INTEGRATED VISUAL DATA TECHNOLOGY INC.
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Installation & Calibration Manual

ED3/ED4-EP SkidWeigh Plus Series

Electric Pallet Truck Hydraulic Pressure Transducer Check Weighing Scale

Lift Accurate Technology

ED3/ED4-EP V140

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General Installation Guide

This **ED3-EP** and **ED4-EP** SkidWeigh Plus V140 Series installation & calibration guide describes how to install, calibrate, test and use your on-board electric pallet truck check weighing scale. 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:

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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 on-off power switch on the top of the digital indicator.

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 V140 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

** The ED3/ED4-EP Series configuration might consist of additional hardware. Depending on the system application the additional hardware such as USB port, operator access control RFID card reader, Bluetooth module, RF module, etc., might be included in the indicator.

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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.

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Electrical connections

All SkidWeigh systems operate from 12 to 55 VDC.

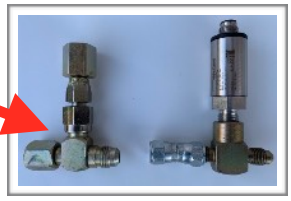
- Orange Wire (+) Ignition switch On position
- Brown Wire (-) Battery negative
- Red Wire, connect to RED wire of the pressure transducer cable
- Black Wire, connect to BLACK wire of the pressure transducer cable
- White Wire, connect to WHITE wire of the pressure transducer cable

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 contacts, 5 A current ratting

Pressure transducer

Use T-piece and adapter(s) to accommodate 1/4”-18 NPT

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

LCD Display
Aug 28, 2010
12:20:23

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*)

LCD Display
PLEASE WEIGHT
WEIGHT = 455

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.

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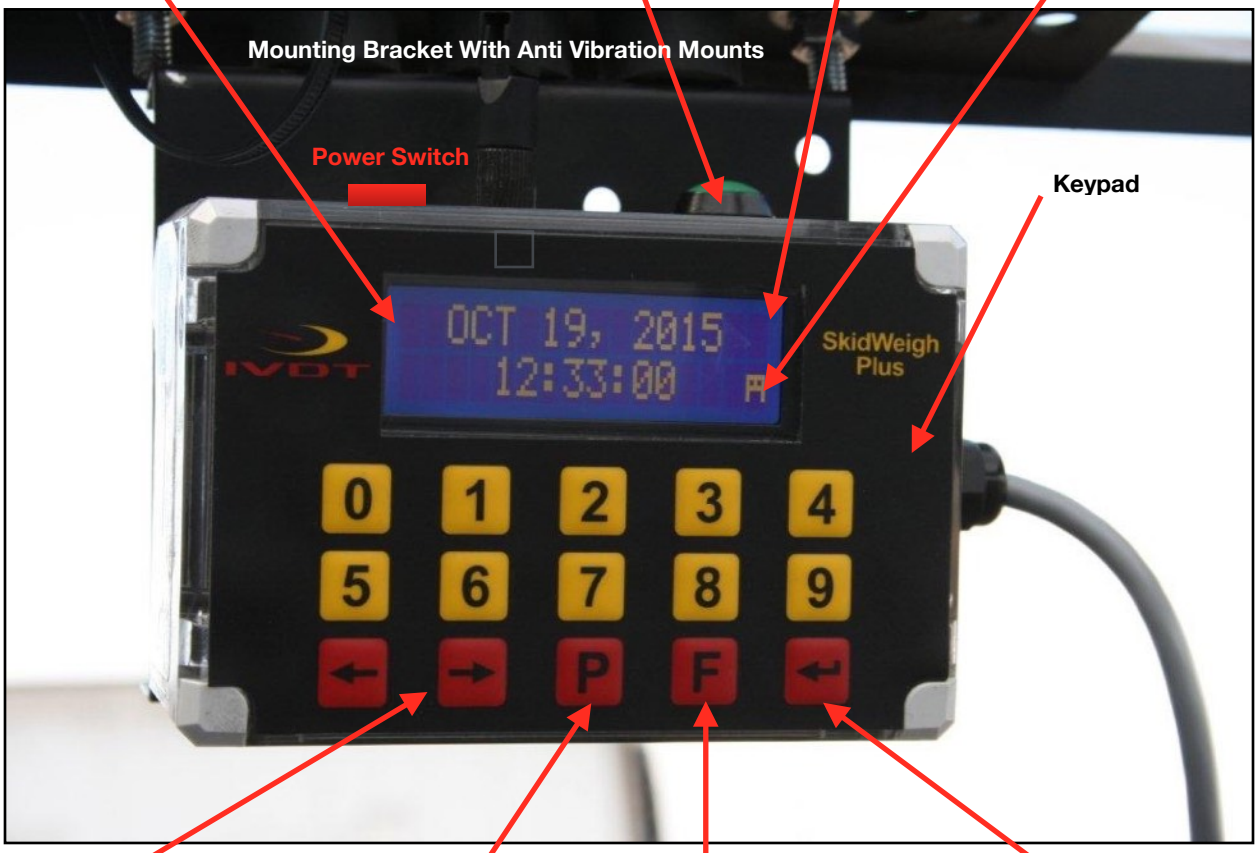

