

SkidWeigh System

ED2-300 Series

With Forklift Engine Idle Limiter



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Ver.040510-77

Forklift On-board Freight Weight Verification With Engine Idle Limiter

The **ED2-300 Series** is an automatic heavy duty *Forklift Checks Weighing/Engine Idle Limiter* system used to verify load weights on the move and will shutdown the engine after pre determined time when vehicle not being used. (*Vehicle is standing unloaded*)

This is not a “Legal for Trade” scale, but an economical on-board check weighing system. The installed system will allow your lift truck operator to increase vehicle utilization, increase productivity, provide operator safety and display and verify the freight load weights.

The freight load weight readout accuracy is within +/-0.5% to +/-1% of the vehicle's lifting capacity.

Example: Toyota forklift, lifting capacity 4000 pounds, the freight load readout accuracy will be within +/- 25 to 40 pounds.

To obtain a load weight readout the lift truck operator is to lower the loaded forks to the ground, wait until the indicator **MODE** shows the number **8** and then, **just lift the load above the ground.** Within 3-5 seconds the load weight will be displayed. This load weight will be shown on the display until the next time the load is being lowered. This version comes with automatic engine shutdown when vehicle is standing unloaded longer than designated idle time out period.

Proper Operator Procedure for Weighing Loads

(Automatic Load Weighing Cycle)

1. Insert the forks into the pallet or under the product to be weighed and lower the forks. Make sure that the pallet is positioned all the way on the fork's carriage. The number **8** in the **MODE** display must be shown before you initiate a “**Load Weighing Cycle**”. If the number **8** is not shown on the indicator, **lower the forks to the ground!**
2. When the **MODE** number **8** is shown on the indicator, lift the loaded forks 2-3 inches (Up to 10 cm) above the ground. You must activate the lift control valve the same way that you normally do when picking up the loads. ***Do not attempt to slow down this operation. Do not start to tilt the load in any other direction and do not lift the load to different heights.***
3. As soon as the load has been lifted, the digital display will go blank for a moment and then the weight value of the lifted load will be displayed. This load weight will be displayed on the indicator until the next time the forks are being **lowered to the ground.**



Mounting Location for Digital Indicator

Install the mounting bracket with the anti-vibration mount and fasten the digital indicator on the vehicle's dashboard or side railing, preferably on the right hand side.

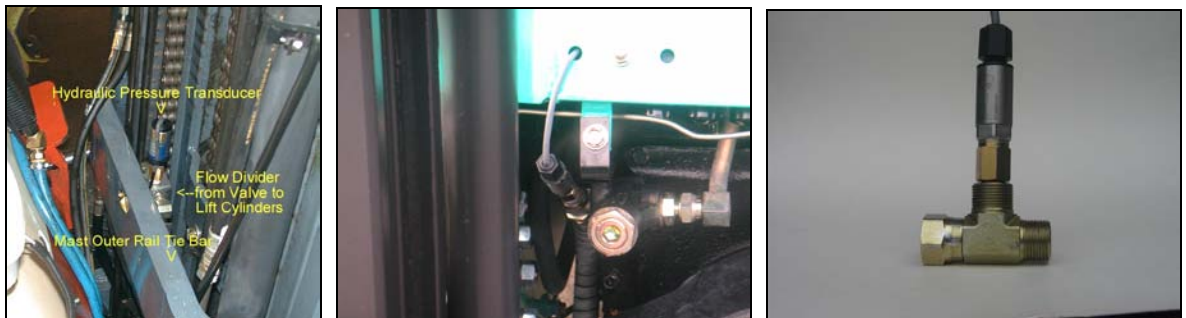


Anti-vibration mount, ¼"-20 UNC (25 x 20 mm, vulcanized rubber, Duro5) supplied with every kit



