problematic on certain types of equipment due to the design of the hydraulic system. In these instances strain sensing technology may be used instead.

There are 5 individual display channels available. These can be calibrated for up to 5 different loader attachments, different trailers or different commodities. Each channel will display the net bucket weight lifted at any time. If required the bucket weight can be added to the total for the channel in use and will also be added to the TOTAL channel, which accumulates weight from all of the five channels.

The instrument has an illuminated 4 digit LCD display, 3 front panel switches, an external pushbutton, and an internal audible alarm. An external audible alarm is optional.

The instrument is normally powered on via the ignition circuit and recalls the function selected when last used.

With careful operation, system accuracy can be as good as  $\pm 1\%$  of full load although  $\pm 2\%$  is more common in practice.

#### Weighlog readings are not suitable as a legal basis for the sale of goods.

For each channel you can :

- adjust the Calibration Factor
- select either static or dynamic weighing mode.
- set the Zero Weight (Tare).
- display and add the bucket weight to the sub-total.
- reset the Sub-total.
- receive audible alarm confirmation of the tare and loading routines.

Weighlog 100.

Fig.1

The front panel has five buttons. Only the middle three are used on the

### **Display Units**

The instrument can display up to 9999 tons. If you prefer to work in lbs units, this option is selectable from the programme mode.

When set to the "USA" readout option, the display will read up to 9990 lbs rounded to the nearest 10 lbs. Above this threshold (e.g. when displaying any of the totals) the display will alternate between "lbs x 1000" and any remainder. The instrument can display up to 99,990 lbs

For example, for a total of 22,563 lbs the display will alternate between :



The Weighlog translates pressure (or strain) to weight by means of a calibration factor programmed into the instrument. The accuracy of the system depends to some extent on the following :

#### 2.1 Machine requirements

- 1. **Operating Temperature :** Always allow the machine and the hydraulics to warm up to the normal operating temperature before commencing weighing.
- 2. Weighing on level ground : Avoid weighing when on a slope or a side slope. Wherever possible weigh on a level area.
- **3.** Vehicle movement : Best results are obtained when weighing while the vehicle is stationary. It is important that the load does not bounce or jerk as it is lifted.
- 4. Maintenance : Keep your machine maintained in good condition. Things like excessively worn bushings, pivot pins and slideways, as well as lack of lubrication to these areas can have an adverse effect on weighing accuracy.
- NOTE: After any major servicing particularly if you have replaced worn components or carried out welding repairs, you should re-calibrate the weighing system. If the hydraulic system has been drained and re-filled you should also check for any air which may have become trapped at the pressure sensor.

#### 2.2 Lifting procedure

The correct lifting procedure is especially important for dynamic weighing. The load should be lifted smoothly and consistently through the weighing position. The engine speed should be the same for every weighing. The engine tachometer if fitted, is useful here.

The best procedure is as follows :

- 1. Having picked up the load, crowd (roll) the bucket right back as far as it will go.
- 2. Pull the lift lever right back with the engine at idle.
- 3. Increase engine revs to the "weighing speed" and lift smoothly without bouncing or jerking. Ensure that you lift at the weighing speed as you pass through the reference position (dynamic weighing).

## 3 - Preliminary Checks

#### 3.1 Select channel



Ensure that the correct channel is selected for the attachment / commodity / trailer to be weighed.

Simply press the **T** button to cycle through the channels.



# 3.2 Check / change weighing mode

 With the appropriate channel selected, press the CAL button. The display will show "dYn" for dynamic weighing mode or "StAt" for static weighing mode.



To change the mode:

- 2. Press and hold the CAL button...
- 3 ...then press the subtraction to switch between the weighing modes.



#### 3.3 Check Zero Weight (Check Tare)

You should check the zero weight regularly as part of the daily operating routine. ALWAYS check zero weight if the machine has been left idle for some time and has cooled down.

The lifting procedure is different for Dynamic and Static weighing modes. Note the weighing mode set on the channel you have selected and follow the appropriate procedure below.

- 1. Ensure that the bucket is completely empty. Crowd (roll) the bucket right back as far as it will go.
- 2.a **Dynamic weighing mode :** Lift the bucket *through* the reference position. A single beep will be heard. The display will show a value.
- 2.b **Static weighing mode**: Lift the bucket up to the reference position and stop. A single beep will be heard. If you lift too high a second beep is heard and the display will show 4 dashes (fig. 6). If so, lower the bucket back down to the reference position.
- If the display reads within ±0.02 (20 kgs) or in "USA" units ±40 (40 lbs) (fig. 7), this is within the repeatability of the Weighlog system and can be accepted without zeroing the weight. Simply continue loading as normal.
- If the display reads more than ±0.02 (20 kgs) or in "USA" units ±40 (40 lbs) (fig. 8), then you should zero the weight (see 3.4).







