

Installation & Calibration



ED2-OL SkidWeigh System

Lift Truck On-board Overload Warning System Showing in % of the Vehicle
Maximum Lifting Capacity

ED2-OL V1500



General Installation Guide

This ED2-OL SkidWeigh system installation & calibration guide describes how to install, calibrate, test and use your on-lift truck board load weighing system showing in % of vehicle lifting capacity. Following the instructions in this guide will enable you to get your system operating quickly and easily. In the event that you require additional assistance, please contact customer support via e-mail at support@skidweigh.com , visit www.skidweigh.com or contact us at the address or contact number below:

Integrated Visual Data Technology Inc.

3439 Whilabout Terrace, Oakville, ON, Canada, L6L 0A7

Phone: 905-469-0985

Safety

Always disconnect the vehicle battery while installing SkidWeigh system or any other electronic product.

Make sure that unit, pressure transducer and any other associated cables are securely mounted and do not impede any of the vehicle's controls. Use care when routing the components cables. Route the cables where they will be protected.

Use commonly accepted install practices for after market industrial vehicle electronic devices.

The installation of the SkidWeigh systems should only be performed by an acknowledged lift truck dealer technician or end user electro and hydraulic technical installer.

Here are two acceptable methods of making a wire connections:

- * Soldering your connections (recommended)
- * Crimp connectors (with the use of the proper crimping tool)

Regardless of the method you choose, ensure that the connection is mechanically sound and properly insulated. Use high quality electrical tape and shrink tubing where necessary.

This product is connected directly to the vehicle's ignition switch, 12 to 55 V DC. There is no on-off switch on the unit.

Electro-Magnetic Compatibility

CE conformity to EC directive 89/336 (EMC) by application of harmonized standards: Interference stability EN 61000-6-2 and EN 61326-1 interference emit EN 61000-6-3, EN 61326-1 for the pressure transducer.

ED2-OL SkidWeigh Series

Our policy is one of continuous improvement and the information in this document is subject to change without notice.

Check that software version displayed on LED is the one applicable for your application.

Overview of components

The standard ED2-OL SkidWeigh weighing system consist of two main components:

- * Digital indicator with wiring harness, mounting bracket and anti-vibration mount

- * Hydraulic pressure transducer with 3 wires cable
- * Installation & Calibration manual and operator usage instruction

Operational principal

The ED2-OL SkidWeigh system operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit that will automatically activate the “weighing cycle / specific algorithm ” every time a skid load is lifted just above the ground. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings per session which is converted into a load weight reading shown in % of vehicle lifting capacity and is updated every second.

Pressure transducer installation

The pressure transducer must be installed in the lifting hydraulic line **between the lift control valve and lift cylinder(s)**. Mount a T-piece in hydraulic line. In some cases you can install the pressure transducer in the flow divider, drilling and tapping for 1/4”-18 NPT male in spare plug (if only single or double mast configuration) or in the body of the flow divider. Also, you can drill and tap on any “larger elbow” that might be available in the hydraulic lifting circuit found

in vehicles with larger hoses to accommodate larger vehicle lifting capacities.



Pressure transducer installation precautions

Before installation of the pressure transducer the hydraulic lift circuit must be pressure free.

There are two ways to do that:

1. Place the forks on the ground in their lowest position and make the hydraulic system pressure free by tilting the mast forward. The chain(s) should be slack.

2. Lift the forks and position them on the top of a supporting fixture. Start lowering the lifting cylinder into its lowest position. Be sure that chain(s) are slack.

Make sure that that installed pressure transducer will not touch any moving parts or assembly of the vehicle while in normal operation. Pressure transducer has 1/4”-18 NPT male thread. Use thread seal to ensure tight fit.

Selecting the mounting location for digital indicator

Use the enclosure mounting flange bracket and fasten digital indicator on the vehicle dashboard or side railing preferably on the right hand side. There are many examples of mounting locations that will depend on the vehicle model. However, additional mounting items such as a flat brackets may be needed to help secure the unit to upper right corner of the guard or side railing.