Pressure Transducer Installation

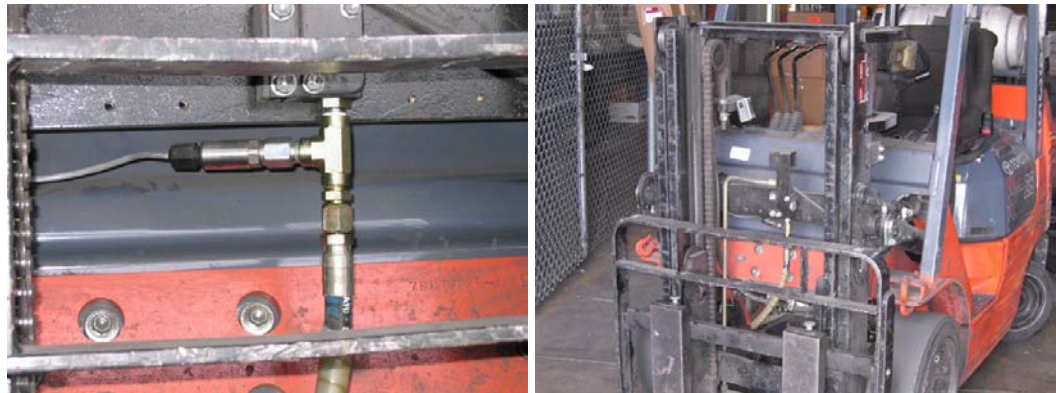
1. The pressure transducer body itself has a male port ¼"-18 NPT. Standard cable length is 6' (1.5 meters).



2. The pressure transducer must be installed in the **hydraulic line between the lift control valve and the lift cylinder(s)**. Forklift equipped with hydraulic accumulator would require different software that will increase the time to calculate the load weight due to the “delayed” pressure increase.

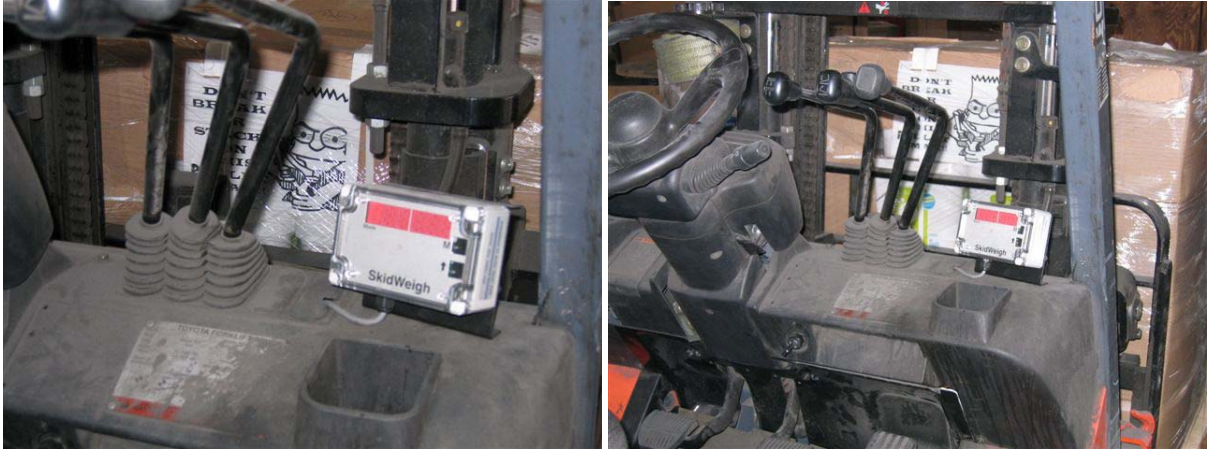
Note: Before installing pressure transducer make sure that hydraulic lift circuit is pressure free. Place the forks on the ground in their lowest position and tilt the mast forward. Chain must be slack. You can also lift the forks and position them on top of supporting surface. To make hydraulic lift circuit pressure free, lower the lifting cylinder into its lowest position. Make sure that chain is slack.

3. The majority of pressure transducer installations into the vehicle hydraulic system will require some kind of T- piece to be connected in the lifting hydraulic line. (See picture bellow) In addition to the T- piece installation method, the pressure transducer can be installed in the flow divider - either in the spare plug or by drilling and tapping for 1/4”-18 NPT in the flow divider body or at any “larger elbow”, as long as it is in the vehicle lifting hydraulic line.
4. Make sure that the installed pressure transducer will not touch any moving parts or the assembly of the forklift or any other material handling vehicle when the vehicle is in normal operation. The installation of the pressure transducer should be performed by an acknowledged forklift technician.



Example of the pressure transducer installation / digital indicator on Toyota forklifts with short mast





Seven Wires Single Cable

(For Vehicle Input Voltage's from 12 to 55V DC)

RED Wire of pressure transducer cable to RED WIRE of the 7 wires cable from the indicator
BLACK Wire of pressure transducer cable to BLACK WIRE of the 7 seven wires cable from the Indicator

WHITE Wire of pressure transducer cable to WHITE WIRE of the 7 wires cable from the indicator

ORANGE Wire (+) Connect to ignition switch, "ON" position

BROWN Wire (-) Connect to battery negative (Electric motor powered vehicles) or to the vehicle chassis for combustion engine powered vehicles.

