



Foundation of Quality Control of Agricultural Machinery (SKL)

TECHNICAL REQUIREMENTS for the installation of a SKL testing station for field crop sprayers

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TECHNICAL REQUIREMENTS for the installation of a SKL testing station for field crop sprayers

General

The testing equipment must be such that the obtained test results are mutually and those of other SKL testing stations are similar.

Requirements to the testing place for testing field crop sprayers

Elaboration

Test equipment must be established in such a way that the measuring results are not influenced by weather circumstances (wind/rain).

Legal requirements

A SKL testing station must meet all legal requirements, which are put in the Dutch law (labour and environmental legislation). In many municipalities is it already obliges to perform the tests on an impermeable floor. The sprayed liquid must be caught.

Execution inspection

The place where the inspection takes place must be big enough to test the cross-distribution of the sprayer for the whole width of the spraying boom. It must be possible to unfold the whole spraying boom to make it able to test the whole spray boom.

Requirements testing place:

- The equipment to measure the cross distribution of the sprayer must be placed inside a building where no influence of weather circumstances is.
- Or
- This equipment is placed under on a both at the top and at the backside-closed hangar, where at minimum three wind breaking walls are. The length of the roof is at minimum 4 meters when measured from the back of the test stand.
 - The sprayed liquid must be collected
 - During testing inside a building, the exhaust gases of the tractor of the self-propelled machine must be removed to outside.
 - The dimensions of the testing place are wide enough to test the whole machine (possibly in several parts, minimum width of the test stand is 12 meters)

The Testing Equipment

Pressure Gauge tester

The pressure gauge tester is used to test the accuracy of the pressure gauge of the sprayer what will be inspected.

The test pressure gauge on the pressure gauge tester has to meet the next requirements:

- Minimum diameter of the scale: 150 mm
- Scale deviation: 0,1 bar between 0 and 16 bar
- Accuracy class 0,6 according to DIN-16005

A digital test pressure gauge is also allowed. It has to have a reading of 0,1 bar between 0 and 16 bar and it has to meet the same requirements of accuracy as mentioned above.

At purchase of the test pressure gauge there shall be an official calibration certificate according to DIN 50049-2.3 of maximum two years old handed over by or on behalf of the NKO (Dutch Calibration

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Organisation)

Flowmeter

The flowmeter is primarily meant for measuring the agitation capacity of the pump (in l/min). The error of the flowmeter shall not exceed 2% of the end value of the scale with a maximum of 6 l/min.

Analogue flowmeters shall have a clearly readable scale partitioning. For the scale partitioning the requirements are:



Table: Requirements scale partitioning flowmeters.

Range flowmeter (l/min)	<100	> 100
< 100 l/min scale partitioning max (l/min)	2	10
> 100 l/min scale partitioning max (l/min)	-	10

Electronic flowmeters must meet the same requirements of exactitude as analogous. At electronic flowmeters the position of the flow sensor is frequently critically for the measured value that is found. For this reason the SKL recommend placing the flowmeter in a fixed support.



Horizontal groove patternator or groove scanner

The horizontal groove patternator or groove scanner is used to test the cross distribution of the sprayed liquid. Both mechanical and electronic horizontal patternator are allowed.

Horizontal groove patternator

- The horizontal groove patternator must exist of a frame on which flat plates with a groove profile have been confirmed
- The depth of the grooves is at least 70 mm.
- The upper part of the standing up edge of each groove is at maximum 2 mm broad
- The mutual distance between the grooves must be 100 mm.
- The deviation in this distance is at maximum 2 mm.
- The plates tend (minimum 3⁰) in the direction of the graduated cylinders.
- The patternator must a minimum have work width of 12 meters.
- The effective length of the grooves must be at minimum 1.50 m.; lengths of 1.80 à 2.00 m. are better and are put as a requirement at new installations.
- Under the lowest point of each groove, a transparent graduated cylinder has been placed with a content of 500 ml.
- Scale graduation of the graduated cylinders shall be a maximum of 10 ml.
- The error shall not be greater than 10 ml of 2% of the measured value
- On the graduated cylinders are two signs, one on a fluid altitude of 340 ml and one on an altitude of 460 ml.
- If must be able to place the sprayer in such a way that all sprayed fluid is collected on the patternator.

Electronic groove scanner

- The length of the grooves is at least 150 mm
- The mutual distance between the grooves is 100 mm.
- The deviation in this distance is at maximum 2 mm.
- The positioning of the separate steps of the scanner must be reached with a distance of +/- 20 mm.
- The measuring error of the measured volume of the separate grooves at a flow volume of 300 ml/min shall be less than 4%.
- The instruction handbook shall give information on how to operate and adjust the installation



Other test facilities

- A good evacuation hose for the exhaust gases of the tractor or the self-propelled machine;
- A measuring tape for measuring height and nozzle spacing;
- A revolution counter for measuring the PTO revolutions. This revolution counter must provide measuring which deviate not more than 2% from the scale end value;
- A air pressure gauge for measuring the pressure in the pressure pulsation damper;
- A measuring glass with a good readable classification in ml. (measuring range of 2 l, scale division of 20 ml, error 20 ml.);
- The necessary tools;
- Blocs with testing forms and SKL-approval stickers.

Meter Control

All for the inspection of the sprayers used measuring equipment will be checked on accuracy and good work annually by or on behalf of SKL. When during this control the measuring device is not in good order, an official calibration is required.

Assessment

A by the board of SKL delegated technical inspector determines after research on the basis of the technical requirements if the testing equipment of the testing station (still) meets the requirements. As sign of approval on every testing device a special approval sign shall be placed.