

Installation & Calibration Manual



ED3/ED4-EP SkidWeigh Plus Series

Electric Pallet Truck Check Weighing
Lift Accurate Technology

ED3/ED4-EP V1.25



General Installation Guide

This **ED3-EP** and **ED4-EP SkidWeigh Plus V1.25** Series installation & calibration guide describes how to install, calibrate, test and use your on-board check weighing unit. Following the instructions in the **ADMINISTRATION MENU** guide will enable you to get the system set up and weighing calibration function 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 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 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.

ED3/ED4-EP SkidWeigh Plus Series

Our policy is one of continuous improvement and the information in this document is subject to change without notice. The software version is displayed on the LCD display once the power is turned on to the system.

Overview of components

The standard **ED3/ED4-EP** SkidWeigh Plus check 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 **ED3-EP** and **ED4-EP** SkidWeigh Plus operational principal is based on the hydraulic pressure transducer mounted in the vehicle lifting hydraulic circuit and lift accurate technology. The load should be placed all the way in towards the load back guard. With the load lowered to the ground the LCD display will show time and date which is a starting point to initiate a load weight procedure.

Operational Cycle

Operator must activate **lift control switch and hold it until the loaded forks are automatically stopped at the measurement height** based on the pressure transducer input signal. The increase in the hydraulic pressure signal will initiate specific “weighing cycle” measurement algorithm for activation of the lift accurate technology process that will automatically stop lifted forks at predetermined height. As soon the loaded forks are stopped the system will take a series of measurements and within 3-4 seconds the load weight will be shown on LCD display. With load weight shown on LCD display the system lift motor travel control will be enabled.



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.

Pressure transducer installation precautions

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

Pressure transducer has 1/4”-18 NPT male thread. Use thread seal to ensure tight fit.

Selecting the mounting location for digital indicator

Note: Use the mounting bracket with the anti vibration mount and fasten digital indicator on the vehicle dashboard. 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 digital indicator.



Electrical connections

All 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**

Two **Black wires** are connected to internal relay, dry contacts located in ED3/ED4-EP digital indicator. This internal relay is controlled by the microprocessor and will be activated only during the load weighing cycle. The relay configuration is SPST, normally closed NC contacts. 10 A current rating



Pressure transducer

Male Port 1/4"-18 NPT

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.

Note: Any external devices connected to the SkidWeigh system, such as non standard onboard printer might require external fuse.

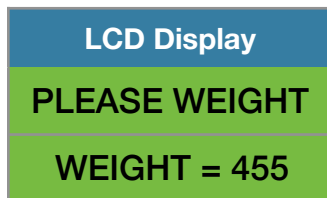
Verification of the electrical connections done properly