F 9 ADMINISTRATIVE MENU (Password protected)

F 0 OPERATOR MENU

Use < > keys for *Bluetooth pairing, *TARE set up, * Weight readout to be shown in kilograms

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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/date or information available depending on the purchased hardware configurations.
To enter into the Administration Menu, press **F** key and than press **9** key.

Input password **521**
Use **< >** 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 the menu.

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 Date / Time follow the LCD instructions and press **"Enter key"** ↵ to confirm.

LCD Display
Aug 28, 2010
12:20:23

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 3 digits. Press **“Enter key”** ↵ to confirm.

LCD Display
<> KEY to SCROLL
F KEY TO EXIT

LCD Display
SET VEHICLE ID
ENTER TO SELECT

LCD Display
ENTER VEHICLE ID
1_

LCD Display
VEHICLE ID
CONFIGURATED

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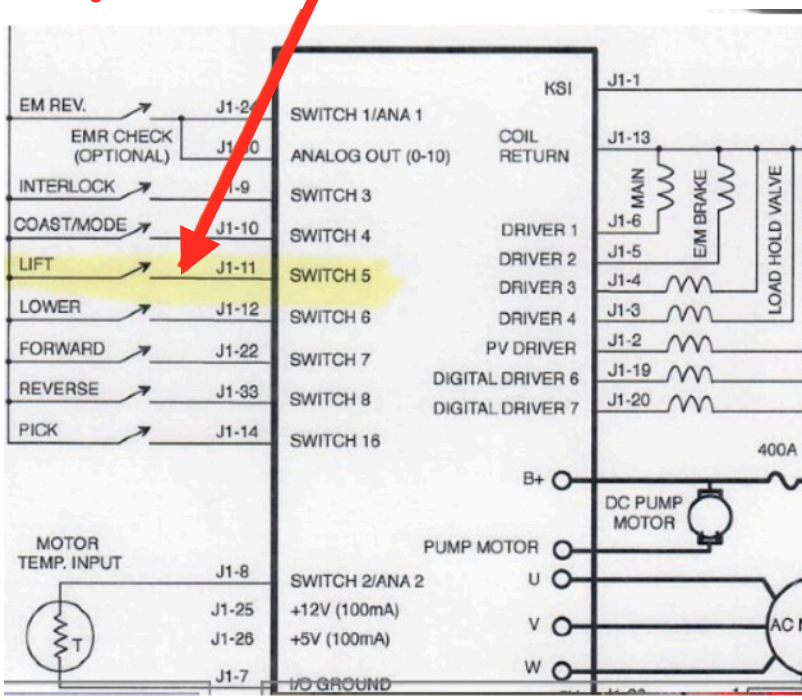
Use two BLACK wires and "splice" them in series with the operator activated lift control switch wire or signal wire on controller side that is activating lift motor.