## 3 - Preliminary Checks

#### 3.4 Zero Weight (Set Tare)

The weight should be zeroed if the weight reading for an empty bucket is more than  $\pm 0.02$  (20 kgs) or in "USA" units  $\pm 40$  (40 lbs).

Ensure that the hydraulic system is up to it's normal operating temperature. It may be necessary to lift and lower a full bucket for a few minutes to exercise the hydraulics and warm the system up. Observe the correct lifting routine (section 2.2).

- 1. Ensure that the bucket is completely empty. Crowd (roll) the bucket right back as far as it will go.
- Press and hold the TARE button (fig 9). The audible alarm will beep five times and the display will flash 0.00.
- 3.a **Dynamic weighing mode :** Lift the bucket *through* the reference position. A single beep will be heard. The display will show a value.
- 3.b **Static weighing mode** : Lift the bucket up to the reference position and stop. A single beep will be heard. If you lift too high a second beep is heard and the display will show 4 dashes (fig. 6). If so, lower the bucket back down to the reference position.
- As the weight is registered, the display will continue to flash but may change to show a number (fig. 10). Press the REMOTE ENTER BUTTON to zero the weight (fig. 11). The alarm will sound one beep to confirm the weight is zeroed.
- 5. Repeat the routine several times to confirm the system is correctly zeroed.







There are two fundamentally different ways of weighing with the Weighlog -Dynamic weighing and Static weighing. You can select the weighing method for each of the five channels on the instrument.

#### 4.1 Dynamic weighing

Dynamic weighing means that the weight is measured without interrupting the lift. The load is lifted straight through the reference position. Dynamic weighing can give consistent results without significantly slowing down the loading cycle, but it does rely on a certain degree of care on the part of the operator (section 2.2).

1. Lift the load *through* the reference position. The alarm will sound one beep. The display will then show the net weight in the bucket.

The weight will remain displayed until you lower the bucket below the reference position.

2. Press the Remote Enter Button to add the weight to the sub-total for the selected channel (and to the TOTAL channel).

### 4.2 Static weighing

Static weighing requires the load to be lifted or lowered to the reference position and held there. The display will show a "live reading" which will fluctuate as the machine settles. You can tip off excess material as required, therefore static weighing is ideal for the last bucket load if you are aiming to reach a target load.

- 1. Lift the load up to the weighing position. The alarm will sound one beep and the "live" weight will be displayed. If you go too high the display will show 4 bars (fig. 6).
- 2. It is a peculiarity of hydraulic systems that the pressure (and therefore the load reading) will diminish for some time after the load is stopped at the reference position, therefore you should allow a short while for the weight reading to settle down.
- 3. Press the Remote Enter Button to add the weight to the sub-total for the selected channel (and to the TOTAL channel).

## 5 - Reset Totals

#### 5.1 Reset Sub Totals

Channels 1 to 5 can be reset independently.

- 1. Select the appropriate channel 1 5.
- 2. Press and hold the Remote Enter button for 5 seconds. The display will flash 5 times and then go to zero.

The TOTAL channel is not affected.

#### 5.2 Reset Grand Total

- 1. Select the TOTAL channel.
- Press and hold the TARE button for 5 seconds (fig. 12). The display will begin to flash.



 Continue holding the TARE button while you press the button (fig. 13).

The alarm will beep and the display will go to zero.



### 6.1 Weight Calibration

Accurate results from the Weighlog can only be achieved if the calibration procedure has been carried out carefully and in the correct sequence.

You must set the zero weight of the empty bucket/forks/trailer and a weight calibration factor, for each channel to be used.

The calibration factor is an arbitrary number relating the hydraulic pressure (or strain measurement) in the lift system to the load in the bucket. This factor must be set independently for each vehicle, attachment or trailer and each channel of the Weighlog.

### 6.1.1 Display/Change Calibration Factor

- 1. Select the appropriate channel.
- Press and hold the CAL button. The display will show "dYn" or "StAt" for 3 seconds, before changing to show the calibration factor for that channel (fig. 14). The default factor is 1.00

The left hand digit will be flashing.

