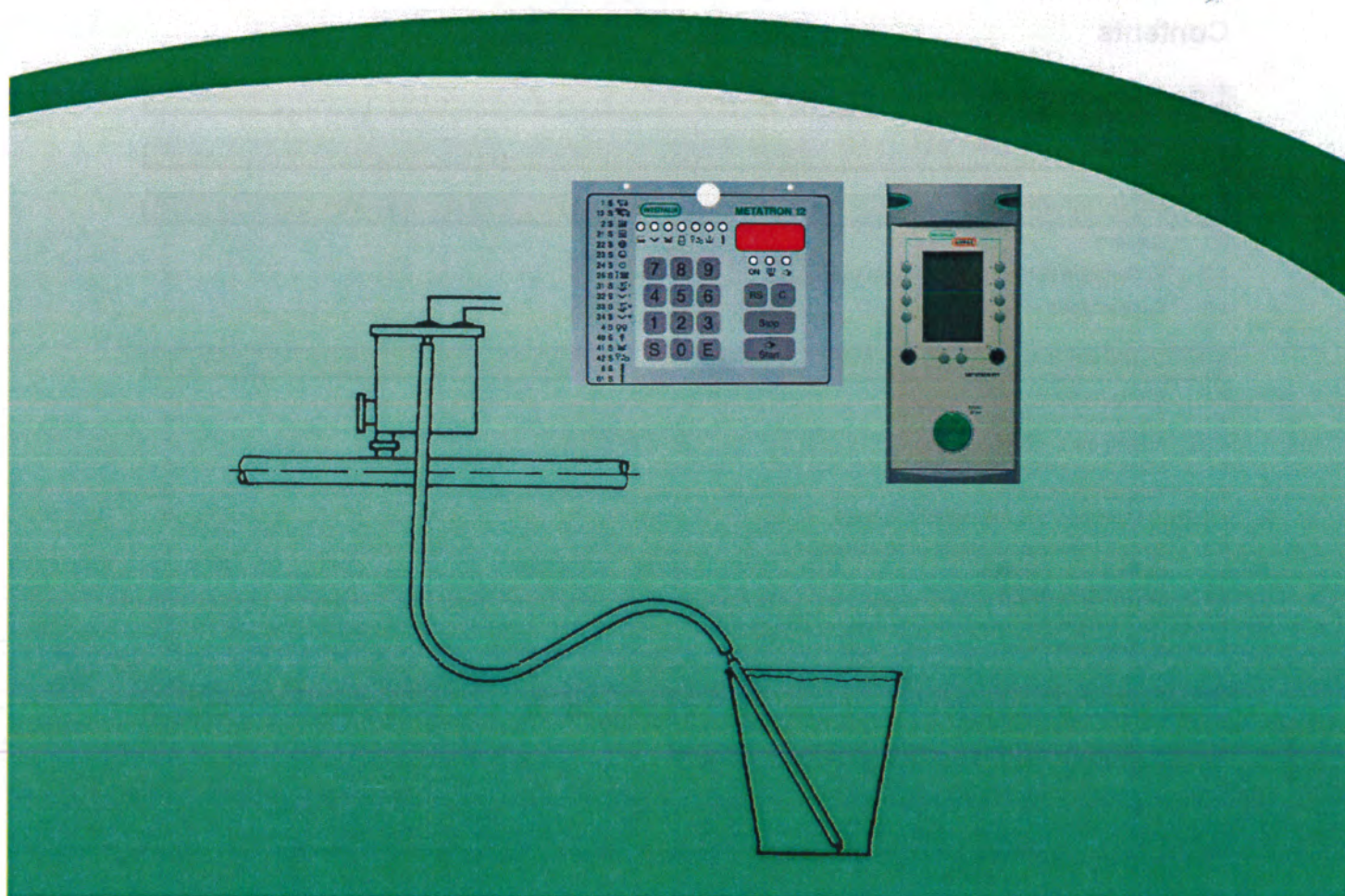




Calibrating the Metatron meter with cleaning solution

- Test set-up, compl. 7161-2862-000 -

Instruction Manual and Parts List

7161-9001-004

05-2003

20 05 01 02 99

Contents

1	Preface	1
2	Description	1
3	Safety information	2
3.1	Owner's	2
3.2	Explanation of the safety symbols used	2
3.3	Special types of hazards	2
4	Calibrating METATRON meters	3
4.1	Measurements	4
4.1.1	Equipment required	4
4.1.2	Adding the cleaning solution	4
4.1.3	Measuring set-up	5
4.1.4	Measuring sequence	6
4.1.5	Evaluation of the measurement result	6
4.2	Setting the meter constant or % correction	7
4.2.1	METATRON DEMAS	7
4.2.2	METATRON APEX	8
4.2.3	METATRON S21	9
4.2.4	METATRON P21	10
5	Spare parts	11

Marks modifications to the previous edition

1 Preface

General remarks

These operating instructions are supplied with the unit.

They should be kept close at hand and remain with the equipment even if the equipment is sold.

We reserve the right to make changes, on the basis of technical developments, to the data and diagrams given in these operating instructions.

Reproduction, translations and duplications in any form, including extracts, requires the written approval of the issuing company.

These operating instructions are not covered by any amendment service.

In each case, the latest information can be requested from a specialist dealer or directly from

Westfalia Landtechnik GmbH

Werner Habig Str. 1

59302 Oelde

Tel. (02522) 77 0

Notes for the owner

The owner is responsible for complying with all instructions relating to safety and for using this device as agreed.

He is to ensure that all users know how to operate this device and are able to do so safely.

Only use computers which are in perfect working order.

2 Description

In milking parlours with METATRON milk metering, every year the meters in the METATRON installations are checked by the inspection association and calibrated if necessary to ensure that the difference between the amount of milk measured and displayed and the amount of milk actually obtained is as small as possible.

To do this several measurement values are determined at each milking place.

If the measurement value deviates from the value actually obtained, an adjustment is made via the meter constant or the % correction.