Two Wires Electrical Connection for Engine Shut Down

(Two wire connection with no accessory control)

BLACK Wire

Disconnect the circuit(s) required to run engine (Ignition coil, fuel pump, fuel solenoid, "IGN" circuit, etc. 10 A max.) from ignition switch "RUN" position and connect to the BLACK wire (RUN). The RUN wire will be "hot" until the idle limiter times out.

RED Wire

(+) Connect to ignition switch, "ON" position

Connect the RED fused wire (Use at least 10A in line fuse) to ignition switch (IGN) or a terminal on the fuse block that is "hot" when ignition or master switch is in the normal running position. The RED wire supplies operating power to the idle limiter

Use the appropriate in line fuse, at least 10A.

Digital Indicator Calibration / Setup Two Keys Description



Upper Right Key Labeled “M” (Calibration / MODE key)

Lower Right Key Labeled “↑” (0 – 9 numerical increments input key)

MODE

Five Digits Load Weight Readout Display

8	Digit 5	Digit 4	Digit3	Digit 2	Digit 1
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Note: Both keys, **M** and **↑** are used only during the system calibration/set up mode. They can be accessed through two small holes on the polycarbonate cover. *(Use a paper clip to activate the keys)*

- The left most significant digit represents the **MODE** of operation
- The five other digits represent the load weight readout
-

Calibration / Setup Procedures Concept

(The ED2 Series SkidWeigh installation & calibration CD is supplied with every kit)

The **ED2 Series** SkidWeigh systems calibration/setup procedures are very simple. There is no input of the complicated codes found on majority of other systems on the market, but the simple procedure utilizing two buttons and few steps to complete the automatic calibration of the **empty forks being lifted just above the ground and automatic calibration of the known load weight being lifted just above the ground.**



Note: At any point if you make a mistake, for whatever reason, turn the power to the system OFF / ON and start all over. All final calibration and set-up values will be automatically stored after the calibration/setup procedures are finished. **If power to the ED2 Series is disconnected information will NOT BE LOST.**

- The **ED2 Series** system has to be calibrated with a known load weight
- Use the customer’s floor scale or find a known load weight within the operating facility
- Keep that known load weight nearby to complete the calibration

- For best results, use at least 30% to 50 % known load weights of the particular lift truck's lifting capacity.
- **Example:** For 3000 pounds lifting capacity of the vehicle, use at least 1500 pounds or close to that load weight to be used to calibrate the system.
- **Note:** 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 weight display to show in kilograms. Use a known load weight in kilograms and enter that value into the system accordingly.

Starting Point

Every time the power is turned on, the software version will be shown on the right hand side of the display for a brief moment. Example of one of the software version is 10275. When forks are lowered to the ground, the digital display will show number **8** in the **Mode** window.

MODE	Five Digits Load Weight Readout Display				
8					

Calibration of the Empty Forks

Lower the empty forks to the ground (No hydraulic pressure in the lifting circuit)

- Press the “**M**” key (*Use a paper clip*) and hold it down for 5 seconds.



- After 5 seconds, the **MODE** display digit will show “**0**”. This means that the system is ready for **automatic zeroing of the scale**.

MODE	Five Digits Load Weight Readout Display				
0					

- Lift the empty forks or any other attachment **just above the ground**. (*Activate the lift control valve, as you would do during the normal lifting operation. Do not attempt to activate and lift the empty forks slowly*)



- Wait a few seconds, the display will go blank and then it will show **0** or any other number in the furthest right digit display.

MODE		Five Digits Load Weight Readout Display				
1						0



Automatic zeroing of lifted empty forks (or any other attachment) is done!

Calibration of Loaded Forks

(Example: Known Load Weight is 1500)

- At this point, drive the vehicle into the skid with a known load weight. (If this is a typical pallet with known weight, make sure that the forks are in the pallet and are **lowered to the ground**)
- Start entering a known load weight into the digital indicator. The first value of the known load weight can be entered by pressing the “↑” key.
- The number will increment from 0 to 9 and will wrap around.
- To enter a second digit from the right, press the “M” key and the **MODE** digit will increment to 2.
- Keep pressing “↑” to enter a second value of known load weight.
- Repeat this procedure until the **MODE** digit display is showing **5**.



