

ED2-Series SkidWeigh

Automatic Forklift Load Check Weighing & Visual Overload Warning System



Doing it right



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SkidWeigh System Order Number: **ED2-SM-RONA**

Ver.092010-20

Material Handling Vehicle On-board Load Weight Verification With Visual Overload Warning

The **ED2-SM-RONA Series SkidWeigh** is an automatic heavy duty forklift check weighing/overload warning system used to verify load weights on the move. **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 load weight readout accuracy is within +/-0.5% to +/-1% of the vehicle's lifting capacity. ***Example: Caterpillar forklift with a lifting capacity of 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.

If the load lifted is above pre-set overload value, LED display will show the load weight, display will “flash” and the buzzer will come on. To stop the buzzer lower the load to the ground.

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.

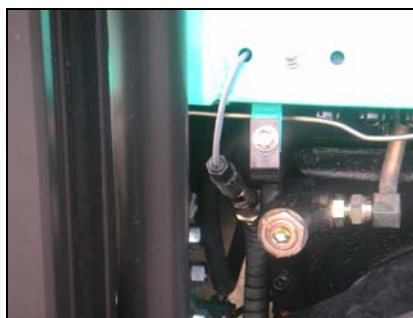


Anti-vibration mount, 1/4"-20 UNC (25 x 20 mm, vulcanized rubber, Duro5) supplied with every kit

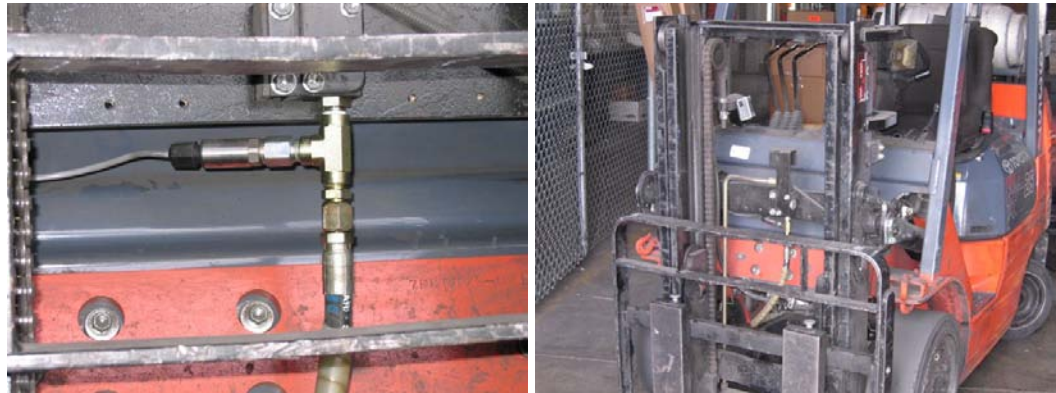


Pressure Transducer Installation

1. The pressure transducer body has a male port 1/4"-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)**. Vehicles equipped with hydraulic accumulator would require different software. Send digital indicator back to IVDT Inc. and we will change software at no charge to you.
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. 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.



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



Seven Wires Single Cable

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

RED Wire of pressure transducer cable to RED WIRE of the 7 wire cable from the indicator
BLACK Wire of pressure transducer cable to BLACK WIRE of the 7 seven wire cable from the indicator
WHITE Wire of pressure transducer cable to WHITE WIRE of the 7 wire 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.

Digital Indicator Calibration / Setup Two Key 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	Digit 3	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 and calibration CD is supplied with every kit)

The **ED2 Series** SkidWeigh systems calibration/setup procedures are simple.

Utilizing two buttons and a 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 are required.**

This calibration procedure applies for all forklifts, loaders, telehandlers, skid-steers, high lift electric pallet trucks, hydraulic lift tables, etc.



Note: 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, the 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 that 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. An example of one of the software versions is 9171. When the 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 Lifted 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 Digit 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 the Lifted 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, the 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 during the normal lifting operation*).

MODE

Five Digits Load Weight Readout Display

6					
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- The display will go blank. Wait a few seconds. (*Do not move forks, do not tilt or activate side shift lever*)
- Within 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, the system will go automatically into operational mode.
- Number 8 will be shown in the MODE window. The 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 the 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.

