

# Manual

## **AGRETO Hydraulic Scale Indicator B300-V4-K354**

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# 1 Introduction

Thank you that you have chosen an Agreto three-point scale. You have acquired a robust tool for daily practice.

The Agreto three-point scale may be used solely for internal use as a checkweigher. A use for the legal transactions is not permitted.

Please read this manual carefully before using the scale in operation.

In this manual, as usual "weight" is used in common parlance, the term for the mass.

## 2 Scope of Delivery

- 1 Pressure sensor with 4 m signal cable
- 1 Weighing display with weighing software, housing and mounting bracket
- 4m Cable for weighing signal
- 2m Power supply cable
- 1 Manual

## 3 Intended Use

The AGRETO hydraulic scale is designed for installation in the lifting hydraulics of forklift trucks and front loaders with single-acting lift cylinders.

The pressure sensor measures the pressure in the hydraulic circuit, the display converts this pressure into the weight and displays it.

In order to get meaningful values, the system must be calibrated after fitting with a known weight.

To perform weighings the instructions in this manual must be followed.

When using the system in front loaders, the position of the load and the lifting height has a significant influence on the accuracy.

A weighing on the basis of the hydraulic pressure in the rear hydraulics of a tractor is not possible due to the different leverage and rotational movements of the lifting rod!

## 4 Security

### 4.1 Safety Instructions for the buyer



Important!

Make sure that each person who works for the first time with the AGRETO Hydraulic Scale, has read and understood this manual.

### 4.2 Safety instructions for the operator



Danger!

The AGRETO Hydraulic Scale may only be operated by persons who are familiar with the operation of the device.



Precaution!

Keep the work area clean! Soiled areas contributes to accidents.



Danger!

Risk of injury from tip-over / fall and inattention while working with the measuring instrument getting on and off the tractor.

### 4.3 Personal Protective Equipment



WARNING!

For people who work with the device, the wearing of safety shoes is required.

### 4.4 Residual Hazards

Working with the device residual risks may arise for persons and objects that cannot be prevented by design or technical protection measures.



WARNING!

The AGRETO Hydraulic Scale must not be operated in explosive areas.

## 5 Technical Specifications

### 5.1 Pressure Sensor

- Maximum pressure: 250 bar
- Overload 120%, breaking load 150%
- Accuracy: +/- 0,1%
- Working temperatur: -20 to +65 ° C
- Temperature compensation: -10 bis +50 °C
- Hydraulic connection: M14 x1,5 inner angle 37°

### 5.2 Weighing Indicator

- 6-digit LCD display mit 20mm digit height, LED-illuminated
- Power supply 12 bis 24 VDC
- Working temperature: -10 to +50 Grad Celsius
- Real time watch
- Tare by pressing a button (zero position of the empty device)
- Sum function (also possible via external switch)
- Erschütterungsfest und spritzwassergeschützt
- Vibration damped display for reading while driving

### 5.3 Cabling

- 4m weighing signal cable
- Waterproof screw connector (IP68)
- 2m power supply cable for the weighing indicator

## 6 Installation

### 6.1 Installation of the Pressure Sensor

- Find a suitable place between the controller and cylinder in the pressure line of your hydraulic system. If any control valves and blocking valves are used, the pressure sensor must be mounted between these valves and the cylinders.
- Disconnect the hydraulic line at a threaded connection and arrange the necessary fittings, such as T-piece, socket, etc., these are very individual and are not supplied with the hydraulic scale.
- If no proper separation point is present, you must remove a piece of hose and let press in a T-piece.
- Mount the pressure sensor and route the signal cable to the area of the weighing indicator.