Choose the correct location and make sure that:

- Indicator is visible and within reach of the operator
- Location so that operator does not hit a head



Compact size

All of the SkidWeigh-OL Series systems are compact size, housing dimension of only 115 x 65 x 40 mm (4,53" x 2,65" x 1,58") with mounting flange.



Electrical Connections

All SkidWeigh-OL Series systems operate from 12 to 55 VDC.

Digital indicator with seven wires single cable

- **Orange Wire (+) Ignition switch On position**
- **Brown Wire (-) Battery negative**
- **Red Wire, connect to RED wire of the pressure transducer cable**
- **Black Wire, connect to BLACK wire of the pressure transducer cable**
- **White Wire, connect to WHITE wire of the pressure transducer cable**



Pressure transducer cable

(Pressure transducer cable must be connected to the digital indicator seven wires single cable)

- **White Wire, signal 0 to 2,5 V**
- **Black Wire, signal negative**
- **Red Wire, power supply to pressure transducer + 11 VDC**



Electrical power short circuit protection

- All of the SkidWeigh OL Series systems are internally short circuit protected with resettable fuse. There is no need to install external inline fuse in orange wire connected to the ignition switch.
- Automotive 60 V load dump protection
- Reversal power supply protection

“Quick test to determine if electrical connections are done right”

Note: SkidWeigh weighing calibration function is not done yet at this stage. This procedure is only to test if electrical connections of the system installation into the vehicle is done properly!

After you have connected electrical power and pressure transducer cable you can “quickly” check the system operation.

- Lower the forks to the ground
- Turn On ignition switch
- Digital LED display will be activated, showing software version and serial number
- Number **8** will be shown on LED display above the **Mode** sign.
- Lift loaded forks or engaged second mast to increase pressure in lifting cylinder. Mode **8** will go off and some load weight in % will be shown on LED display.

If the above test is valid than the system electrical connections are done right. The next procedure will be to calibrate the SkidWeigh weighing function.

Lift truck equipped with hydraulic accumulator

If the standard SkidWeigh system is installed on the lift trucks equipped with hydraulic accumulators, please contact us to provide you with different digital indicator having specific software algorithm to obtain load weight accuracy within +/- 1% of vehicle maximum lifting capacity.

Weighing function calibration procedure

The ED2-OL SkidWeigh calibration is automatic and is done by lifting empty and loaded forks (or any other attachment such as paper clamp) just above the ground. MAKE SURE THAT YOU HAVE A KNOWN LOAD WEIGHT AND KEEP IT NEARBY TO COMPLETE THE CALIBRATION.

For the best results use at least minimum calibration load test weight of 40 to 60% of maximum lifting capacity of the lift truck. Use customer floor scale or find a known skid load weight within the operational facility.

Important:

If you want the system to show load weight in % of vehicle maximum lifting capacity, use the known load weight in pounds during the system calibration and enter that value accordingly. The same would apply if you want the system to show load in % of vehicle maximum lifting capacity weight in kilograms. Use the known load weight in kilograms and enter that value into the system accordingly.

Use your known load weight value to calculate known load weight shown in % as per example shown below.

Calibration starting point



Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.

- Turn ignition switch to on position and start the engine
- LED display will show software version on the right side and number **8** will be shown in **Mode** window.

Calibration of empty forks being lifted just above the ground

To initiate calibration press the “**M**” key (use a paper clip) and hold it down for approx. 5 seconds.



After 5 seconds the Mode display digit will change from number 8 to 0. (System is ready for automatic zeroing of the scale function)



When LED display is showing “**0**” in Mode digit, lift the empty forks (or attachment such as clamp, etc) **just above the ground.**



Note: Activate the lift control valve as you would do during the normal lifting operation. Do not attempt to lift the empty forks slowly.

Wait few seconds, LED display will go blank and will show “**1**” in Mode digit and “**0**” value in furthest right digit display.

Automatic zeroing is done !