Note: In our example known load weight is 1500. *Make sure that you enter 0 in **MODE 5**, since the known load weight has only 4 digits as in our example of 1500.* This value of 1500 could represent kilograms or pounds.

MODE		Five Digits Load Weight Readout Display			
1					0
MODE					
2				0	
MODE					
3			5		
MODE					
4		1			
MODE					
5	0				

- Before going to **MODE 6** please make sure that the “Known load weight” (in our example, 1500 pounds or kilograms) is ready to be lifted. The loaded forks must be on the ground (No hydraulic pressure in the lifting hydraulic circuit).



- Press the “M” key to advance to **MODE 6** and immediately lift the “known load weight” just above the ground.
- (*Activate the lift control valve, as you would do during the normal lifting operation*).

MODE		Five Digits Load Weight Readout Display			
6					



- The display will go blank. Wait a few seconds. (*Do not move forks, do not tilt or activate side shift lever*)
- Within a 3-5 seconds the display will show the value of the calibrated “known load weight”, in our case 1500. If you lower the load to the ground system will go automatically into operational mode.
- Number 8 will be shown in the MODE window. System is ready to be used!



System Weigh Calibration Function Is Finished!

From this point on, the system weigh calibration/setup has been successfully done and all the calibrating parameters are saved and will not be lost when the power to the system is turned off. The display will show the load weight value until the forks are lowered to the ground. When the forks are lowered to the ground, the display will automatically reset and the system will go into **MODE 8**; *which is a starting point for all weighing cycles.*

Keep in mind that if another weighing cycle is not to be initiated, but the vehicle is in motion or the forks are lifted during normal operation, the hydraulic pressure “spikes” will be introduced and some random readout value on the digital display will be shown. The value displayed might be 0, 10, 20, etc. This readout value does not represent the load weight, but is only a readout value due to the vehicle motion.



Engine Idle Limiter Feature

The **ED2-300** Series or any other models with such feature will allow the end user to enter any engine idle time out value and automatically stop the engine running.

The standard engine shutdown is 5 minutes when vehicle is standing unloaded.

*(For Delaware, Connecticut and DC the engine idling time limits are 3 minutes).
California, New Jersey, Florida, Maryland, Pennsylvania, Massachusetts and New York the engine idle times should no more than 5 minutes)*

Once the pre-set “Engine Shutdown Value” is entered into the system, every time that 50% of the pre-set value is reached, the LED indicator display will show the current numeric number in seconds and will start to decrease. If the vehicle remains standing unloaded engine will stop after the pre-set time out period. All LED digits will show 0’s and will be flashing indicating to the operator that engine has stopped.

During the time out period if vehicle has been moved the cycle will be reset and time out will start all over.



(MODE 7) Engine Idle Time Out Value

All **ED2-300** Series SkidWeighs or other models with such features require an additional step in the standard calibration procedure (*Mode 0 to Mode 6*). This **Mode 7** will come up automatically on the ED2-300 SkidWeighs after the standard calibration procedures are finished and loaded forks are lowered to the ground.

(As of example, we want to enter “5 minutes (300 seconds) Engine Shutdown”)

How to get to the **MODE 7**?

The ED2-300 SkidWeigh systems with “Engine Idle limiter Input Feature” will have a **MODE 7** as a next step. As soon you have finished with the **MODE 6** and the display is showing the current calibrated load weight (*In our example it was 1500*) you must lower the loaded forks to the ground.

As soon the loaded forks are lowered to the ground the mode number will automatically advance to the **MODE 7**.

When digital indicator shows the **MODE 7** you must enter the “Engine Shutdown Time Out in Seconds)” for that particular vehicle.

The **MODE 7** digit will remain while you are entering the “Engine Idle Time Out Value in Seconds”.



MODE		Five Digits Load Weight Readout Display			
7					0

- Using the same keys “M” and “↑”, enter the “**Engine idle time out value**”. In our example it’s 300. You will note that the **MODE 7** digit remains throughout this operation. (Make sure that 4th and 5th digit is 0)

MODE		Five Digits Load Weight Readout Display			
7					0
MODE					
7				0	
MODE					
7			3		
MODE					
7		0			
MODE					
7	0				

On the last shift, (Utilizing “M” key, left shift) the **MODE 7** digit will turn off. The “Engine Idle Time Out Value” will be successfully stored in the memory.

MODE		Five Digits Load Weight Readout Display				
7	0	0	3	0	0	

The entered value of 300 (300 seconds = 5 minutes) will be shown briefly on the digital display and the unit will return to the normal operational **MODE 8**.