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

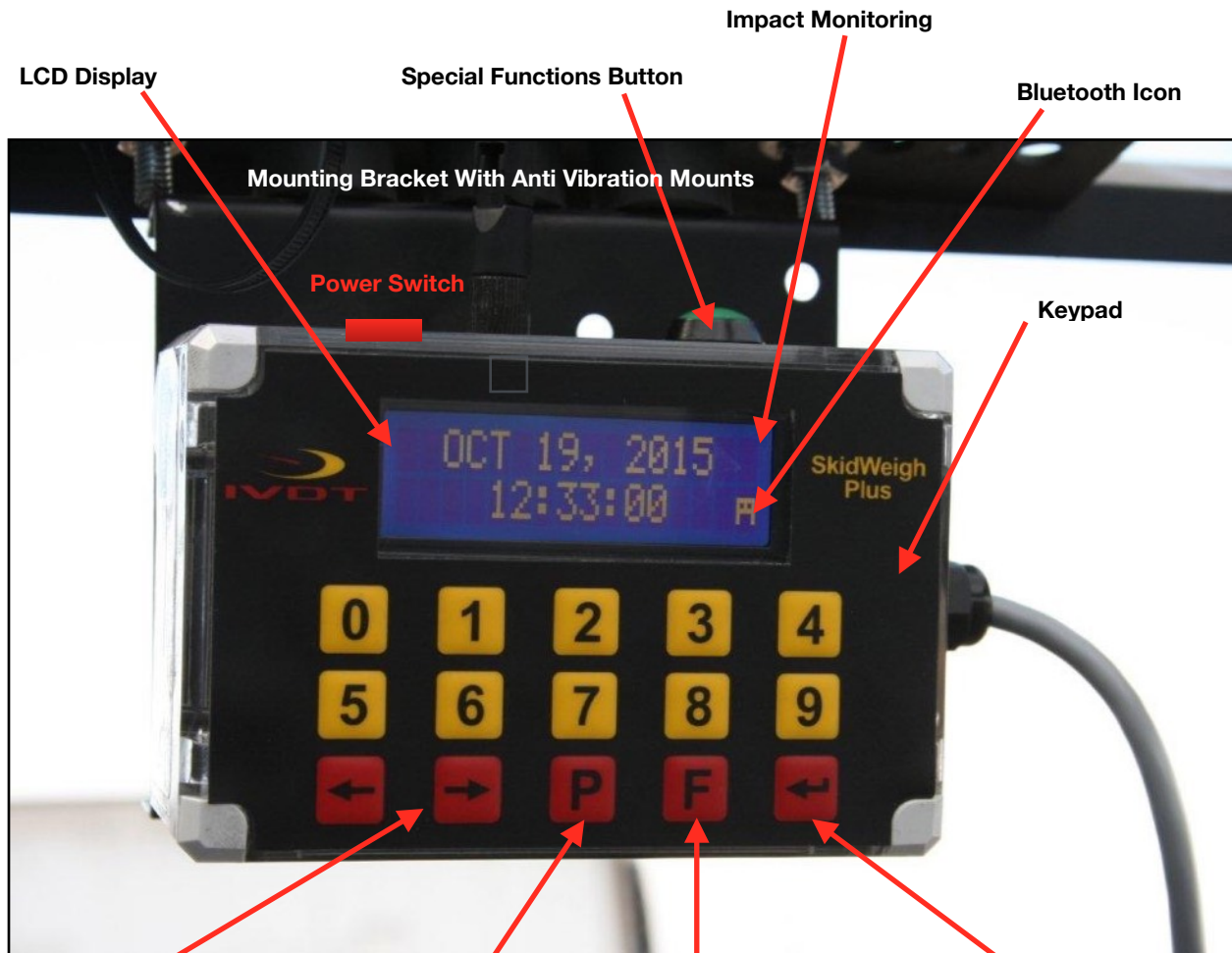
- Turn on vehicle power switch
- Lower forks to ground
- Turn on digital indicator power switch located on top of the housing
- Digital LCD display will be activated, showing software version and serial number
- Digital LCD display will show current date and time



If the forks are lifted above the ground LCD digital display will show **“PLEASE WAIT”** and within few seconds display will show “some” load weight . (Example: 455, not calibrated load weight at this stage)



If the above test is valid than the system electrical connections are done right.
The next procedure will be to log in the **ADMINISTRATION MENU** to calibrate the weighing function.



Toggle Arrows Keys in set up menu

Print key or /and USB recording, wireless data SEND

FUNCTION MODE KEY

"Enter key" ↵

F 9 ADMINISTRATIVE MENU (Password protected)

F 0 OPERATOR MENU

*Bluetooth pairing *TARE set up * Part Count set up when applicable

Administrative Menu

The administration menu allows the *installation technician to calibrate system weighing function* (**SET CALIBRATION 1**) and for the end user to manage data, set vehicle ID#, time, utilization factor, impacts, etc., information available depending on the purchased hardware and software configurations.



To enter into the **Administration Menu**, press **F** key and then press **9** key.

Input password _____

Use **left and right arrow keys to scroll for functions** that might apply for your system configuration.

Follow the LCD instructions, use **“Enter key”** ↵ to confirm set up input, use **F key** to exit.

LCD Display
MENU
Password = ____

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

Date / Time Set Up

LCD Display
SET CLOCK
ENTER TO SELECT

LCD Display
SET CLOCK
AUTO _

Use left ◀ and right ▶ arrow key (*bottom left side of the keypad*) to change from AUTO to MANUAL date/time set up.

Note: AUTO set up refers to system utilizing a wireless RF platform with automatic date /time update from IVDT Base station communication and programming hub.

For the applications without Base Station, use **SET CLOCK MANUAL _** instructions.

LCD Display
SET CLOCK
MANUAL _

to set clock / date. Follow the LCD instructions and press “Enter key” ↵ to confirm.