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 <u>signal wire on controller side</u> that is activating lift motor. 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.

Note: 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 travel.

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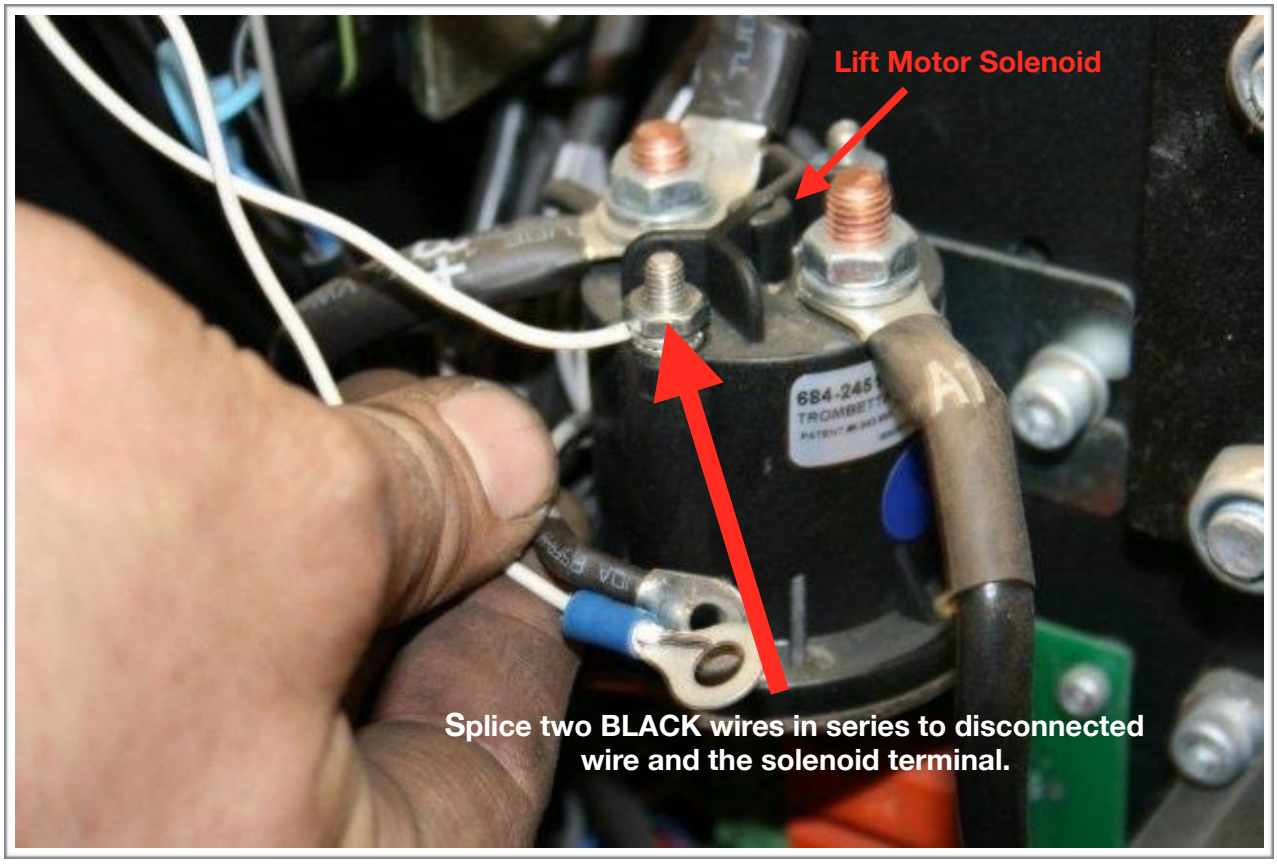
Method B. (*Some older electric pallet trucks with solenoid coil wiring interface*)

Use two Black wires and splice them in series with one of the lift solenoid coil wires activating the lift motor travel.

