

## Installation, Calibration & Usage Manual



# SkidWeigh ED2-SM Series

Lift Truck Onboard Check Weighing & Overload Alert

MED2SM



## General Installation Guide

This ED2-SM SkidWeigh series installation & calibration guide describes how to install, calibrate, test and use your lift truck onboard load weighing 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](mailto:support@skidweigh.com), visit [www.skidweigh.com](http://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 technical installer familiar with material handling vehicles operation.

Here are two acceptable methods of making a wire connections:

\* Soldering electrical 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. For vehicles with voltages higher than 55 VDC use voltage convertor ( 36 to 160 VDC, Part No. VC-160)

## 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-SM 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-SM series check weighing system consist of two main components:

\* LED display digital indicator with mounting bracket and wiring harness cable (Optional overload Audio / Visual alert)

\* Hydraulic pressure transducer with 3 wires cable

\* Installation & calibration manual and operator usage instruction

\* **ED2-SM-Rona SkidWeigh kit does not have accumulative load weight total function.**

*(Rona kit is equipped with overload buzzer)*

## SkidWeigh ED2-SM series operational principal

The ED2-SM SkidWeigh system operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit between lift control valve and lifting cylinder(s). There is need for external switches, proximity sensors or specific operational procedure of lifting the forks in order to obtain a proper load weight readout.

SkidWeigh “weighing cycle” will be automatically activated every time 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 utilizing proprietary software algorithm.

## 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 (single or double mast configuration) or in the body of the flow divider. In some cases you can drill and tap on “larger elbow” if available in the hydraulic lifting circuit found in vehicles with larger hoses accommodating larger vehicle lifting capacities.

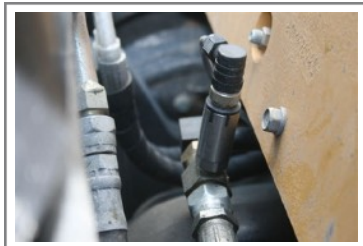
## Pressure transducer installation precautions

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 mounting flange 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

## Electrical Connections

All SkidWeigh systems operate from 12 to 55 VDC.

(For voltages above 55 VDC order voltage convertor Part No. VC160)

- **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**
- **Dry contact internal relay S.P.S.T. for optional external overload alert (Contact current rating, max. 1A)**
- **3 Wires dry contacts: Yellow Wire NC Blue Wire NO Green Wire Common**



## Electrical power short circuit protection

- All 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.
- Automotive 60 V load dump protection
- Reversal power supply protection

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

Note: 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 (*No hydraulic pressure in lifting cylinder*)
- Turn on ignition switch or power on switch
- Digital LED display will show software version (*Example 1600*)
- Number **8** will be shown in **Mode** digit
- Lift forks with any load just above the ground. Mode number **8** will go off for few seconds and some load weight will be shown on the LED display.
- If the above test is valid then 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 SkidWeigh calibration is automatic and is done by lifting empty and loaded forks with known calibration load weight 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.

- **Use paper clip to access buttons “M” and “Arrow Up”**



## Important

If you want the system to show load weight in pounds, use the known calibration **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 weight in kilograms then use the known calibration **load weight in kilograms** and enter that value into the system accordingly.



### 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**” button (use a paper clip) and hold it down for approx. 5 seconds until **Mode digit 8 changes 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 **just above the ground** to automatically calibrate zero value for empty forks being lifted.

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



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

*(Instead of 0 value it could be any other number from 0 to 9, depending on previous calibrated load weight entered into the system)*

### Automatic zeroing is done!

**Note:** Next step will be calibration of the system by lifting known load weight



## Calibration of loaded forks being lifted just above the ground

**Pick up a known load weight and lower it to the ground.**

In our example we will use a known calibration load weight of 4000 pounds

- \* Button **M** is used to enter into weighing calibration procedure and shift to the next digit.
- \* Button **Arrow Up** is used to input digital value 0 to 9, wrap around.

*Start entering a known load weight value for each digit by using arrow up button (increments from 0 to 9 for each digit), wrap around. To move to next digit press “M” button.*



Mode	Digit 5	Digit 4	Digit 3	Digit 2	Digit 1
<b>1</b>					<b>0</b>
<b>2</b>				<b>0</b>	
<b>3</b>			<b>0</b>		
<b>4</b>		<b>4</b>			
<b>5</b>	<b>0</b>				

- Start with least significant digit of the known calibration load weight. (In our case this is “0”)
- Use “M” button to increment to the next digit on LED display.
- Keep pressing “M” button and enter a third, fourth and fifth calibration load weight value. As the input for known load value has only four digits (**4000 in our example**), the fifth digits must be “0”.



- Before going to **Mode 6** make sure that the “Known load weight” is ready to be lifted.
- **The loaded forks must be on the ground.**  
(No hydraulic pressure in the lifting hydraulic circuit)



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



- LED display will go blank and within few seconds LED display will show the value of calibrated “Known load weight of 4000”



**Lower the load to the ground.**

System will go automatically into operational mode.

System is ready to be used.

Mode digit will display number **8**.

**Note:** If system is set up for overload alert the **Mode 7** will be shown automatically. Follow instruction for overload warning alert value input.

## Weighing calibration function is completed

Lower loaded forks to the ground.

## Overload Alert Value Input

As soon SkidWeigh system weighing function calibration is done the **loaded forks must be lowered to ground.**

The **Mode 7** digit automatically will be shown and will remain on LED display until overload alert value is inputted into the system. With LED display showing “**Mode 7**” you have to enter the overload alert value for that vehicle / application. In our example we will enter the overload alert value of **4500**.

Use paper clip to access buttons “**M**” and “**Arrow Up**”.

Make sure **0** number is inputted for digit 5.

*(In our example for overload value of 4500 has only 4 digits)*

As soon the last digit is inputted into the system **Mode 7** will change to **Mode 8** which is the normal operational mode



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

**Example:** If the lifted load is above preset overload value of 4500 the LCD display will

- \* Show actual overload value
- \* LED display showing the overload value will “flash”. (Optional buzzer will be activated as well)
- \* Overload value alert will stop “flashing” when **loaded forks are lowered to the ground.**



## Operator Usage Guide



1. To initiate load weighing cycle you must lower loaded forks to ground

2. The Mode LED digit will show number 8.

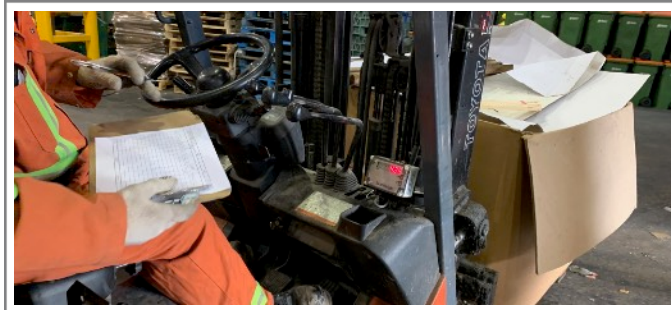
**System is ready to weigh the load**



3. Lift loaded forks just above the ground and within few seconds LED display will show weight.

**Note:**

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



### **Black Button (Optional)**

With LED displaying load weight, press black button to accumulate load. Each time the new load weight is shown by pressing black button the accumulative load weight total will be updated. System will also show number of load weights taken.

### **Red Button (Optional)**

With LED display showing the latest accumulative load weight total by pressing red button system will reset to zero. Another accumulative load weight total cycle can be initiated.

### **Overload Alert:**

The overload Audio / Visual alert will be deactivated when **load is lowered to the ground.**