MODE					
8					



The System Calibration and the “Engine Idle Time Limit Value in Seconds” Have Been Successfully Stored in the Memory



Accumulative Freight Load Weight Function

Left Button: Accumulative function for load weights



Every time the **indicator shows the load weight** and the **left button** is pressed, the load weight will be added into a weighing counter and will show the current total weight of all load weights entered in the counter. (A quick “blink” on the display indicates that the current load weight has been added into the counter.)

To reset the current load weighing counter, press the **right button**. This will reset the current total and the cycle will start all over.



Right Button: Reset

Note: Weight loads can be added only while the indicator shows the current load weight. If the load weight is lowered and **Mode 8** is shown on the display, the last load weight will not be added even if the **left button** is pressed.

The maximum number of load weights entered into the accumulative counter is 40. If 40 loads have been reached, the display will show the current total weight of all 40 loads weight entered. This current total weight will stay and “flash” on the instrument display for a moment. The current accumulative counter of all 40 loads weight will be reset automatically and you can start the new cycle again.

ED2 Series SkidWeigh MODE Description

MODE 8 **Represents Standard Operational “Weighing Cycle Mode”**
MODE 0 to 6 Represents standard calibration mode
MODE 7 Represents Optional “Engine Idle Limiter Input Value Set-up”

MODE	Description	Action	Remarks
8	Standard “Weighing Cycle Mode”	Lower the forks to the ground	MODE 8 must be shown to initiate the weighing cycle
0	Automatic zeroing of empty forks	Forks must be lowered to the ground. Lift the empty forks	Lift empty forks just above the ground
1	Enter first value of known load weight	0 – 9 numerical increments, use ↑ key	Press the “M” key to advance to the next MODE
2	Enter second value of known load weight	0 – 9 numerical increments, use ↑ key	Press the “M” key to advance to the next MODE
3	Enter third value of known load weight	0 – 9 numerical increments, use ↑ key	Press the “M” key to advance to the next MODE
4	Enter fourth value of known load weight	0 – 9 numerical increments, use ↑ key	Press the “M” key to advance to the next MODE
5	Enter fifth value of known load weight	0 – 9 numerical increments, use ↑ key	Press the “M” key to advance to the next MODE
6	Automatic calibration mode with known load weight on the forks	The forks must be on the ground level. Lift the forks with the known load weight	After a few seconds, the display will show the known load weight value
7	Engine Idle Limiter Input Value Set-up	Enter Value in seconds as per instructions described above.	Applies only for systems with the engine idle limiter

For help with general or miscellaneous problems that you may experience with your ED2 Series SkidWeigh, refer to the following table for the possible solutions.

Problem	Possible cause	Possible solution
<p>MODE 8 digit is not shown on the instrument display when the ignition switch is turned ON</p>	<p>No power to the system</p>	<ul style="list-style-type: none"> - Check whether the fuse is blown - Check for a bad ground chassis connection - Remove any paint around the ground chassis connection - On electric vehicles, make sure that the “Black wire”, negative is connected to the battery negative, not to the frame of the vehicle
<p>When in MODE 8 and the forks with the load weight are lifted, there is no weight readout shown on the instrument display</p>	<p>Pressure transducer or wiring harness</p>	<ul style="list-style-type: none"> - Check all 3 wires connections from the pressure transducer cable - Check the WHITE wire if connection is broken - Check the RED wire - it should have at least 11V DC - Check the pressure transducer for physical damage - Replace the pressure transducer
<p>Weight display shows some random number (Example: 4630) regardless if forks lowered or any weight load lifted</p>	<p>Pressure transducer ground wire (Black wire) is broken or disconnected</p>	<ul style="list-style-type: none"> - Broken Black wire from pressure transducer - Make sure that the “BLACK WIRE” from the pressure transducer to the wiring harness is connected
<p>All display digits are “flashing” 999999 when the ignition switch is turned ON</p>	<p>The pressure transducer is near saturation (> 2.45V)</p>	<ul style="list-style-type: none"> -The load weight is too heavy for this vehicle - Pressure transducer damaged
<p>When the known load weight is lifted, there is a “larger weight readout error”</p>	<ul style="list-style-type: none"> - Follow a proper “weighing cycle”. - Calibration required - Faulty pressure transducer 	<ul style="list-style-type: none"> - Recalibrate the system with known load weight - The system is calibrated in kilograms, but the operator thinks that readout is in pounds or vice versa - Follow the “Standard Weighing Cycle” procedure - Replace pressure transducer
<p>The instrument display shows approx. the same weight readout regardless if the forks are loaded or not</p>	<p>Pressure Transducer</p>	<ul style="list-style-type: none"> - The white wire (pressure transducer signal output) is broken or not connected - Faulty pressure transducer
<p>When the load weight is lifted display shows the weight value and display is “flashing”</p>	<p>Overload warning</p>	<ul style="list-style-type: none"> - The preset overload value is too low - Check the overload settings and correct it
<p>The lifted load weights are within the system error of +/- .5 to 1% of the vehicle lifting capacity most of the time; but sometimes a “Larger error might occur”</p>	<p>Follow the proper weighing cycle error</p>	<ul style="list-style-type: none"> - Make sure that the standard weighing procedures are followed. - When the load weight is lifted, do not move the vehicle - When the load weight is lifted, do not tilt the mast - Replace the pressure transducer
<p>The display will not return to the MODE 8, standard weighing cycle</p>	<ul style="list-style-type: none"> - Forks are not lowered to the ground - Pressure transducer 	<ul style="list-style-type: none"> - Lower the forks (attachment) to the ground (There should be no pressure in the lifting circuit) - Replace the pressure transducer