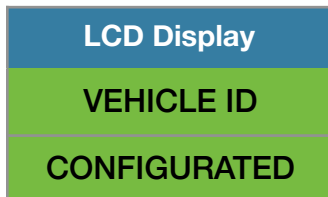
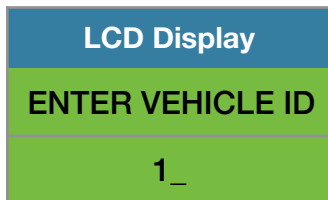
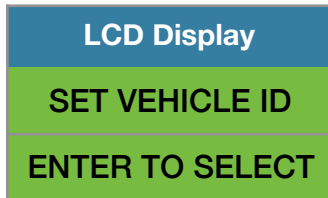
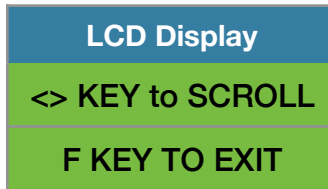


Press **“Enter key”** ↵ to confirm the setting. The cursor will automatically move to the next item to be changed (Month, Day, Year, Hours, Minutes, Seconds). On the last correction, seconds item press **“Enter key”** ↵ to confirm new date / time set up.

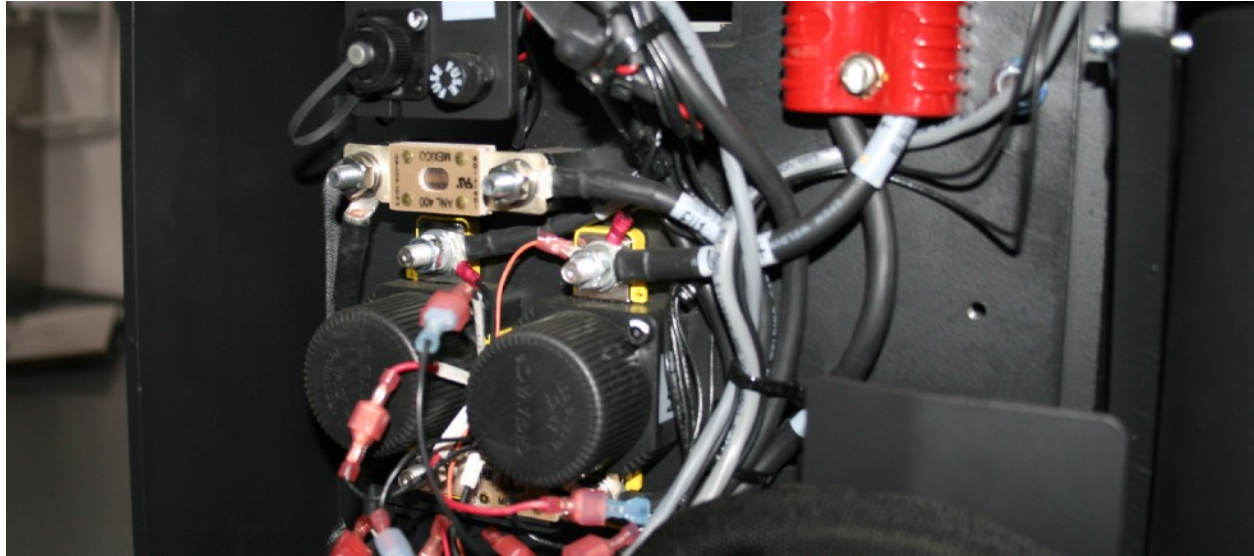
Set vehicle ID#

- Maximum input number for vehicle ID# is 4 digits.

Note: For system used with RFID card reader maximum input number for vehicle ID# is 5 digits.



Lift Accurate Technology



Automatic lift motor travel de-activation methods during the load weighing cycle

Two **BLACK wires** are connected to the internal relay, dry contacts located in the **ED3/ED4-EP** digital indicator. This 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.** Internal relay configuration is SPST normally closed contacts, 10 A current rating.

