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INTEGRATED VISUAL DATA TECHNOLOGY INC.
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ED2-SLL

Installation & Calibration Manual

Lifted Load Indicated in % of Maximum Vehicle Lifting Capacity with Audio/Visual Overload Alert

ED2-SLL V5

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General Installation Guide

This ED2-SLL V5 Series SkidWeigh system installation & calibration guide describes how to install, calibrate, test and use your load monitoring system. 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 or visit www.skidweigh.com or contact us at the address or contact number below

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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 VDC. 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-SLL SkidWeigh Series

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

Overview of Components

The standard ED2-SLL Series SkidWeigh load capacity monitor 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

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Operational principal

The **ED2-SLL** Series SkidWeigh system operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit. The patented algorithm will initiate the measurement cycle every time a load is lifted. The increase in pressure is converted in an electronic signal at the sample rate of 16000 readings per measurement cycle, updated every second which is converted into a capacity load readout shown in percentage of the vehicle maximum load lifting capacity.

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 lifting 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 in the vehicle.

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 chains 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.

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Electrical Connections

The ED2-SLL SkidWeigh systems operate from 12 to 55 VDC.

- 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 main cable from the indicator.

- White Wire, signal output 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 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.

"Quick test to determine if electrical connections are done right"

Note: SkidWeigh ED2-SLL calibration function is not done yet at this stage. This procedure is only to test if electrical connections of the system electrical wires into the vehicle is done properly!
After you have connected electrical power and pressure transducer cable you can "quickly" check the system.

- Lower the forks to 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** digit.
- Lift the empty or loaded forks to increase pressure in lifting cylinder. Number **8** will go off and indicator will show load in percentages on LED display.
  If the above test is valid then the system electrical connections are done right.

The next procedure will be to calibrate the ED2-SLL system

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- Lift truck equipped with hydraulic accumulator (IC vehicles)

If the ED2-SLL system is installed on the lift trucks equipped with hydraulic accumulators, please contact us to provide you with different digital indicator.

Calibration procedure

The ED2-SLL Series SkidWeigh calibration is automatic and is done by lifting empty forks (or any other attachment such as paper clamp) and loaded forks 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 30 to 50% of maximum lifting capacity of the vehicle as per vehicle name plate. Use customer floor scale or find a known skid load weight within the operational facility.

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Digital Indicator

(System calibration utilizing two pushbutton keys. M and Arrow Up)

- Upper right button **"M"** is used to enter calibration mode and to shift left to the next digit.
- Lower right button **"Arrow Up"** is used to enter numerical increments from 1-9, wrap around.
- Both buttons are used during the system calibration.
- Buttons can be accessed through two small holes on the cover.
- Use paper clip to activate buttons.

Mode LED Digit **Five Digits Load Weight Display**

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1

Note:

- Every time the power is applied the software version will be shown momentarily for a brief moment.
- When forks are lowered to ground LED display will show Mode **8.**
- For best results during weight calibration use at least 30% to 50% of known load weight of vehicle maximum lifting capacity
- If you make a mistake during the system calibration, turn power ON / OFF and start all over.

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ED2-SLL SkidWeigh System Calibration

Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.
- Turn ignition switch to on position (electric lift trucks) and start the engine on combustion powered lift trucks
- LED display will show software version briefly on the right side and number **8** will be shown in the Mode digit.

1. Calibration of empty forks 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 8 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 longer forks, clamp, etc) just above the ground.

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

Wait few seconds, LED display will go blank and will show Mode **1**digit and default “0” value in furthest right digit display.
(The **“0”** value in furthest right digit might be some other number if calibration done previously with different load weight)

Automatic zeroing is done

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2. Calibration of loaded forks

At this point drive your vehicle into the skid load with known weight and **lower it to the ground**

(In this example the known load weight to calibrate the system is 4000 kg or pounds)

Calculation Example

Your Known Load Weight To Calibrate the System Is 4000 Kg or pounds

*** Vehicle Maximum Lifting Capacity Is 8000 Kg**

* As per manufacturer specifications shown on the vehicle name plate

Use a following formula to arrive to the percentage value that you will have to input into the system.

$$\text{Load Capacity in \%} = \frac{\text{Known Load Weight X 100}}{\text{Lift Truck Maximum Lifting Capacity}} =$$

$$\text{Load Capacity in \%} = \frac{\text{4000 X 100}}{\text{8000}} = \mathbf{50}$$

Use value of 50 as a percentage to be entered into the system

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Use **"M"** and **Arrow Up** buttons to enter value of **50**. Make sure that digits 3,4 and 5 are "0".

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
1					0
2				5	
3			0		
4		0			
5	0				

Note:

With LED display showing **500050** and loaded forks on the ground with known load weight press the **"M"** button to advance to MODE **6** and lift the known load weight approximately 2" to 4" inches above the ground to initiate loaded weight calibration.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
6					

The LED display will go "blank". After few seconds LED display will show the calibrated value of **50**.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
				5	0

System load weight calibration in % is done

NEXT

Lower the loaded forks to the ground
to input the overload warning alert for the application

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When calibration is done and loaded forks lowered to the ground the MODE 7 will automatically be shown on LED Display

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					

Use the **"M"** and **"Arrow up"** button to enter the desired overload warning value. In our example we will enter the overload value as **98%**. The Mode **7** digit will remain throughout the numerical input. Make sure that digits 3,4 and 5 are "0". On last shift (Utilizing **"M"** button, left shift direction) the Mode **7** digit will turn off. The overload value will be stored in the system.

MODE	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
7					8
7				9	
7			0		
7		0			
7	0				

The system calibration and overload warning is done

Overload
Audio / Visual Alert at
98% Load Capacity

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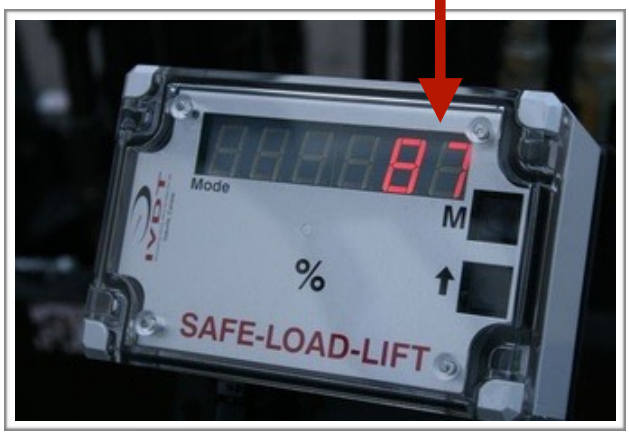
Operator Usage Guide

The ED2-SLL SkidWeigh system does not require operator input.
Digital indicator will show the lifted load weight just above the ground in % of the vehicle maximum lifting capacity.

* The readout is automatically updated every second.

* If the lifted load is more than preset overload value for the application the overload value will be shown on LED display and (Visual, Audio or both warning) will be activated.



* **To deactivate overload alert operator must lower the loaded forks to the ground**.