ED2-300 Series SkidWeigh

User's Manual (Vehicle Operator Copy)

The ED2 Series SkidWeigh is fully automatic lift truck check weighing system. This is not a "Legal for Trade" weighing scale, but an economical onboard check weighing system that will allow your lift truck / loader operator to determine the load weight readout within +/- 0.5% to +/- 1% of the vehicle lifting capacity.

Standard Weighing Procedure

1. Insert the forks into the pallet or under the product to be weighed. Lower the forks to the ground. The number "8" in the **Mode** display window must be shown before you can initiate a "**Weighing Cycle**". If any other number is shown on display, including 0 on right side, lower the forks to the ground.
2. When the number "8" is shown in **Mode** display, the system is ready to weigh the product on the forks.
3. **IMPORTANT:** Activate the lift control lever "**quickly**" and lift the load just above the ground. Do not attempt to lift the load slowly. Do not tilt the load or move the vehicle or lift the load "higher" than just above the ground, within 2" to 3" (10 cm). (All of the load weighing must be done within the free lift of the vehicle.)



4. As soon as the load has been lifted, the digital display will go blank for a moment and the load weight value of the product lifted will be displayed. This product load weight will be shown on the indicator until the next time the forks are being lowered to the ground.

To initiate another "**Weighing Cycle**", the indicator **MUST SHOW** number "8" in the "**Mode**" display window. If the display shows 0, 10, 20 or any other value, you will not be able to take another load weight measurement. Lower the forks to the ground!

Accumulative Load Weight Function

Left Button: (Black) Accumulative function for load weights

Every time indicator shows the load weight and the left button is pressed, the load weight will be added into a weighing counter. It will also show the current total weight of all loads entered in the counter. (A quick "blink" on display indicates that current load weight has been added into the counter)



Accumulative load weight button



Reset button for accumulative load weights

Right Button: (Red) Reset function of accumulative load weights

Every time the indicator shows the load weight and the right button is pressed, the current load weight or current total weight in the counter will be reset. In the case of the system equipped with onboard printer, **the weight ticket will be printed.** The last load weight readout will be shown, until forks lowered.

Engine Idle Limiter Function (Operation)

A countdown sequence is initiated when vehicle is standing unloaded.

If the vehicle is moved before the time period expires the system is reset and engine will not shut down.

At 50% of engine shut down time out period the LED display will show the current time out value to the vehicle operator and the value will be decreasing every second.

When time out value on the LED display reaches one second, engine will be shut down.

All digits will be showing 0's and will flash indicating to the operator that engine have been stopped.

To reset the system you must turn ignition key to OFF position. If you wish to start the engine follow the normal operating procedure

As soon the engine is running again and the vehicle is standing unloaded the engine idle time limiter cycle will start all over.

Explanation for SkidWeigh Weighing Tolerance

Weighing Accuracy is within +/- 0.5% to +/- 1% of the vehicle lifting capacity.

Example: If a forklift truck's maximum lifting capacity is 3000 pounds; then the weighing readout accuracy of vehicle is within +/- 15 pounds in the lower load weighing range and +/- 30 pounds in the higher load weighing range