To change the factor :

3 While holding the CAL button, PRESS and RELEASE the button to advance to the digit you want to change.

4. HOLD the button to cycle the digit from 0 to 9 (fig.15).

- 5. Release the **X** button and the next digit will flash.
- 6. Repeat step 4 for other digits (or if you need to correct a mistake).





## 6 - Calibration

#### 6.2 Calibration procedure

- 1. Decide which attachment/commodity applies to which channel. Make a note of this on the chart provided at the back of this manual.
- Decide whether static weighing or dynamic weighing is appropriate. Select the appropriate channel and then select the weighing mode - "StAt" or "dYn" (section 3.2).
- 3. Start by setting the calibration factor to the maximum lift capacity of the machine (e.g. if the lift capacity is 1.5 tons, then set the factor to 1.500).
- 4. Set the zero weight (section 3.4).
- 5. Fill the bucket with a typical load, the weight of which is known or can be determined on a weighbridge or portable weigh scales.
- NOTE: If you are loading bags of known weight, ensure that they are evenly distributed in the bucket (or on the pallet).
  - Lift the bucket load a number of times and note the weight displayed each time. Observe the procedures for accurate weighing (section 2.2). The displayed weight should not vary by more than ±0.02 (20 kgs) or if in "USA" display mode ±40 (lbs).
  - 7. If not already known, determine the true weight of the bucket load on the weigh scales
  - 8. The actual calibration factor can now be determined by a simple calculation using the true weight and the displayed weight as follows :

Correct factor = existing factor x <u>true weight</u> Weighlog reading

- 9. Programme the correct factor into the Weighlog (section 6.1.1).
- 10. Lift the load again several times, checking that the Weighlog reading is correct.

#### 6.2.1 Calibration example

Calibrating a front end loader with a bucket capacity of 1.5 tonnes.

- 1. Set the calibration factor initially to 1.500.
- 2. A bucket load is weighed and the Weighlog reading is 1.15 tonnes. The same load is weighed on the weigh scales and the true weight is 0.850 tonnes.
- 3. Using the correction calculation :

Correct factor = existing factor x <u>true weight</u> Weighlog reading

 $= 1.50 \text{ x} \frac{0.850}{1.15}$ 

= 1.1087

4. Re-programme with a factor of 1.109

So, if the Weighlog reading is more than the true weight, the factor is decreased and vice versa, if the Weighlog reading is less than the true weight, the factor is increased.

Therefore, if you find a consistent discrepancy between the Weighlog readings and the weighbridge readings, intuitively, you can then nudge the cal factor up or down as required

E.g. If the Weighlog reading is 10% high, then reduce the cal. factor by 10%.

## 6 - Calibration

### 6.3 Select Units

The display resolution can be set to suit "lbs" readout or "tonnes" readout.

- 1. Select the TOTAL channel.
- Hold the CAL button. The display will show either "Eur" for tonnes or "USA" for lbs (fig. 16).



3. Continue holding the CAL button and press the button to change the setting (fig.17).



#### Error message: "Prog"

The instrument memory has been corrupted. You can attempt a "Power On Reset".

- 1. Switch the power supply off.
- 2. Press and hold all three buttons and switch the power on. If the instrument can recover itself, it will perform a short self test routine and return to the normal display. If not, then contact your local RDS distributor.
- NOTE: All calibration settings, sub-totals and the grand total will be reset to the factory default values.

#### Error message: "Err"

If the display shows "**Err**" then there is no pressure signal being received, indicating either a poor connection in the sensor wiring or a faulty sensor.

Visually inspect the wiring loom and connections first, then if necessary check continuity of the sensor lead wires between the "Terminator" screw terminals labelled LOAD SENSOR and the Weatherpak connector on the other end of the load sensor lead. If the wiring is OK then contact your local RDS distributor.

#### Changing loading attachments

If after changing the loading attachment and zeroing the weight, you find that the weight readings are no longer correct, it is usually because the centre of gravity of the machine has been slightly altered by the different attachment. This will affect the load-pressure relationship and therefore the calibration factor must be adjusted to suit. Perform the weight calibration routine to establish the correct factor (section 6.2).

## 8 - Notes

Channel	Attachment/Trailer/Commodity	Weighing Mode	Cal. Factor
1			
2			
3			
4			
5			

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 Correction to figs. 14, 15.

Your local distributor is :