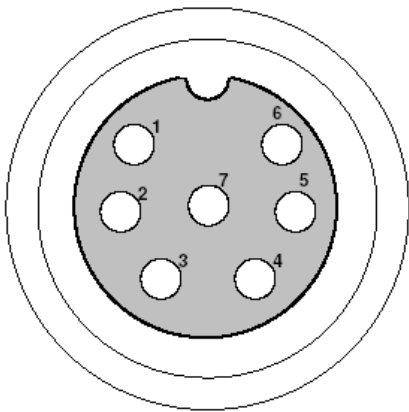


## 6.2 Installation of the Weighing Indicator

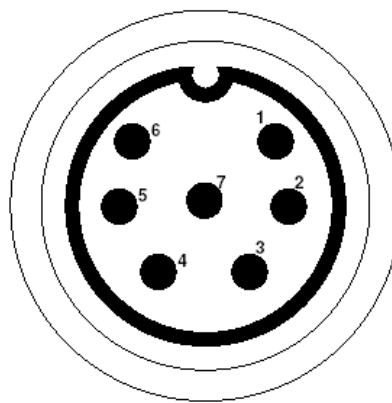
- Place the weighing indicator at a suitable location in the vehicle.
- Connect the power cable to positive and negative to the on-board electrics. The display can be operated from 12 to 24 V.
- Connect the plugs of the weighing signal cable.

The weight signal cable has the following pinout:

Front view cable socket  
on the scale



front view cable plug  
connection cable



No.:	Color	Description	Function
1	Black	EX -	Power supply -
2	Red	EX +	Power supply +
3	White	SI -	Signal -
4	Green	SI +	Signal +
5			
6			
7			



## 7 Settings of the Weighing Indicator

The weighing indicator has several adjustable parameters that affect the operation of the system.

### 7.1 Pre settings

To use the weighing indicator with the three-point scale AGRETO following parameters are set differently from the default settings when delivered:

BUILD	CABLE: 4	(Load cell connection with 4 wires)
BUILD	CAP: 6000	(Capacity of the Scale 6.000 kg)
BUILD	RES: 5	(Resolution of the weighing indicator to 5 kg)
OPTION	FILTER: 4	(Strong damping of the display)
OPTION	MOTION: OFF	(ZERO/TARE/SUM always possible)
OPTION	Z.RANGE: FULL	(Zeroing possible at any load)
SPEC	KEY.FN: SHOW.T	(Set function key to SUM-function)
SPEC	REM.FN: KEY 4	(Remote control Summing key enabled)
SPEC	QCK.CAL: ON	(enables the quick calibration)
SERIAL	TYPE: PRINT	(Type of output for remote control)

The default setting for the capacity of the display (= maximum weighing range) is set to 6000. If you must weigh heavier loads than 6000 kg the parameter BUILD CAP has to be set accordingly higher (up 999,999) so that the display during operation does not go on overload.

For operations with larger loads, the division upwards should be adjusted as otherwise the displayed value is not meaningful.

## 7.2 Change the max-load and resolution

If the maximum load of your machine is above 6.000 kg, you must change the parameters CAP (max load) and RES (resolution).

- Press and hold down the leftmost [UNITS] key and the right [OK] key until the setup menu is displayed. The first parameter group “BUILD” is active.
- Press the [TARE] key twice, the „CAP“ parameter appears.
- Press the [SELECT] button to enter the parameter, the first digit of the number is flashing.
- Now set the required maximum load. To change the active position, use the [TARE] and [SELECT] buttons. Use the [ZERO] and [PRINT] buttons to change the number at the active position.
- When the correct number is set, press [OK]. The “CAP” parameter appears again.
- Press [TARE], the “RES” parameter appears.
- Press the [SELECT] button to enter the parameter, the stored resolution is displayed.
- Use the [PRINT] button to select the desired resolution. Possible values are 1, 2, 5, 10, 20, 50 or 100 kg. It is recommended to set the display to approx. 1.000 increments. At a maximum load of 10.000 kg, this results in a resolution of 10 kg.
- When the correct selection is made, press [OK], the parameter “RES” appears again.
- Press and hold down the leftmost [UNITS] key and the right [OK] key until the “SAVING” message appears. The inputs are saved and the unit restarts.
- To stop the operation without saving, simply turn off the indicator.

