

User manual

AGRETO three-point-scale DPW20

Weighing indicator WA02

06 June 2021



ATTENTION! Read the operating instructions in this user manual before operating the equipment for the first time, in order to prevent damage to your scale or implement

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1. Introduction

Thank you very much for choosing the AGRETO three-point scale. You have just purchased a robust tool for everyday use.

The AGRETO three-point scale can only be employed as a checkweigher for internal use. It's not allowed to be used for legal transactions.

Please read this manual carefully before putting the scale to use.

As in common parlance, the word 'load' is used instead of 'mass' in this user manual.

2. Scope of delivery

Standard scope of delivery

- left and right steel construction with built-in load cells
- 2 upper link brackets with variable hole spacing
- 1 upper link and 2 lower link pins with linchpins
- Weighing indicator with connecting cables
- bag with mounting parts and screws
- 2 hitch hooks CAT II
- This user manual

Optional accessories:

- 3, 5 or 10 m extension cable for the weighing signal

3. Intended use

The AGRETO three-point scale is a scale for weighing three-point implements and/or their loads. It's mounted at the three-point linkage between tractor and implement.

Tractors with Category II and III top links and lower links are suitable, but only Category II implements can be attached.

Only implements with a total weight of 4.500 kg can be attached.

The scale must be set to the exact same mounting height as the attached implement.

The implement must only be connected to the scale via the two lower link pins and the top link pins.

No significant push/pull forces must be transferred, which means that soil tillage implements can be attached. Seed drills with normal sowing coulters are acceptable.

The weighing procedure can be performed during standstill or whilst driving.

Three-point scales aren't officially calibratable and therefore not authorized to determine weights for legal transactions. The scale is meant exclusively as a checkweigher for internal use.

ATTENTION !! Tighten every screw after the first 10 hours of use.

Check the tightening torque of the screws consistently, especially the M20 screws of the lower link hook (400Nm).

4. Safety

Safety guidelines for the purchaser



IMPORTANT!

Make sure that every person who works with the AGRETO three-point scale for the first time, has read and understood this user manual.

Safety guidelines for operating and assembling personnel



Appropriate equipment must be used when employing lifting machinery for transport.



Persons who are involved with mounting, removing or setting up the three-point scale, must wear safety shoes.



Persons who are involved with mounting, removing or setting up the three-point scale, must wear safety gloves.



During transport the scale or pallet can slip on the vehicle. Transport and loading personnel must be instructed to securely attach loads.



Be aware of the risk of crushing between the three-point scale's moving parts during mounting, removing and setting up.



The scale must not be stored or used in a potentially explosive environment.



Be careful not to trip over parts or tools that could be lying around you.

ATTENTION !! Tighten every screw after the first 10 hours of use.

Check the tightening torque of the screws consistently, especially the M20 screws of the lower link hook (400Nm).

5. Specifications

Scale construction

- Steel construction with tubes and milling parts
- Internal load cells
- Roller supported mounting for implement attachment
- Designed for implements with a total weight of 4.500 kg
- Lower link attachment to the tractor: Pins Ø28 mm, 64 mm inner width, for lower link with CAT II ball end, CAT II hook and ball, or CAT III hook and CAT II reduction balls
- Lower link attachment to the implement: Ball joint Ø28.4mm, 51 mm width or a CAT II Walterscheid quick coupling-hook
- Lower link distance: CAT II, standard 87.5 cm, can be adjusted infinitely between 85 and 90 cm with set screws, can be adjusted manually up to 105 cm for attachment to a rigid axle
- Top link attachment to the tractor: Pins Ø25.4 mm, 64 mm inner width, for top links with CAT II ball joint, or CAT II hook and ball
- Top link attachment to the implement: CAT II mounting brackets Ø26 mm
- Distance lower link-top link on the attachment: infinitely adjustable between 48 and 68 cm
- Horizontal distance lower link pins-implement pins (lower link shifted backwards): 160 mm (200 mm for hooks)
- Horizontal distance top link pins-implement pins (top link shifted backwards): 130 mm or 160 mm depending on the mounting brackets
- Net weight approx. 80 kg including pins
- Dimensions: 104x84x20 cm (LxWxH, lying down)

Load cells

- 2 high resolution shear force load cells, each at 5,000 kg, 2mV/V, 350 Ohm
- Total nominal load: 10,000 kg
- 120% overload, 150% breaking load
- Protection class IP68 (dust- and waterproof)
- Operating temperature: -35 up to +65 °C
- Temperature compensated: -10 up to +40 °C

Weighing indicator

- E-Ink display with really good readability
- 12V on-board power supply or 9V battery
- Operating temperature: -10 up to +50 °C
- Shockproof and spraywaterproof
- Arm with 2 ball joints for optimal orientation, mounting plate with 2x 7mm holes and 45mm space between the holes.