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.

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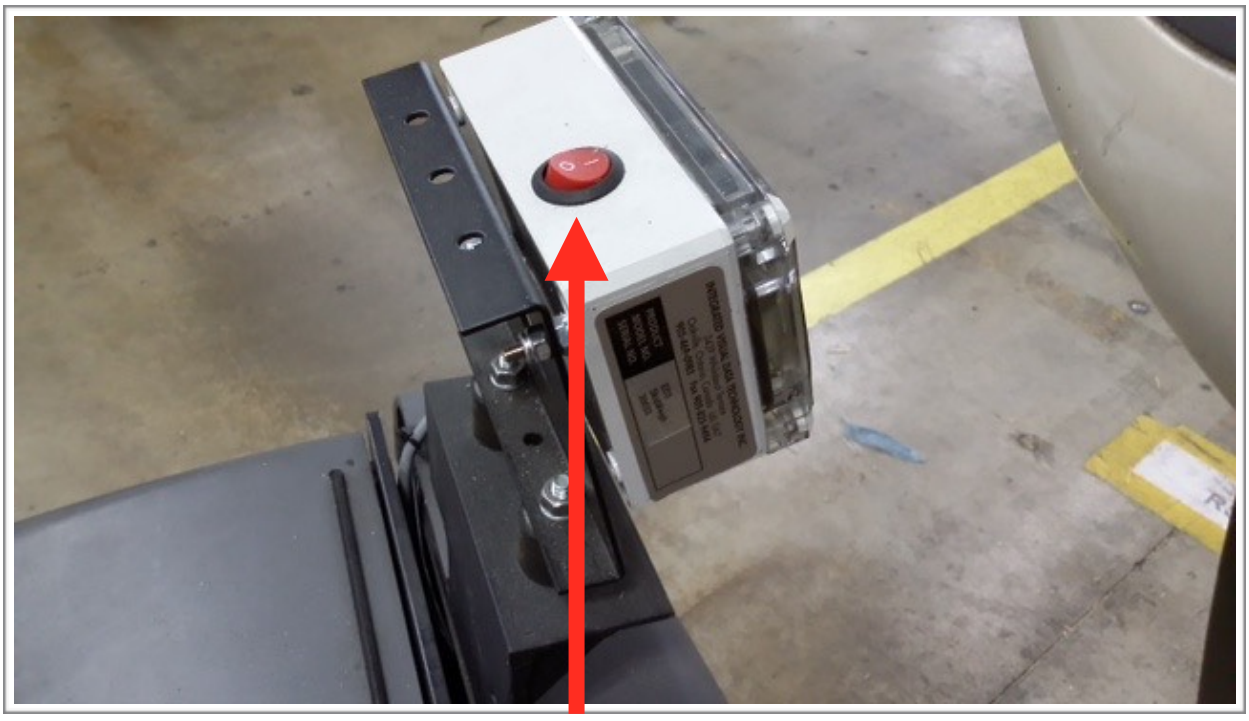
Once the load weight is shown on the LCD display internal relay will be de-activated and the lift motion control will be enabled.

(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 is not used turn indicator power switch to OFF position.



ED3/ED4-EP System Power On / Off Switch

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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:

The ED2-EP V140 SkidWeigh system MUST BE CALIBRATED WITH KNOWN LOAD WEIGHT IN POUNDS

Note: Should operation require for load weight to be shown in kg, press **F** key and number **0** and change **WEIGHT DISPLAY** to kg *after the system being calibrated in pounds*.

Calibration

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 in the Administration Menu, press **"F"** key and than press **9** key and input password **521**. Use left or right arrow keys to scroll to **"CALIBRATION 1"** menu.