Method A. (Newer electric pallet trucks with various CANbus controllers)

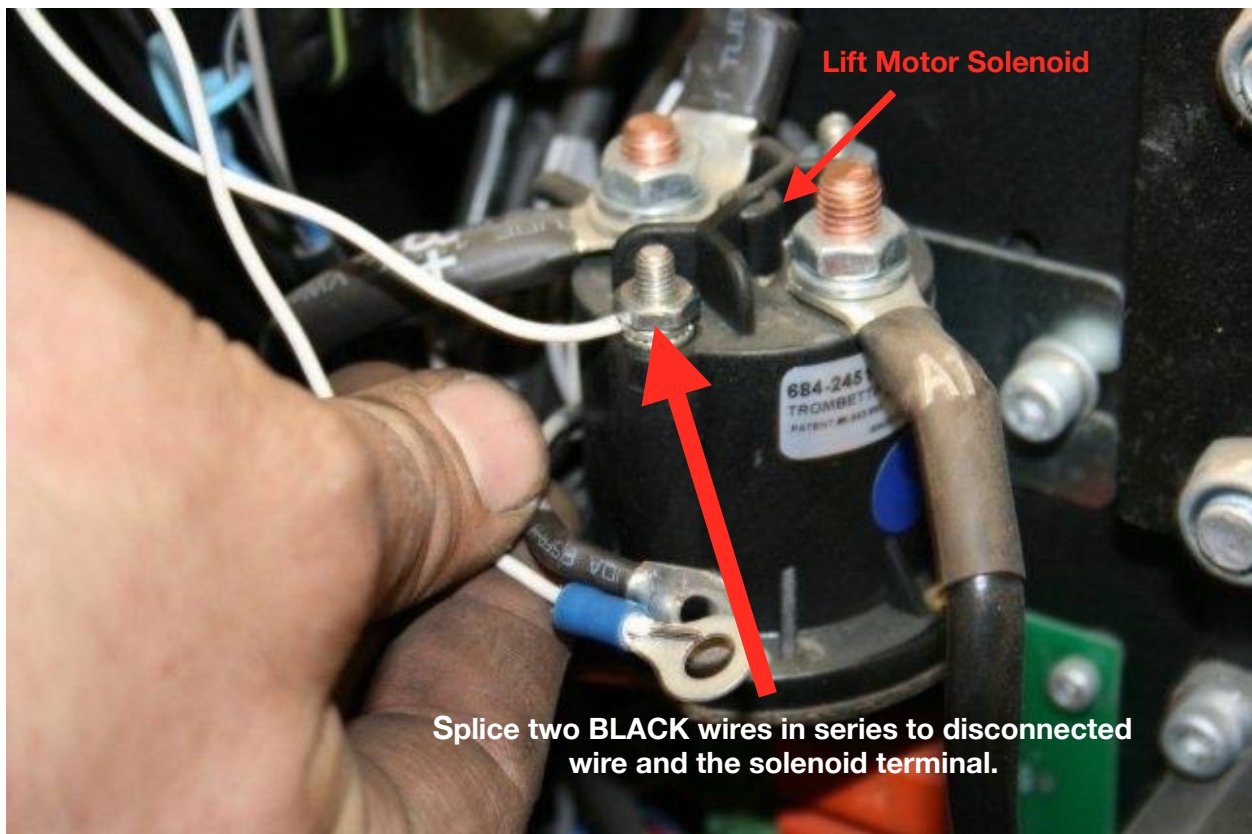
Use two **BLACK wires** and “splice” them in series with the operator activated **lift control switch wire** or signal wire from electronic controller that is activating lift up valve lift motor solenoid. The predetermined motion of the lifting cylinder and the load weight measurement “weighing cycle” will be initiated and controlled automatically by the software algorithm based on the input from the pressure transducer signal. Once the load weight is shown on the LCD display internal relay will be de-activated and the lift motion control event will be automatically enable.

(With vehicle stationary and during the lifting cycle diagnostic display on some vehicles might show “No power to lift motor” or audio signal might be activated for short time period.)

Consult vehicle wiring diagram or contact the OEM for the proper interface to control lift motor control

Method B. (Some older electric pallet trucks with solenoid coil wiring interface)
Use two **Black** wires and splice them in series with one of the lift solenoid coil wires activating the lift motor.

Disconnect one of the original solenoid coil wire (From either positive or negative terminal of the solenoid coil) and splice two **BLACK** wires in series to disconnected wire and the solenoid terminal.



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 from the pressure transducer signal.