Cabling

- Internal load cell connection with T-connector (IP67)
- 3m long weighing signal cable from the scale to the indicator, optionally longer
- Waterproof, threaded plug connector (IP68)
- 2 m power supply cable with a flexible universal plug (for cigarette lighter and standard sockets according to DIN EN ISO 4165), with integrated and replaceable fuse

Accuracy

- +/- 0.02% load cell accuracy
- +/- 1 to 2% accuracy when operated properly in everyday conditions
- 5 kg weighing indicator resolution
- Readability during standstill or smooth ride: very good
- Readability during bumpy ride: sufficient
- Deviation when load shifts (front, back, left, right): none when operated properly
- Deviation on slopes: hardly noticeable up to 5%
- Deviation when inclined sideways: hardly noticeable up to 5%
- Deviation when not attached vertically: hardly noticeable up to 5%, can be compensated through calibration

6. Getting started

Unpacking and assembly

The Agreto three point scale is delivered inside of 3 different packages. In the 2 smaller ones are the side pieces of the scale (left and right). In the bigger package are the small parts and the middle piece.

Unpack all parts and keep it in case of later shipping or for storage.

In the profiled pipes of the side pieces, you will find the connector cable for the load cells with a M12 plug.

Connect the plug with the T-connector of the middle piece and screw it in hand tight.

Slide the side piece into the middle piece and pull the cable with the T-connector to the open side of the middle piece.

Connect the second side piece with the T-connector.

Screw the side pieces together with the middle piece.

Screw the link hooks onto the side pieces. Be careful of a tightening torque of 400 Nm on the M20 screws.