The following steps have to be carried out for a calibration:

- Check whether the installation is clean
- Add cleaning solution
- Fit the measurement equipment
- Carry out and evaluate the measurement
- Set the meter constant or the % correction
- Clean the installation (rinse with clear water)

3 Safety information

3.1 Owner's

In particular make sure that

- the operating instructions are always legible and available in full at the place of use.
- the inspector is instructed on all relevant matters of safety at work and protection of the environment and is familiar with the operating instructions and particularly the safety instructions they contain.

3.2 Explanation of the safety symbols used

The following safety symbols are used in these operating instructions. These symbols are to draw the reader's attention to the text in the adjacent safety instructions above all.

Safety symbols

This symbol indicates that there is a risk to the machine, materials or the environment.



Attention!

This symbol indicates information which contributes towards better understanding of how the equipment works.



Note!

3.3 Special types of hazards



Attention!

Always read the safety instructions on the container when handling cleaning agents and to ensure they are disposed of correctly!



Use protective equipment!

Wear protective goggles and gloves when handling cleaning agents!

- Do not remove any safety and warning instructions on the container and make sure that they remain legible.

4 Calibrating METATRON meters

**Note!**

Measurements with cleaning solution can only be carried on meters with pin electrodes!

Requirements

The meters are given the meter constant 6 in the factory. This is entered on the rating plate on the meter.

The meter constant "6" (DEMAS/APEX), or a % correction of "-2%" (S21/P21) should be set when a meter is calibrated for the first time

**Attention!**

There must not be any deposits in the installation or in the meters.

- The milking installation must be in perfect condition from a technical point of view and from the point of view of hygiene.
- A dirty milking installation must be thoroughly cleaned by a qualified service engineer (5-8% dose of rinsing agent / first alkaline then acidic).

