

TEST REPORT



of the
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Federal Research Institute
for Cultivated Plants, Braunschweig



Kverneland micro-granular spreader „micro-drill“

**Approved for applying granuled crop protection products in
rows**

Anmelder und Hersteller
Kverneland Group Soest GmbH
Coesterweg 42
59494 Soest

Approved at
3 March 2021

Equipment and dimensions

1. Carrying frame and attachments



Arc-shaped bracket for attachment to the respective sowing units made of painted sheet steel.

Fig. 2: The granulate spreader is screwed onto special brackets. The recess is filled by the 12 V drive motor.

2. Granule container



Granule container made of plastic (polyethylene) with a sliding lid and bottom surfaces that are inclined towards the dosing device. The container closure lid grips the edge of the container on the outside and prevents the ingress of moisture.

Container size: 16 L

Dimensions: 480 mm length, 317 mm width and 380 mm height (with lid).

Emptying: via an emptying opening and a swiveling outlet channel, which is also used for the calibration of the spreader. The granule flow can be stopped using a slider.

Fig. 3: Container made of polyethylene with a nominal volume of 16 l and scale on the side (5 – 16 l, graduation 1 l).

3. Dosing device



Fig. 4: The dosing wheel can be unscrewed after lifting a pawl. The metering wheel/wheels is/are held by two plastic clips and driven via the hexagonal shaft.

Dosing unit per granule spreader driven by a 12 V geared motor. Depending on the version, with up to three dosing openings and 1 - 3 granule lines. Several granule spreaders can easily be coupled electrically via the terminal and the JOB computer. One dosing shaft for each spreader, each with four different dosing wheels (single-row design, dosing wheels made of stainless steel), which can be used depending on the granule used. In the multi-row versions, one dosing wheel doses a granule outlet, so that up to three dosing wheels can be arranged next to each other. The dosing takes place after a calibration depending on the driving speed. The speed of the dosing shaft can be infinitely adjusted (computer-controlled). The signal from a wheel sensor, a radar sensor or a signal from the respective implement is used as the speed signal.

Outlet sockets: One, two or three pipe sockets with an outside diameter of 20 mm. Drainage device at the same time outlet for the calibration (26 x 36 mm). Two hooks are formed on the outlet to which plastic bags can be attached to collect the granules.

4. Granule lines

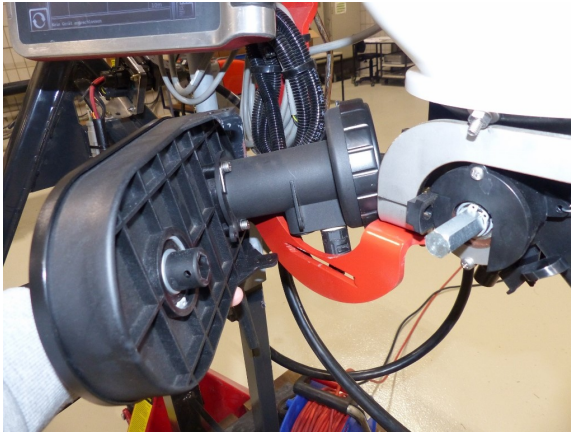


Fig. 5: The drives of the granulate spreader can be easily pulled off the shaft and are secured with a linch pin.

The granule lines are designed as flexible plastic hoses with an inner diameter of 20 mm. The length depends on the single grain or potato planter used. The hoses are to be laid in such a way that the free fall of the granule is not impeded.

The granules are distributed via the coulter into the sowing row.

5. Terminal

"Tellus Match" ISO bus terminal with touch screen display (display size 180 x 250 mm) for simultaneous control of the granule spreader and the seed drill used via a horizontally divided screen. Convenient calibration test for the set granules or the micro fertilizer. Depending on the microgranules used and the speed, the computer suggests a dosing wheel (4 different dosing wheels). If the target quantity cannot be achieved with the settings, a warning signal sounds and a more suitable dosing setting should then be selected. Recalibration is required when changing the dosing wheel(s). The granules escaping during the calibration can easily be collected in a plastic bag and the weight can then be determined on a precise scale. After weighing, the weight can simply be entered into the computer and a new check of the output can be started. The granule flow can be stopped manually at any time or is stopped automatically when the parallelogram is lifted. Complete manual operation is also possible. Display during application: driving speed, product name, row width and set application rate in kg/ha.