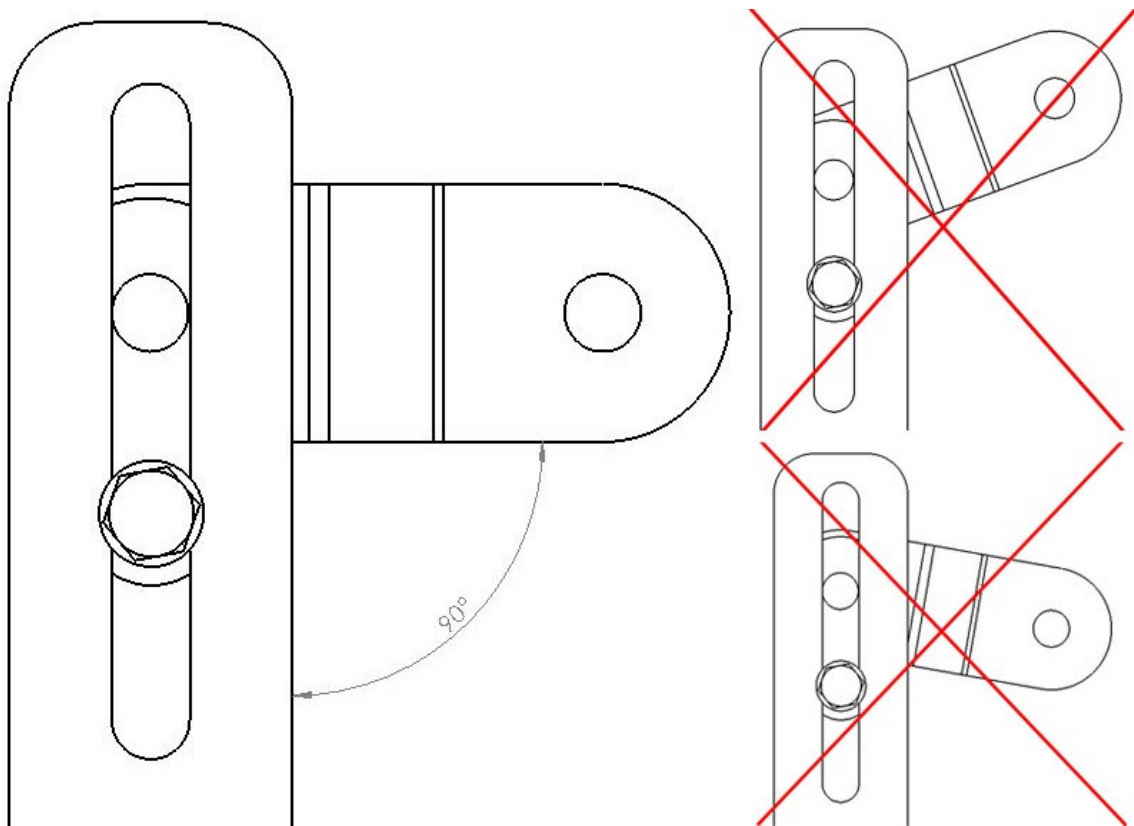
Setting lower link distance

- Measure the necessary horizontal distance between both lower link mounting points on your implement (for instance a fertilizer spreader). The standard dimension for Category II is 87 cm, but in practice it's between 86 and 88 cm.
- Set the required distance on your three-point scale with the slotted holes in the middle piece.
- Set the scale's width in such a way that there's a little space left between scale and implement, so that the scale isn't under tension.

Setting mounting height

Proceed as follows:

- Loosen the 2x M20 Screws, which hold the upper link bolt.
- Set the height of the upper link bolt so the upper link bracket is in a right angle to the scale.
- Tighten the M20 screws again.



ATTENTION: The exact setting of mounting height is not only a prerequisite for accurate weighings. When the angle is not exactly right, the three-point scale and/or your implement could get damaged or deformed.

Mounting the three-point scale

- You can choose whether you first want to mount the three-point scale to the tractor or the implement. When your implement has a rigid axle, you must first mount the scale to the implement. Of course, the scale can be left mounted on the implement if it is only used for that implement.
- Only use the included upper link bolt, mount the upper link together with the brackets with this bolt.
- Use the three-point scale in the most vertical position possible. Use the 2 included mounting brackets and choose one of 4 hole positions with the toothed piece. In case of a special implement situation, when vertical mounting is not possible, the scale has to be recalibrated to deliver correct results. 5 degrees deviation of a vertical position only lead to minimal deviations while weighing.

Connecting the weighing indicator

- Position the weighing indicator in a suitable spot in the vehicle.
- Connect the power supply cable. Either use the provided cable or connect the indicator directly to the electric system. The indicator either runs on 12V on board power supply or a 9V battery. In case of a 24V on board supply, a 24→12 V voltage converter can be used.
- Connect the weighing signal cable to the plug on the three-point scale. You could run the cable along the hydraulic tubes to prevent damage.

The plugs are industrial standard M12, 4-pin, Code-A.

The plugs are assigned as following:

Pins	Description	Function
1	EX -	Supply -
2	EX +	Supply +
3	SI -	Signal -
4	SI +	Signal +

7. Weighing indicator

Switching on the weighing indicator

Switch the weighing indicator on with the middle button [ENTER]. The indicator shows a start-up sequence, followed by the scale's actual load, based on the zero point of the calibration.



Zeroing

With the button [0/cal] the zero point of the indicator is defined new. Always use this function for zeroing. This zero point will be saved until a new zero point is defined

Standard weighing procedure

Load and unload the implement, or use your implement as usual, and the load's actual weight will be displayed immediately on the weighing indicator. The indicator is stabilized, which allows you to read the weight while driving.

Calibrating

For exact weighing, it's advised to recalibrate the scale for every new implement combination. To recalibrate the zero point must be set on an unloaded scale, then loaded with with a high as possible known weight. If you press the [0/cal] button for 3 seconds, the [+/-] appears and the actual loaded weight can be set with the arrow keys and with confirmed with [ENTER]. It's advised to move the vehicle before calibrating to remove possible tensions.

As a practical example you could picture an empty fertilizer spreader mounted to a DPW20. The spreader is loaded with 1000kg of fertilizer and the indicator displays 1200kg before calibration. With the mentioned calibrating process, the actual load can be set.

The calibration will be saved until the next calibration or a reset to factory settings.

Settings/ Menu

To acces the menu, you have to press the [ENTER] button. There you can change kg→lbs, activate or deactivate the bluetooth interface and reset the indicator to factory settings [RESET]. The needed menu point can be chosen with the arrow keys and will be marked by a [>] symbol. To choose a menu point, you use the [ENTER] key.

Turning off the indicator

Press the [ENTER] button for 3 seconds until the display turns off. If the power supply is turned off, the last displayed weight stays and is deleted on the next start. If the battery is used, the indicator will turn itself off after not being used for 5.