Vehicle Overload Warning Feature

ED2-2-SM-RONA SkidWeigh System has a visual overload warning feature with buzzer

The **ED2-SM** Series or any other models with such features will allow the end user to enter any overload warning value that is applicable for that particular forklift operation. Once the pre-set “Overload Value” is entered into the system, every time that overload value is reached; the indicator display will “flash” and the value of the **overload load weight will be shown to the operator.** The buzzer will come on as well.

To stop the indicator LED display flash (Overload Warning), the operator must lower the load to the ground.

Overload Warning Input Value (MODE 7)

All **ED2-SM** Series SkidWeigh or other models with such overload 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-SM-Rona SkidWeigh systems after the standard calibration procedures are finished and the loaded forks are lowered to the ground.

(For example, we want to enter an “**Overload Warning Value**” of 4000)

How to get to MODE 7?

The ED2-SM-RONA SkidWeigh System with the “Overload Warning Input Feature” will have a **MODE 7** as the 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 as the loaded forks are lowered to the ground, the mode number will automatically advance to the **MODE 7.**

When the digital indicator shows **MODE 7**, you must enter the “Overload Warning Value” for that particular vehicle. The **MODE 7** digit will remain while you are entering the “Overload Warning Value”.



MODE						Five Digits Load Weight Readout Display					
7					0						

- Using the same keys “M” and “↑”, enter the “Overload Weight Value”. In our example it is 4000. You will note that the **MODE 7** digit remains throughout this operation. (Make sure that the 5th digit is 0)

MODE						Five Digits Load Weight Readout Display					
7					0						
MODE											
7					0						
MODE											
7			4								
MODE											
7	0										

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



MODE						Five Digit Load Weight Readout Display					
7	0	4	0	0	0						

The entered value of 4000 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 “Overload Warning Value”
Have Been Successfully Stored in the Memory*

ED2-SM-Rona Series SkidWeigh MODE Description

MODE 8 Represents The Standard Operational “Weighing Cycle Mode”
MODE 0 to 6 Represents the standard calibration mode
MODE 7 Represents the Optional “Overload Warning 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	Overload Warning Input Value Set-up	Enter Overload Warning Value as per instructions described above.	Applies only for systems with the overload warning option

Troubleshooting

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
MODE 8 digit is not shown on the instrument display when the ignition switch is turned ON	No power to the system	<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
When in MODE 8 and the forks with the load weight are lifted; there is no weight readout shown on the instrument display	Pressure transducer or wiring harness	<ul style="list-style-type: none"> - Check all 3 wire 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
Weight display shows some random number (Example: 4630) regardless if forks are lowered or any weight load lifted	Pressure transducer ground wire (Black wire) is broken or disconnected	<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
All display digits are "flashing" 999999 when the ignition switch is turned ON	The pressure transducer is near saturation (> 2.45V)	<ul style="list-style-type: none"> - The load weight is too heavy for this vehicle - Pressure transducer damaged
When the known load weight is lifted, there is a "larger weight readout error"	<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
The instrument display shows approx. the same weight readout regardless if the forks are loaded or not	Pressure Transducer	<ul style="list-style-type: none"> - The white wire (pressure transducer signal output) is broken or not connected - Faulty pressure transducer
When the load weight is lifted, the display shows the weight value and display is "flashing"	Overload warning	<ul style="list-style-type: none"> - The preset overload value is too low - Check the overload settings and correct it
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"	Follow the proper weighing cycle error	<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
The display will not return to the MODE 8 , standard weighing cycle	<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



CE Conformity (EMC) by application of harmonized standards. (NCI printer, pressure transducers)
 FCC Conformity (EMC) compliance with Part 15 of the FCC rules.

ED2-SM-RONA Series SkidWeigh

User's Manual (Vehicle Operator Copy)



Doing it right

The **ED2-SM-RONA Series SkidWeigh** is a fully automatic forklift check weighing and overload warning system. The ED2-SM is not a "Legal for Trade" weighing scale, but an economical onboard check weighing / overload warning system that will allow your forklift operator to determine the load weight readout within +/- 0.5% to +/- 1% of the vehicle's lifting capacity.

Standard Weighing Procedure (All ED2 Series SkidWeigh Systems)

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 the **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!

Overload Warning Function (ED2-SM-RONA and other ED2-SM-OAS Series)

Every time the pre-set overload weight load is reached, the display will indicate a current weight, and the display will “flash”.

If the system has been specified to include audio warning, then the buzzer will come on as well.

To stop display from flashing and turn the buzzer off, lower the load.



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