![IVDT logo] INTEGRATED VISUAL DATA TECHNOLOGY INC. Solutions that lift your business

Installation & Calibration Manual

Power On / Off Switch

Electric Pallet Truck Check Weighing Systems

SkidWeigh Series ED2E-EP and DL2E-EP

General Installation Guide

This **SkidWeigh Series ED2E-EP / DL2E-EP** system installation & calibration guide describes how to install, calibrate, test and use your electric pallet truck on-board weighing system. Following the instructions in this guide will enable you to get your system setup and operating quickly. 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 and or contact number below:

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Safety

Always disconnect the vehicle battery while installing SkidWeigh systems 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 component 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 a knowledgable lift truck dealer technician or end user with electro and hydraulic experience.
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, operating voltage from 12 to 55 VDC.

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.

SkidWeigh ED2E-EP / DL2E-EP 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 **SkidWeigh ED2E-EP / DL2-EP Series** check weighing system consist of the following 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 **SkidWeigh ED2E-EP / DL2E-EP** system operation principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit. The increase in the hydraulic pressure will activate the specific "weighing cycle" algorithm and initiate automatic motion control of the hydraulic lift motor. The microprocessor will take a readout of the predetermined valid pressure transducer input at a sample rate of 16000 readings per measurement session and will convert it to the load weight that will be shown on LED display.
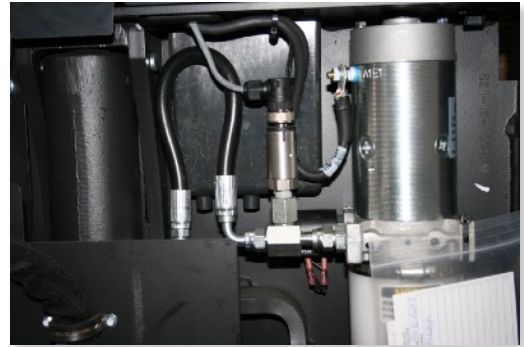
Pressure Transducer Installation

The pressure transducer must be installed in the lifting hydraulic line **between the lift control valve and lift cylinder.** Mount a T-piece in hydraulic line for the installation of the pressure transducer.

2 Methods for Automatic Pump Motor De-Activation During Load Weighing Cycle

Two **BLACK wires** are connected to the internal relay located in the **ED2E-EP / DL2E-EP** digital indicator. The internal relay is controlled by the microprocessor and activated only during the load weighing cycle. **There is no power connected to these two BLACK wires !** Internal relay configuration is SPDT.

Method A. *(Preferred Method)*
Use the two **BLACK wires to "splice" them in series** with the operator activated **lift control switch** wire or signal wire from the electronic controller that is activating the lift pump motor solenoid.
Note: The predetermined motion of the lifting cylinder and the load weight measurement "weighing cycle" will be initiated and controlled automatically by the software algorithm based on the input signal from the pressure transducer. Once the load weight is shown on the LED display the internal relay will be de-activated and the lift pump motion control will be back to normal operation . **(With the vehicle at a stationary position during the lifting cycle diagnostic display on some vehicles may show 'No power to lift motor' or audio signal might be activated for short time period.)**

**Operator Activated
Lift Pump Motor Control Switch**

Consult Vehicle Wiring Diagram !

Method B.

*Use the two b*lack wires and splice them in series with one of the lift pump solenoid coil wires activating the pump motor.

Disconnect one of the original solenoid coil wire *(From either positive or negative terminal of the solenoid coil)* **and splice the two bLACK wires in series to the** disconnected wire and solenoid terminal.
Note: The predetermined motion of the lifting cylinder and the load weight measurement "weighing cycle" will be initiated and controlled automatically by the specific software algorithm based on the input from the pressure transducer signal.
(With the vehicle at a stationary position during the lifting cycle diagnostic display on some vehicles may show 'No power to lift motor' or audio signal might be activated for short time period.) Unloaded vehicle is motion may produce hydraulic spikes that are detected by the pressure transducer sending a signal this may be seen by the vehicle controller as starting the "weighing cycle". Short interruption of the power to the lift solenoid coil on some controllers **are** seen as a fault and power to the vehicle will be cut.