Press **"Enter key"** ↵ and follow the LCD instructions.

LCD Display
<> KEY TO SCROLL
F KEY TO EXIT

LCD Display
CALIBRATION 1
ENTER TO SELECT

LCD Display
CALIBRATION 1
LIFT EMPTY FORKS

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

System zero load calibrated value will be recorded. After few seconds the LCD display will show "LOWER FORKS".

LCD Display
CALIBRATION 1
LOWER FORKS

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

LCD Display
CALIBRATION 1
WEIGHT = ❑

Pick up a known load weight and lower the loaded forks to the ground.
(Our example of the known load weight is 4000 pounds)

LCD Display
CALIBRATION 1
WEIGHT = 4000

Input into the system the known load weight of 4000 and press **"Enter key"** ↵.
The LCD display will show "LIFT LOAD".

LCD Display
CALIBRATION 1
LIFT LOAD

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

LCD Display
CALIBRATION 1
LOWER FORKS

After few seconds the calibrated load weight value of 4000 will be stored in the system memory and LCD display will prompt you to lower “LOWER FORKS”.

LCD Display
CALIBRATION 1
CONFIGURATED

As soon the loaded forks are lowered to the ground LCD will show Data / Time.

LCD Display
AUG 28, 2010
12:25:23

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

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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.

LCD Display
<> KEY TO SCROLL
F KEY TO EXIT

LCD Display
SAVE TO USB
ENTER TO SELECT

LCD Display
SAVING TO USB
– – – – – -

LCD Display
ERASE SDRAM ? N

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/ED4-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

LCD Display
<> KEY TO SCROLL
F KEY TO EXIT

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

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Lift Truck Operator Usage Guide

Toggle Arrows Keys

Print

F 9 Administrative Menu

F 0 Operator Menu

"Enter key" ↵

WEIGHING CYCLE

Turn on power switch. (Input operator ID# or use RFID card or complete OSHA safety check if applicable)

- 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 loaded forks are automatically stopped
- LCD display will show "PLEASE WAIT" and after few seconds a load weight will be shown on LCD display

Note:

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

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Accumulative Load Weight Total (If Applicable)

To add loads press **"Enter key"** ↵ after each load weight is shown on LCD display. To reset current load weight total or print ticket press **"P"** key. Should the system have USB port or using RF base station wireless communication the load weight information will be stored on both devices.

Tare Function Input

To set up tare value into the system press **"F"** key and then press number **0**. Input TARE value and press **"Enter key"** ↵**.** To reset current TARE in the system press **"F"** key and input **0** and press **"Enter key"** ↵

Bluetooth Pairing (If Applicable)

System allows to pair Bluetooth Barcode Scanner or printer. *(if applicable)*
To enter into the Bluetooth pairing menu, press **"F"** key and then number **0.**
The scanner connects to the host via Bluetooth and emulates a serial connection (SPP)
Note: Use left ◀ and right ► arrow key to choose MANUAL, INQUIRY or AUTO.

Suggestion: For pairing of Bluetooth barcode scanner and printer use INQUIRY function

Changing Load Weight Readout from pounds to kg

Note: Default load weight readout is in pounds. To change load weight readout from pounds to kg press **"F"** key and than number **0**. Scroll to "Displayed Weight", use **< >** keys to toggle to kg or back to pounds and press **"Enter key"** ↵**.**

Waybill ID# Input (If Applicable)

With Waybill ID# function enabled by pressing **"P"** key while the load weight is shown on LCD display you will be able to input Waybill ID#. Press **"Enter key"** ↵ to confirm.

OSHA Safety Check (If Applicable)

The OSHA safety check will be automatically initiated every 8, 12 hours or daily. Default value shown on LCD display is (F) representing **"fail"**.

Use **< >** key to change. Follow the LCD messages menu and press **"Enter key"** ↵ after choosing **F** or **P** on each safety check question.

F = Fail and (P)= Pass