



THE GLOBAL STANDARD
FOR LIVESTOCK DATA

ICAR Guidelines for periodic checking of the milk meters

Metatron Milk Meter

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Network. Guidelines. Certification.

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1 General

- a. The testing procedure with water should be carried out with milk meters that are cleaned properly. This has become even more important with the change of the test liquid from Circotop MB to Circotop MBX, since the latter is more sensitive to residue formation on the electrodes. With clean meters, MBX delivers very reliable data; internal measurements in the GEA Farm Technologies production site even suggest that there is less variation than with Circotop MB.
- b. If the installation has not been cleaned in daily rotation between acid and alkaline agent, a basic cleaning by a qualified service engineer is strictly recommended.
- c. Make sure that the software version for Dematron 70/75 is 7.11 or higher.
- d. The water test must be carried out without a connected sample cup.
- e. To accomplish the test procedure it is strongly recommended to abide by the user manual 7161-9000-004 (available in different languages).

2 Required equipment

- a. A GEA Farm Technologies sucking set:
- b. Tube with flow restriction with a sucking opening of 2.8 mm.
- c. Air inlet of 1.2 mm.
- d. Electronic weigh-beam/basculé.
- e. Some buckets of sufficient capacity.

3 Test liquid

- a. Water; the temperature of the water should be between 10 and 25 °C.
- b. Addition of 70 ml Circotop MBX per 10 kg of water.

4 The principle of the test

- a. Before the first measurement, draw approx. 3-5 kg of calibration through the meter.
- b. Use the start-stop-start button.
- c. When "stimopuls" appears on the display, keep pressing the start-button until normal pulsation starts.
- d. Suck 10 kg of the test liquid through the meter.
- e. Read the display value.
- f. The test liquid is collected in a milk reservoir for recycling.

5 Reference value

- a. The "Reference Value" of the "Metatron" milk meter is the average of 3 or more results achieved during the water test of the installation test (see example below).
- b. When proceeding to periodic checking, reference values are handed over for support.
- c. In order to determine a trusted mean value / reference value from the water test, it is of high importance to carry out a sufficient number of measurements.

Reason:

- a. Flow rate for measurements with water 3 - 3.2 kg/min
- b. Sudden stop of measurement at this flow rate
- c. Due to inherent characteristics Metatron/DemaTron shows a failure rate of +/- 1,5% at this flow rate
- d. At a normal end of milking, this systematic failure is as low as +/- 0,6 %
- e. Random errors may add up or subtract

Stall	Measurement (kg)					Reference value (kg)
	1	2	3	4	5	
1	10.1	10	10.2			10.10
2	10.2	10.4	10.3			10.30
3	10.2	10.6	10.5	10.4	10.4	10.42
4	10.2	10.6	10.6	10.3	10.4	10.42
5	10.2	10.7	10.6	10.4	10.3	10.44
6	10.7	10.3	10.3	10.5	10.3	10.42
7	10.7	10.6	10.6			10.63

6 Yearly routine test

As written above, the new test liquid Circotop MBX is more sensitive to residue formation. If a reference value has been determined with Circotop MB and the routine test is done with MBX for the first time, at least 3 measurements per meter should be accomplished. If the mean value of those 3 measurements deviates 0.2 kg or more from the reference value, or if 2 of the values differ more than 0.2 kg from each other, a basic cleaning by a qualified service engineer has to be done!

In any other situation proceed as follows:

- a. If the first measuring value deviates 0.1 kg from the reference value: meter = correct.
- b. If the first measuring value deviates 0.2 kg or more from the reference value, proceed to a second measurement.

- c. If 2 consecutive measuring values differ more than 0.2 kg from each other, proceed to a third measurement.
- d. If duplicate measurements show an average deviation of 0.2 kg or less from the reference value: meter = correct. If a meter does not come up to this standard during the periodic checking, proceed to a third, fourth or even fifth measurement.
- e. If there still is a difference of more than 0.2 kg to the reference value after 5 measurements, a correction should be applied to the meter (see stall 8 below). After the correction it is not necessary to start a new series of measurements.
- f. Applying a correction before 5 measurements are done is not recommended by GEA Farm Technologies.

Example for the measurements by the yearly routine test:

Stall	Measurement (kg)					Mean value (kg)	Reference value	Deviation (%) from reference value	Decision	Correction
	1	2	3	4	5					
1	10.2					10.20	10.10	1.0%	OK	
2	10.1	10.3				10.20	10.30	-1.0%	OK	
3	10.1	10.4	10.3			10.27	10.40	-1.3%	OK	
4	10.2	10.2	10.3	10.5		10.30	10.5	-1.9%	OK	
5	10.2	10.6	10.3	10.4		10.375	10.52	-1.4%	OK	
6	10.2	10.6	10.6			10.47	10.44	0.3%	OK	
7	10.7	10.5	10.5	10.4	10.4	10.5	10.3	1.9%	OK	
8	10.7	10.5	10.6	10.5	10.6	10.58	10.30	2.7%	Not OK	-2%

- g. Stall 8: After the correction is applied, the measurement result will be diminished by 2%, resulting in a value of approx. 10.37 kg.

7 Deviating meters

If the average of 5 measurement values deviates 5% or more from the reference value, a service engineer has to be consulted in order to check the outlet valve or for other technical problems. If necessary, the meter should be repaired or replaced.

8 Replacement or repair of meters

- a. When meters are replaced or when repairs influence the measuring, the meters are to be tested during the milking, after which the testing procedure with water should be carried out (at least three times).
- b. This water test will then serve as "reference value".

9 Reporting the results

- a. The results of the periodic checking of the milk meters, as well as interim changes and the checks that go with these changes will be reported to those concerned, among others to the farmer, to the main supplier and to the national milk recording organization.
- b. When the sensor-value is changed, the new sensor-value is to be recorded on the measuring form.

10 Sampling equipment

- a. Check the sampling equipment for cleanliness and completeness of parts.
- b. See to it that the sampling equipment is stored in a dry place, free from dust.
- c. Avoid direct sunlight.