SkidWeigh ED2E-EP / DL2-EP Power Off

When weighing function is not required and to avoid interruptions due to lift cut outs simple turn the system off

Power On / Off Switch
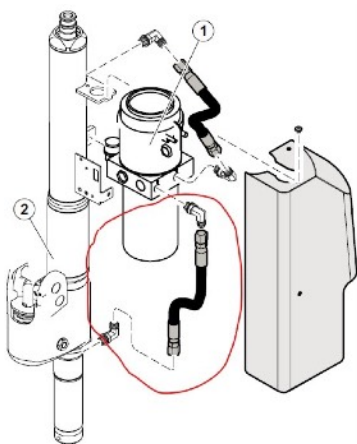
Pressure Transducer Installation Precautions

Before installation of the pressure transducer the hydraulic lift circuit must be pressure free.
Make sure that the installed pressure transducer will not touch any moving parts or vehicle assembly once installed while in normal operation. The pressure transducer has a **1/4"-18 NPT male thread**. Use thread seal to ensure tight fit.

Selecting the Mounting Location for Digital Indicator

Use the mounting bracket with the anti vibration mounts and fasten the digital indicator to the vehicle dashboard, or any other convenient place on the electric pallet truck body 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.

Electrical Connections

All SkidWeigh systems operate from 12 to 55 VDC.

Orange Wire (+) Key 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

Two **black wires** are connected to the internal relay located in the ED2E-EP / DL2-EP digital indicator. The internal relay is controlled by the microprocessor and activate only during the load weighing cycle. **There is no power connected to these two black wires.**

Electrical Power Short Circuit Protection

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

Weighing Function Calibration Procedure

The SkidWeigh ED2E-EP / DL2-EP **calibration is automatic and is done by lifting empty and loaded forks to initiate and program the automatic weighing cycle.** MAKE SURE THAT YOU HAVE A KNOWN LOAD WEIGHT AND KEEP IT NEARBY TO COMPLETE THE SYSTEMS CALIBRATION PROCESS.

For the best results use at least minimum calibration load test weight of 50% to 80% of maximum lifting capacity of the electric pallet truck. Use floor scale or find a known load weight with a confirmed and trusted weight.

Important:

If you want the system to show load weight in pounds, use the known load weight in pounds and enter that value accordingly. The same would apply if you want the system to show load weight in kilograms. Use the known load weight in kilograms and enter that value into the system accordingly.

Starting the Calibration Procedure

Lower the Empty Forks to the Ground

There should be no hydraulic pressure in hydraulic lift circuit.

- Turn power switch to on position

- If the LED display does not show any number(s), turn **on** the main power switch located on top of the housing.

- LED display will show software version on the right side and number **8** will be shown in **Mode** window.

Calibration with Empty Forks

With lowered empty forks on the ground and Mode 8 showing

To initiate calibration procedure, press the **'M'** button using a paper clip

Hold the 'M' button down for approximate 5 seconds.

After 5 seconds the **Mode 8** digit will change to **Mode 0**.
Press and hold the lift button to initiate the automatic weighing cycle. Continue to hold until the system lift interrupt stops the lift range. The system will develop an algorithm calculation and determine the correct height to stop the lift cylinder.

The LED display will go blank momentarily, internal audio will be activated during the measurement event and within few seconds the system will show a '**0**' value in furthest right digit display. Audio indicator will be deactivated.

The ED2E-EP / DL2-EP zero weigh empty fork calibration function is complete

Calibration of Loaded Forks

Position the electric pallet truck into the skid load with **your known load weight**.   -
Lower the **loaded forks to the ground and make sure that no pressure is in the system.**

(In our example the known load weight is 4000 pounds)
Start entering the known load weight into the digital indicator by using the **arrow up button to toggle digits 0-9 and the 'M' button to move from right to left beginning with mode 1 to mode 5. If there is only four digits in your known load weight, 9999 or less, mode 5 must be input as 0.**
Start with least significant digit of your known load weight.