ATTENTION: After changing this parameters, the indicator must be recalibrated.

## 8 Calibrate the Weighing Indicator

To adjust the conversion of hydraulic pressure to weight for your system the weighing indicator must be calibrated before first use.

Think of a defined lift height of your front loader, which you can reposition exactly at any time as precisely as possible and in which you want to display the weights later. Due to the construction of a front loader weighing can always be performed correctly only in this defined lift height. For forklift mast with free lift you must (usually the lower) decide at least for a lifting range.

Think of a defined position of the work tool (shovel, fork ...) which you can reset at any time as precisely as possible and in which you want to display the weights later. Due to the construction of a front loader weighing can always be performed correctly only in this defined tool position. It is advisable to spin up the tool until it stops, and always to weigh in this position. For forklift masts, there is no such limitation.

Decide whether you prefer to weigh after a lifting procedure or a lowering operation. By different pressure conditions in the system by means of friction in mechanical parts, should always be weighed just by an at least short lifting or lowering operation in the same direction.

Consider these three facts in any case already at calibration time!

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To carry out the calibration, please follow the steps below:

- Stand with the vehicle on a flat surface.
- Turn on the indicator
- Press and hold the [ZERO] button until the weight is flashing.
- Bring your **empty** front loader (fork lift mast) in weighing position (as described above with lift / tool position / direction of movement).
- Press the [f] button, the display will show Z.inP, now the zero point is defined and confirmed with 3 short tones.
- Press the [ZERO] button, on the display the weight is flashing again.
- Press the [f] button, on the display you see the last set calibration value.
- Change the displayed number to the actually filled weight or weight used for calibration. The number digit by digit can be changed, the current point will blink. To change the current position use the [SELECT] button. After the most right digits the most left digit will become active again. To change the number of the current (blinking) digit use the [PRINT] button.
- Strain now the loader (forklift) with a familiar weight or fill a known amount of material in your tool. The weight should be as large as possible, best fill your device completely full.
- Bring your front loader (fork lift mast) back in weighing position (as described above with lift / tool position / direction of movement).
- Press the [f] button, the display will show S.inP, now the calibration is performed and confirmed with 3 short tones.
- Press the [ZERO] button, the calibration is stored. This is confirmed with a long tone.
- To cancel the calibration procedure at any point just turn off the display.

The calibration process can be done as often as you need. A new calibration is always overriding the existing calibration.

## 9 Working with the Hydraulic Scale

### 9.1 Switching on the Weighing Indicator

Turn on the weighing indicator with the leftmost button. The display shows a startup sequence then the current weight on the scale, referenced from the zero point of the last calibration.

If you have performed calibration with the currently attached tool, and have used this tool as the zero point in this calibration, the empty device then applies the zero point. You can read the current weight of the load also after switching off and switching on the weighing indicator.

### 9.2 Zeroing

Press the [ZERO], the zero point of the display is reset. Use this function to zero the scale in weighing position. Thus, the zero point is set to the empty weight of the tool and the weight of the load can then be read directly.

When the weighing indicator is switched on the zero-point from the last calibration is used.

### 9.3 Standard weighing procedure

Loading / filling your tool, bring front loading (forklift mast) in weighing position and read the weight from weighing indicator.

### 9.4 Weighing with TARE-function

If you want to weigh goods in containers or packaging, with the Tare-function the weight of the empty container can be automatically deducted without changing the zero point of the scale.

- Make sure that the display shows zero.
- Put the empty container onto the scale.
- Wait until a meaningful weight is displayed.
- Press the [TARE] key. The weighing display jumps back to zero and shows the NET symbol. Now the weighing indicator shows only the net weight.
- Now bring the goods to be weighed in the container.
- Wait until the weighing display indicates a stable value.

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- Read the weight - it is the net weight of the weighing goods without packaging.
- If you want to weigh several goods in the same empty containers, you can bring them successively on the scale. As long as the NET symbol is illuminated the previously determined tare will be deducted and just the net weight will be displayed
- To switch from gross to net, press the [SELECT] button.
- To end the tare function, take the entire load of the scale and press the [TARE] key again.