Calibration of loaded forks being lifted just above the ground

From vehicle name plate make a note of lift truck maximum lifting capacity. This information is important since it will be used to calculate the system to show the load in % of vehicle maximum lifting capacity. The percentage value of the lifted load will be shown on LED display and will be updated every second.

Note:

- Make sure that you enter derated vehicle maximum lifting capacity (As in the case of special attachments, paper roll clamps, etc.)
- Make sure that you have a known load weight to calibrate the system!

Our Example:

- Vehicle maximum lifting capacity as per name plate is **8000** kg.
- Known load weight to calibrate the system is **4000** kg.

Example: Calculation of calibrated percentage value to be entered into the system

$$\text{Known load weight (\%)} = \frac{\text{Known load weight} \times 100}{\text{Vehicle maximum lifting capacity}}$$

$$\text{Known load weight (\%)} = \frac{4000 \times 100}{8000} = 50$$

Calibration known load weight value in percentage is 50.

- Drive vehicle into the skid with known load weight of 4000 kg and lower the **loaded forks to the ground**.
- Start entering a known load weight in % value by using **arrow up** button (increments from 0 to 9), wrap around.
- **In our example the percentage input value is 50.** Start with least significant digit.
- Use **"M"** button to increment to the next digit on LED display.
- As the input value in percentage has only two digits (50 in our example), the rest of the digits must be zero's.

- The first value of known percentage can be entered by pressing “**arrow up**” button.
- To enter the second digit, press the “**M**” button and Mode digit will increment to Digit 2.
Keep activating arrow up to get to digit 5.
- Keep pressing “**M**” button and enter a third, forth and fifth values. All of them must be a zero's.
- Before going to Mode **6** please make sure that the “Known load weight” is **on the ground and is ready to be lifted**.
(No hydraulic pressure in the lifting hydraulic circuit)

Mode	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
1					0
2				5	
3			0		
4		0			
5	0				



- Press the “**M**” button to advance to **Mode 6** and immediately lift the “Known load weight” **just above the ground**.



- LED display will go blank and within few seconds LED display will show the value of calibrated "Known load weight in %), in our example number 50.
- When you lower the load to the ground system will go automatically into operational mode.
- Mode digit will display number 8.



System is ready to be used.

Overload Warning Option

ED2-0L-V SkidWeigh system with visual overload warning (Standard)

ED2-0L-VA SkidWeigh system with visual / audio overload warning

With the overload option, as soon system is calibrated and load lowered to the ground, LED display will show number **7** in Mode digit. When LED display shows “**Mode 7**” you must enter the overload warning value in % for that particular vehicle. The “**Mode 7**” digit will remain while you are entering the overload warning value in percentage.

In this example we will enter the overload value of **90**. *Make sure that Digits 3, 4 and 5 are set to zero's.*

Mode	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					0
7				9	
7			0		
7		0			
7	0				

- On the last shift of the “**M**” button the “**Mode 7**” digit will turn off.
- The overload value in % you have entered will be stored in the memory.
- LCD display will show the entered overload value. (**In our example 00090**)
- Lower loaded forks to ground and LCD display will return to normal operational mode, showing number **8** in Mode digit.



Visual Overload

- LCD display will show and “flash” the overload value.

Visual And Audio Overload

- LCD display will show and “flash” the overload value and audio will be activated.

Note:

To stop visual or / and visual and audio overload warning the load must be lowered to ground.

Operation



- As soon ignition switch is turned on system becomes operational.

(Software version will be shown for the moment)

- There is no need for operator input.

- With forks on the ground, Mode 8 will be shown on LCD display.

(LED light will show green, system is READY)

- With load lifted system will show % of the maximum vehicle load.

(LED light will show amber light, system BUSY)

- Load weight will be shown on digital indicator in % of maximum vehicle lifting capacity and will be updated every second.



- If the load lifted is above pre-set overload value the LCD display will show the overload value and will “flash”.

- If the audio (*Buzzer or external audio warning*) is installed in addition to visual overload warning the audio will be activated as well.

Note:

The visual or visual and audio overload warning can be stopped only if the overload load is lowered to the ground.