4.1 Measurements

4.1.1 Equipment required

- Test set-up, compl.

	Pos.	Part No.	Description	
	-	7161-2862-000	Test set-up, compl.	
	1	7161-2464-020	Intake nozzle	Ø 2,8-2,9 mm
	2	7161-2627-010	Pipe connection	(with air nozzle)
	3	0018-2009-730	Hose	14 x 5,75 x 350
	4	0018-3359-730	Hose	14 x 5,75 x 1800

- Cleaning solution intake tank (min. 10 l)
- Cleaning solution collection tank (50-70 l)
- CIRCOTOP SF cleaner (7722-3001-200)

4.1.2 Adding the cleaning solution



Attention!

Always read the safety instructions on the container when handling cleaning agents and to ensure they are disposed of correctly!



Use protective equipment!

Wear protective goggles and gloves when handling cleaning agents!

Approx. 40-50 litres are required for the measurement.

Composition of the cleaning solution:
70 ml CIRCOTOP SF to 10 litres water.

Temperature of the cleaning solution: 15-25 °C
The least amount of foam is produced within this temperature range.

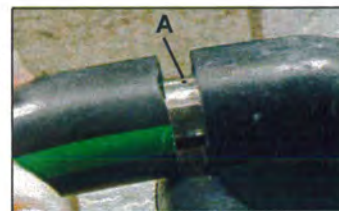
Mix the cleaning solution well!

4.1.3 Measuring set-up

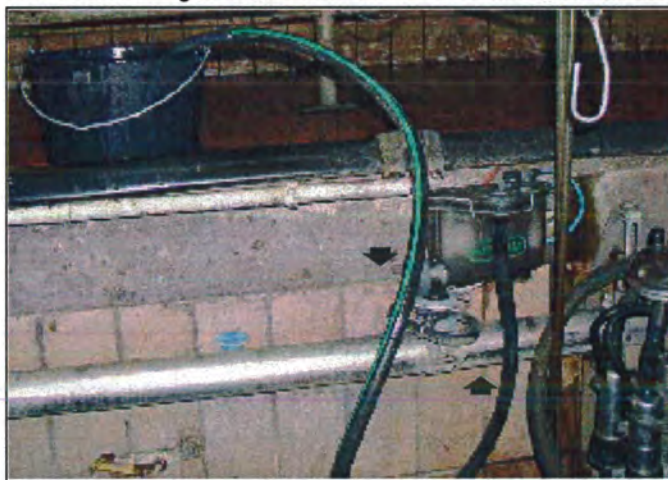
- The meter remains on the milk line.
- The sampling points must not be fitted.
- Assemble the test set-up
Push the hoses onto the connecting pipe so that the edge of the intake container cannot block the air inlet hole (A).

Attention:

The hole must remain clear!



- Remove the long milk tube from the meter and connect the tube to the test set-up.



- Use a tube to create a connection for returning the cleaning solution. (3 possibilities)

- From slide valve on the milk tube (at the drain valve connection) to the collection container.
Milk tube slide valve 7009-4341-070

Attention:

Block off the pressure line in the milk chamber!



- From the pressure line (separate behind the milk transfer equipment) to the collection container.
- From the end of the pressure line (in the milk chamber) to the collection container.

4.1.4 Measuring sequence

- Measure out or weigh 10 l of cleaning solution.
- Remove the red control tube (B).
- Draw approx. 3-5 litres of cleaning solution through the meter before the first measurement.
- Replace the red control tube (B).



- Bring **all milking places** out of the rinsing programme into milking standby by pressing the stop button.
- Press "Start" on the control unit.
- 10 seconds after the start, dip the nozzle of the intake tube into the cleaning solution.



Note!

The drain valve on the meter does not close until 10s **after** the start. The fluid taken in during this time is not measured.

- Allow all of the fluid to be taken from the tank.



Attention!

No additional air may be sucked in during the measuring sequence!
Only the air let in through the connecting pipe on the test set-up.