### 9.5 Weighing with Sum-function

- Bring your front loader (forklifts) in weighing position, wait until the weight is stable and press the [PRINT] button. Thus, the current weight is added to the total weight.
- To read the sum you press the button [f]. The display first shows the number of weights in the summation memory (COUNT) and then the total weight of the total memory (TOTAL).
- To delete the total push and hold the [PRINT] button.
- The summation can also be triggered with an external button, which the [PRINT] key practical remote controls. Connect using a cable connection terminals TX and RX on the weighing display and run this cable isolated through a push button (NO). When the button is pressed TX and RX are connected, and the weighing indicator triggers the sum function (Press and hold to the delete function).

### 9.6 Switching off the Weighing Indicator

Press and hold the leftmost button until the weighing indicator goes out.

## 9.7 Error messages

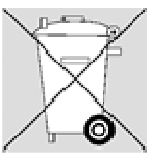
Error	Description	Action
(U - - - -)	Underload	Increase load or switch the scale off and back on again
(O - - - -)	Overload	Reduce load
(TARE) (ERROR)	Taring attempt outside of the permitted range	Reduce tare
(ZERO) (ERROR)	Zeroing attempt outside of the permitted range	Reduce load
(STABLE) (ERROR)	A [ZERO] or [TARE] command can't be executed because the scale is unstable	Try again when the scale is stable
(SPAN) (LO)	The difference between zero point and calibration weight is too small	Use a higher calibration weight
E0200	Calibration is lost	Make a new calibration
E0400	All settings are lost	Make all settings and the calibration again
E2000	Scale is not connected	Turn off the indicator Connect the scale Turn on the indicator
E2000	Weighing signal out of range	Check cable and plugs for damage

## 10 Warranty

Over and above statutory warranty for AGRETO hydraulic balance following warranty provisions apply :

- The AGRETO electronics GmbH guarantees the function and repairs or replaces all the parts that have a material or manufacturing damage within the warranty period.
- Warranty services will be performed by the AGRETO electronics GmbH.
- The decision on the existence of a warranty claim is sole responsibility of the AGRETO electronics GmbH.
- The warranty period begins with the first accounting to an end customer and ends 5 years from this date of invoice.
- Prerequisite for warranty service are the presentation of the original invoice and compliance with all elements of this instruction manual.
- Excluded from warranty are wear, normal wear and tear, damage due to misuse, negligence or accident.
- When processing a warranty claim transport costs incurred will be charged to the buyer.

## 11 Disposal



Dispose the product in the definitive shutdown or parts of environmentally friendly (metal to the respective metal scrap, plastic to plastic waste, etc. - Do not dispose as household waste!)

Detailed information can be found in Directive 2002/96/EC



# 12 Declaration of Conformity



## EC Declaration of Conformity

For the following named product

### AGRETO Hydraulic Scale

This is to confirm that it complies with the essential protection requirements of Council Directive on the approximation of the laws of Member States relating to electromagnetic compatibility (2004/108/EC).

For the evaluation regarding electromagnetic compatibility, the following standards were applied:

EN 61000-6-3 :2001  
EN55022 :1998  
EN60601-1-2 :2007

And with reference to Security:

EN60950 :2000

This explanation is given by the manufacturer

AGRETO electronics GmbH  
Pommersdorf 11  
3820 Raabs

Submitted by:

Anton Eder  
Business Manager

Pommersdorf

26.02.2014



legally binding signature

## 13 Imprint

All information, specifications and illustrations are as of 2017, subject to technical changes or design changes.

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AGRETO electronics GmbH  
Pommersdorf 11  
A-3820 Raabs

Tel.: +43 2846 620 0

Fax: +43 2846 620 19

E-Mail: [office@agreto.com](mailto:office@agreto.com)

Internet: [www.agreto.com](http://www.agreto.com)