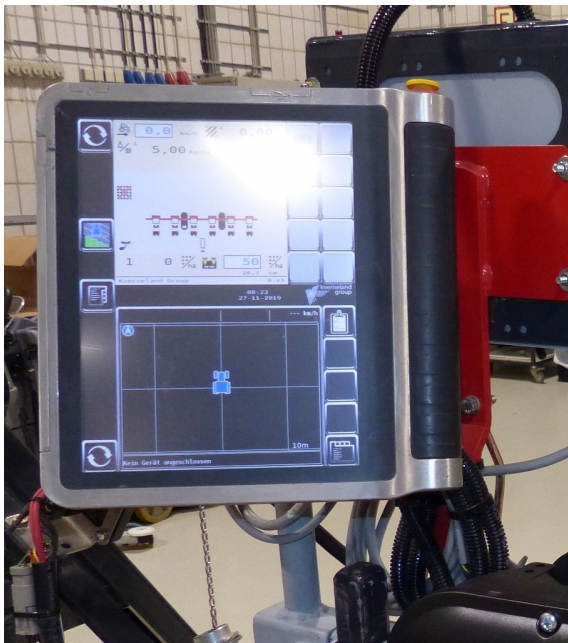
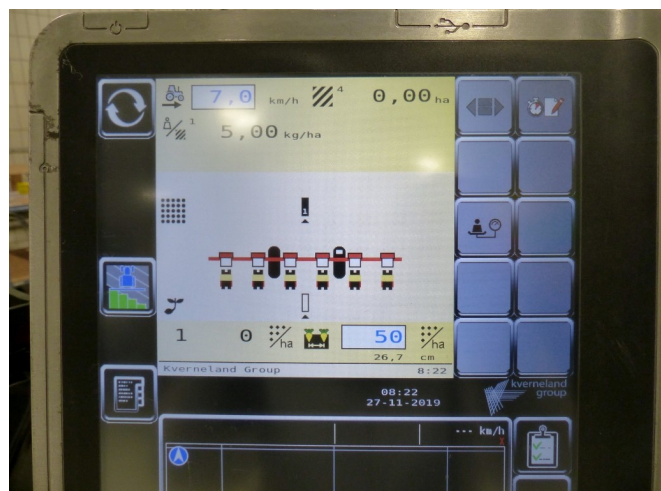


Fig. 6 and 7: "Tellus Match" operating terminal (above), display on the terminal during application (right).

6. Weight: 8.9 kg per granule spreader (without micro granules).



Assessment

Granule container

Granule container made of plastic (polyethylene) with a nominal volume of 16 l. The filling opening is provided with a sliding lid that covers the entire upper area of the container. The lid thus engages over the filling opening; it seals well. A scale in the container wall makes it easier to estimate the granule consumption. The containers have a separate emptying opening. The drain channel is secured by a stainless steel bracket and can be used for calibration and draining. To do this, it is simply swiveled backwards and locked. For emptying, a correspondingly large collecting vessel must be placed under the granule outlet. After emptying, the dosing wheel should also be removed and cleaned and reinserted. The dosing wheels are driven by a hexagonal shaft and held in position by plastic clips on the dosing wheel holder. The exchange is easy and can be carried out without tools.

Dosing device

At the working speeds that are usual in practice, dosing takes place depending on the travel via a wheel sensor and therefore does not require precise adherence to constant speeds. The dosing takes place after a calibration test and the calibration of the speed signal by controlling the speed of the dosing shaft. The signal from a wheel sensor, a radar sensor or a signal from the respective implement is used as the speed signal. The dosing shafts are driven by 12 V geared motors. Depending on the version, there is one dosing opening to three dosing openings. Accordingly, 1 to 3 dosing wheels are installed in the device, which deliver the granules into 1 granulate line each. The granule lines must be laid in such a way that they neither kink nor sag, thus ensuring an uninterrupted flow of granulate. The operational test was carried out with a corn precision planter and microgranular fertilizer. A blank formulation was used to test the dosing accuracy. The dosing accuracy meets the requirements both in level conditions and on slopes of up to 10%. Calibration checks and the calibration of the individual granule spreaders are nevertheless useful before each use and at regular intervals during use.

Granule lines

The lines consist of flexible plastic tubing with an inner diameter of 20 mm. The length must be adjusted accordingly by the outfitter when attaching to seed drills. The micro granule spreader is designed as additional equipment for precision seed drills. The granules fall into the open seed row during sowing and are covered with soil during the sowing process.

Terminal

"Tellus Match" ISO bus terminal with touch screen display (display size 180 x 250 mm) for simultaneous control of the granule spreader and the seed drill used via a horizontally divided screen. Convenient calibration test for the set granules or the micro fertilizer. Depending on the microgranules used and the speed, the calculator suggests a dosing wheel (4 different dosing wheels available). If the target quantity cannot be achieved with the settings, a warning signal sounds so that the dosing setting (dosing wheel and speed) can be adjusted accordingly. When changing the dosing wheel, recalibration is required. The granule flow can be stopped manually at any time or is stopped automatically when the seed drill is lifted. Complete manual operation is also possible.

Practical use

The device has proven itself during the field test. It enables the granules to be deposited according to the instructions for use for the crop protection product. Phytotoxic damage did not occur.

Work safety

The device was safety-technically examined by the testing and certification body of the social insurance for agriculture, forestry and horticulture (PZ.LSV) and meets the safety-technical requirements valid at the time of the examination.

Field testing

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Technical testing

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