8. Troubleshooting

Proceed as follows when you have reason to believe the displayed weights are incorrect:

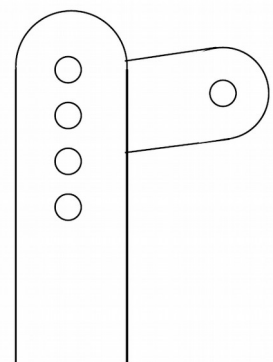
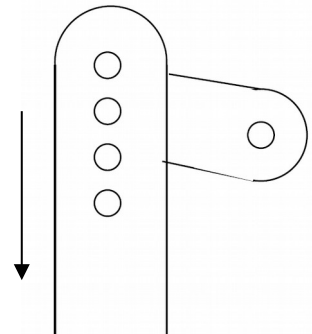
- Make sure that there is no transfer of forces because a part of your implement touches the scale. The implement can only be in contact with the scale through 3 attachment pins.
- Make sure that the scale isn't attached too tightly on the side to your implement. Check if there is still some space on both sides of the lower attachment points. Consult chapter 6 of this manual.
- Check whether the angle between scale and mounting brackets is exactly right. The factory-set calibration is only correct under an exact right angle, and the position of the load doesn't influence the weighing result. Consult chapter 6 of this manual.
- Try to use the scale in a position that is as vertical as possible. Use the top link brackets with either 130 mm or 160 mm hole spacing. If this isn't possible, the weighing indicator must be calibrated for the application. A small deviation of a few degrees doesn't matter that much.
- Calibrate the scale. Follow the instructions in this manual.
- Unsatisfactory weighing results can be caused by tensions in the scale's suspension. The 3 attachment pins aren't supported by ball bearings, and even when balls and/or hooks are used, tensions build up in the system due to load changes. These tensions dissipate while driving or moving. This is the reason why the scale and implement must be moved twice during the calibration process. It also explains why the scale weighs more accurately during movement than during standstill.
- During static weighings (for instance: slowly filling a fertilizer spreader) the displayed weight is usually lower than the true weight of the load, because of tensions in the system. Under higher loads the scale might not react smoothly to changes in weight. When you have enough experience with your system, you can add the missing weight. If not, you have to stop filling a bit earlier and clear the tensions in the system by moving, after which the correct weight will be displayed.

AGRETO three-point scale

- Check without attached implement whether the scale displays the same weight on both sides. Stand on the left and then the right side of the linkage. If the difference is larger than 10kg, one of the load cells is malfunctioning or load cell suspension needs to be readjusted. If this is the case, please contact the manufacturer.
- Check with implement attached whether the scale shows the same weight when the load is in the front and then in the back of the implement. If this isn't the case, the imbalance must be offset by changing the angle of the top link mounting brackets:

If the scale displays a higher weight in the back, you must shift the two mounting parts slightly upwards. You do not have to remove the scale. Loosen the 2x M20 Screws on both sides and knock on the moveable upper link bolt with a rubber hammer

If the scale displays a higher weight in the front, you must shift the upper link bolt down.



9. Maintenance and cleaning

- Clean the AGRETO three-point scale together with your implement. High-pressure cleaning must be done from a distance of at least 0.5 m.
- Store the machine in a dry and safe place.
- When you don't use the machine for a longer period, treat it with a suitable anticorrosive agent.

10. Warranty

In addition to the legally required warranty, the following warranty conditions apply to the AGRETO three-point scale:

- AGRETO electronics GmbH guarantees proper functioning, and repairs or replaces all parts that exhibit material or manufacturing defects during the warranty period.
- Warranty services are provided by AGRETO electronics GmbH only.
- The decision whether warranty applies, is made exclusively by AGRETO electronics GmbH.
- The warranty period starts when the end user is billed and ends 5 years after the invoice date.
- A requirement for warranty is the presentation of the original invoice and compliance with all the points in this user manual.
- Warranty doesn't apply to wear and tear, nor to damages due to improper use, negligence or accidents.
- In case of a warranty claim transport costs are to be paid by the purchaser.

11. Disposal



When the product has reached end-of-life, dispose of the product or parts thereof in an environmentally responsible manner, with materials separated according to type (scrap metal, plastic waste, etc. - do not add to household waste)!

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

12. Declaration of conformity



EC declaration of conformity

For the following product:

AGRETO three-point scale

This confirms that the product meets the essential safety requirements, as stipulated in the Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility (2004/108/EG).

The evaluation of this product was carried out in accordance with the following standards:

EN 55022:1998
EN 60601-1-2:2007
ÖNORM ISO 2332

This declaration is made for and on behalf of the manufacturer

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Mogersdorf

01-27-2014



legally binding signature

13. Impressum

All information, specifications and images in this manual are correct according to the status in 2021, and subject to technical adjustments or changes in design.

Despite careful treatment and examination of the contents, no warranty is made with respect to information in this user manual. Any liability of the author is excluded.

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