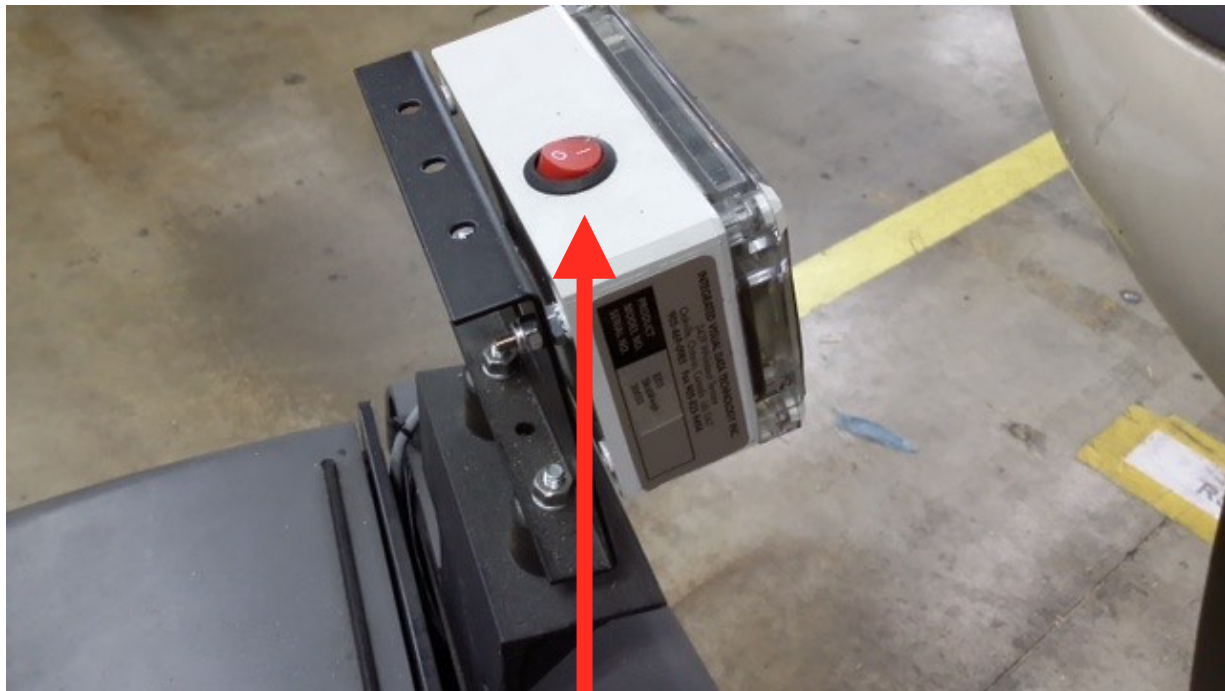
Once the load weight is shown on the LCD display internal relay will be de-activated and the lift motion control will be enabled.

(With vehicle stationary and during the lifting cycle diagnostic display on some vehicles might show “ No power to lift motor” or audio signal might be activated for short time period.)

When unloaded vehicle is in motion the hydraulic “spikes from pressure transducer signal” might be seen by the vehicle controller as start of the “weighing cycle”. Short interruption of the power to the lift solenoid coil on “some controllers” could be seen as a “fault” and power to the vehicle will be cut.

Solution:

When the weighing function of the system is not used or moving unloaded vehicle turn **ED3/ED4-EP** indicator power switch to OFF position.



ED3-EP Power Switch



Weighing scale function calibration

The **ED3/ED4-EP SkidWeigh Plus** calibration is automatic and is done by lifting empty and loaded forks with known load weight. 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 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 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.

Calibration starting point

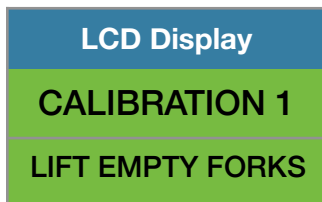
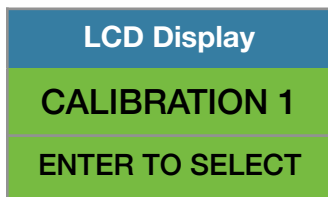
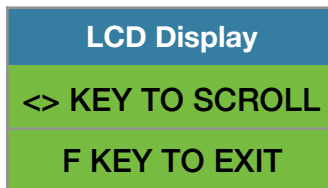
Lower the empty forks to the ground. There should be no hydraulic pressure in lift hydraulic circuit.

Follow instructions shown on the LCD display

To enter into the **Administration Menu**, press **F key** and than press **9** key and input password

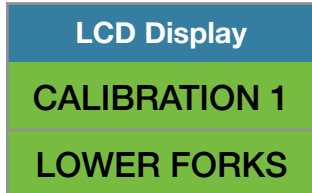
_____ Use left or right arrow keys to scroll to **“CALIBRATION 1”** menu.