- Use the **"M"** button to increment to next digit on the LED display

Mode 1 '0' 400[0]	Mode 2 '0' 40[0]0	Mode 3 '0' 4[0]00	Mode 4 '4' [4]000	Mode 5 '0' [0]4000

Repeat this procedure until the **Mode** digit display is showing number **5.**
Note: Since in our example of 4000 pounds known load weight value has only four digits make sure that the 5th least significant digit has **"0"** value entered into the calibration system.With loaded forks on the ground **and no pressure in the system** press the '**M**' button to advance to **Mode 6.**

When the digital indicator shows **Mode 6,** activate and **hold lift control button**.
The pressure transducer readings and specific algorithm calculations will **stop the lift cylinder at predetermined height.** The LED display will go blank for the moment, internal audio will be activated and within few seconds will show the calibrated known load weight of 4000.
(In your case the known calibrated load weight will be shown!)

The ED2-EP system weighing calibration is done

When you lower the loaded forks to the ground **Mode '8'** will show on the LED display. This indicates that the system is calibrated and ready to weigh. **Mode '8'** is the starting point for all weighing procedure.

Operator Weighing Procedure

The **Mode 8** shown on LED display is always the **starting point to initiate a weighing cycle**

Weighing Loads

When power to the vehicle is turned on the LED display should show software version. *(Example: Software version 1500)* If the LED display is not showing any digits make sure the power on / off switch located on top of the instrument enclosure is on.

1. Insert the forks into the pallet or under the product to be weighed.

2. Lower the forks to the ground.

LED display must show Mode 8 to initiate the "weighing cycle".

3. Activate and hold the lift control button. LED display will go blank for the moment, audio will be activated during the measurement.

The "weighing cycle" will be initiated and the system will automatically stop the lift cylinder when ready and load weight will be shown. Audio will be deactivated.

The lift cylinder will be operational once the load weight is shown on the LED display.


Mobile Wireless Bluetooth Printer

*The SkidWeigh ED2-EP / DL2-EP Elite series can be ordered to support Bluetooth mobile printers. The automatic Bluetooth pairing is done by holding down both buttons, **M** and **Arrow Up** and turning power on to the system.Within few seconds the LED light (Blue) will come on and stay on indicating that pairing with mobile printer is completed.*

Accumulative Load Weight Function

SkidWeigh ED2E-EP-AT / DL2E-EP-AT Units equipped with the AT, accumulative totalling function, utilize

two buttons to add multiple load weights and to reset system to 0 when complete and or print.
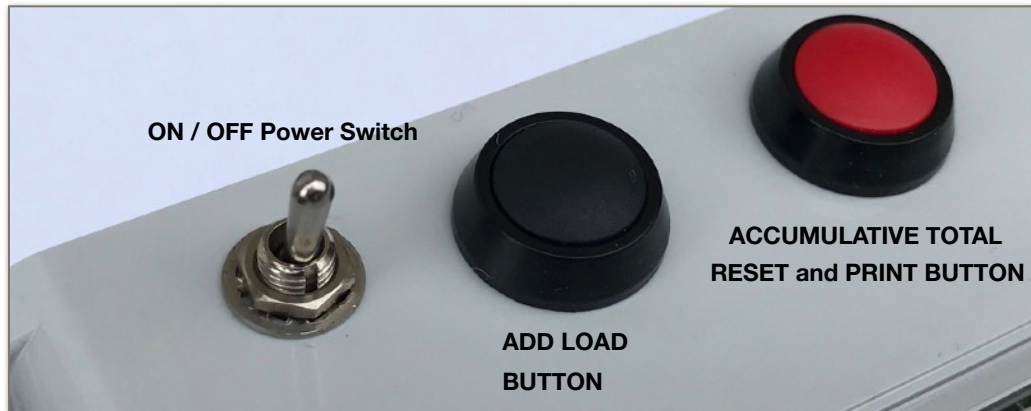
Black Button to be pressed to accumulate / add loads. LED display must show a current load weight in order to add the load weight to a series of series in the accumulative load weight total counter.

Red button to be pressed to reset current or accumulative total load weight and print ticket.

System utilizing onboard Bluetooth printer will provide printing tickets, individual and total load weights.

Note1: This load weight will be shown on LED display until next time the forks are lowered to ground.

Note2: When vehicle in motion the LED might show some random load weight. This is due to the hydraulic spikes and this does not represents any actual load weight value.

Note 3: During the normal operation if you do not want to use the weighing function, turn off the main power switch located on the top of the housing. LED display will not show anything and you can operate your electric pallet truck without weighing cycle function and lift cylinder will not stop during normal operation.