Press **“Enter key”** ↵ and follow the LCD instructions.

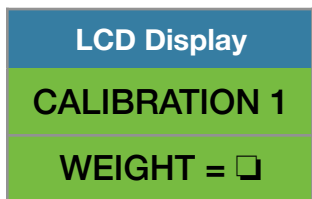


- Activate and **hold lift motor control switch until lifted empty forks are automatically stopped.**

System zero load value will be calibrated. After few seconds the LCD display will show

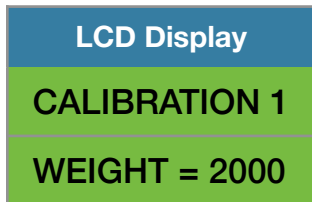


Lower the empty forks to the ground. The LCD display prompt you to input **known calibration load weight**.



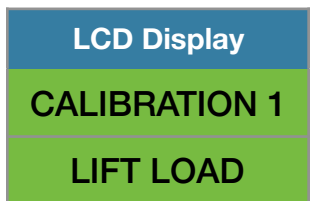
Pick up a known load weigh and **lower the loaded forks to the ground**.

(Our example of the known load weight is 2000 kg)

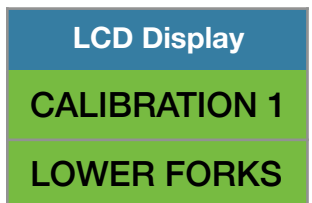


Input into the system the known load weight of 2000 into the LCD display and press **“Enter key”** ↵.

The LCD display will show

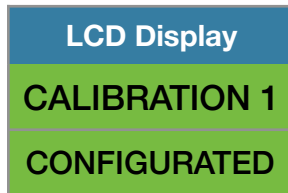


Activate and **hold lift motor control switch until lifted loaded forks are automatically stopped**.



After few seconds the calibrated load weight value of 2000 will be stored in the system memory and LCD display will prompt you to lower “**LOWER FORKS**”.

System weighing function is completed.



As soon the loaded forks are lowered to the ground LCD will show data / time.

System is ready to be used!



Calibration of the ED3/ED4-EP system weighing function is finished.



Saving recorded data to USB memory stick

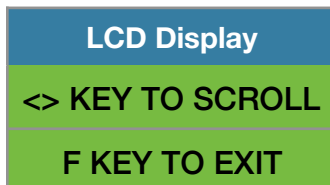
The **ED3/ED4-EP** SkidWeigh Plus system will allow you to download all recorded data to the memory stick. **Follow instructions shown on the LCD display**

This function is located in **Administrative Menu**.



When the system has finished uploading the data to the USB memory stick the LCD display will prompt you to erase the SDRAM , all files contained on the SKidWeigh Plus ED3-EP.

Once you have made your selection **Y** or **N** press “**Enter key**” ↵ to confirm selection and the system will automatically bring you back to the main



screen in the administrator menu. Press **F** key to exit the menu.

Lift Truck Operator Guide



Turn on power to the system

- Insert forks into the pallet or under the product to be weighed
- Lower the loaded forks to the ground. LCD display must show date / time
- Activate lift motor control switch and hold it until lifting cylinder is automatically stopped
- LCD display will show "PLEASE WAIT" and after few seconds a load weight will be shown

Note: As soon the load weight is shown on LCD display the lift motor motion control will be disabled and lifting operational cycle is back to normal operational mode.

“P” key Functions

- Systems with USB port by pressing “P” key load weight data will be recorded and can be downloaded to the memory stick at any time
- Systems utilizing RF wireless module by pressing “P” key load weight will be send to the base station

Accumulative Load Weight Total

- With LCD display showing load weight by pressing “Enter key” ↵ the current value will be added into total counter. You can keep adding individual loads and when finished by pressing “P” key the accumulative load weight total will be printed, recorded or send to the base station.

Waybill ID#

- With Waybill ID# function enabled by pressing “P” key you will be able to input valid Waybill ID number.

Operator Menu *(Pressing F key and than pressing number 0)*

- Depending on the system configuration the operator menu by pressing **F key** and than pressing **0** key allows operator to do a following:

BLUETOOTH PAIRING *(Systems with onboard printer or scanner)*

TARE function *(Input of Tare value when using the weighing function)*

PARTS COUNT by weight *(Input for individual part weight)*