- Enter the measurement results determined in the test report.
- Repeat this process at least twice at each milking place.
Another measurement sequence should be performed if the difference between the 1st and 2nd measurement is greater than 0.2 l.

Carry out a clear rinse after measuring an installation.

4.1.5 Evaluation of the measurement result

- Calculate the mean value.
- If the mean value is outside the required value (10.3 - 10.5), determine the percentage deviation from the required value.
- Set the meter constant or the % correction.
(Section on "Setting meter constant")

Examples						
	Measurement			Mean value	Deviation (%) from required value	Mean value after correction
	1.	2.	3.*			
1.	10,1	10,0		10,05	-3 %	10,35
2.	10,2	10,3		10,25	-1 %	10,35
3.	10,2	10,4		10,30	-1 %	10,40
4.	10,2	10,5	10,3	10,33	-	10,33
5.	10,2	10,5	10,4	10,36	-	10,36
6.	10,2	10,5	10,5	10,40	-	10,40
7.	10,2	10,5	10,6	10,43	-	10,43
8.	10,7	10,6		10,65	+2 %	10,45
9.	10,8	10,6		10,70	+3%	10,40
* Another measurement should be taken if the difference between the 1st and 2nd measurement is greater than 0.2 l.						

4.2 Setting the meter constant or % correction

4.2.1 METATRON DEMAS

Explanation of the setting process with the example 9.

- Determine the constants with which the values have been measured:
Key in "9-0-S". The meter constant is shown (e.g. 9 according to the **previous** correction value of +1 %).
- Switch control unit to the rinsing position:
Press "C".
- Switch off device:
Disconnect the power with the switch on the back of the device.
- Remove front panel from the housing.
- Adjust the encoding switches by -3 % according to the deviation determined:
Set new meter constant 6 (corresponds to the new correction value of -2 %) on encoding switches 5 to 8.

Position of encoding switches 5 to 8															
Constants	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
% correction	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6

- Fit front panel.
- Switch on device:
Switch on the operating power with the switch on the back of the device.
- Switch control unit to milking standby:
Press "Stop" button.
- Check the new meter constant set:
Key "9-0-S".
The new meter constant (6) is displayed.

4.2.2 METATRON APEX

Explanation of the setting process with the example 9.

- Determine the constants with which the values have been measured:
Key "9-0-S". The meter constant is displayed (e.g. 9 according to **the previous** correction value of +1 %).
- Switch control unit to the rinsing position:
Press "C".
- Change control unit to "enhanced mode"
Key "8-8-S-2-E".
- Enter new constant.
Enter constant 6 (according to the new correction value -2%).
Key "9-0-S-6-E".

Constants	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% correction	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7

- Switch control unit to milking standby:
Press "Stop" button.
- Check the new meter constant set:
Key "9-0-S".
New meter constant (6) is displayed.

4.2.3 METATRON S21

Determining and changing the % correction



Note!

With METATRON S21 it is the % correction that is displayed and entered (not the meter constant).

01

METATRON S21

- When the vacuum pump is switched on METATRON displays the "rinse monitoring" symbol.

02

METATRON S21

- Call up "System set-up" menu by pressing button 1 "Select" (for approx. 1 s)

03

METATRON S21

- 1st point in the "System set-up" menu appears.

04

METATRON S21

- Press button 2 "Start Stop" (3x) (scroll through the menu points)
- The current % correction is displayed (-2%)

05

METATRON S21

- Change % correction**
Button 3 "Manual" = lower (-)
Button 1 "Select" = higher (+)
- Save the new setting by pressing button 2 "Start Stop" (for approx. 1 s). LED L flashes briefly.

06

METATRON S21

- Press button 2 "Start Stop" (3x), until the rinse monitoring symbol appears.

Constants		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
% correction	-15 ...	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	... 15

4.2.4 METATRON P21

Determining and changing the % correction



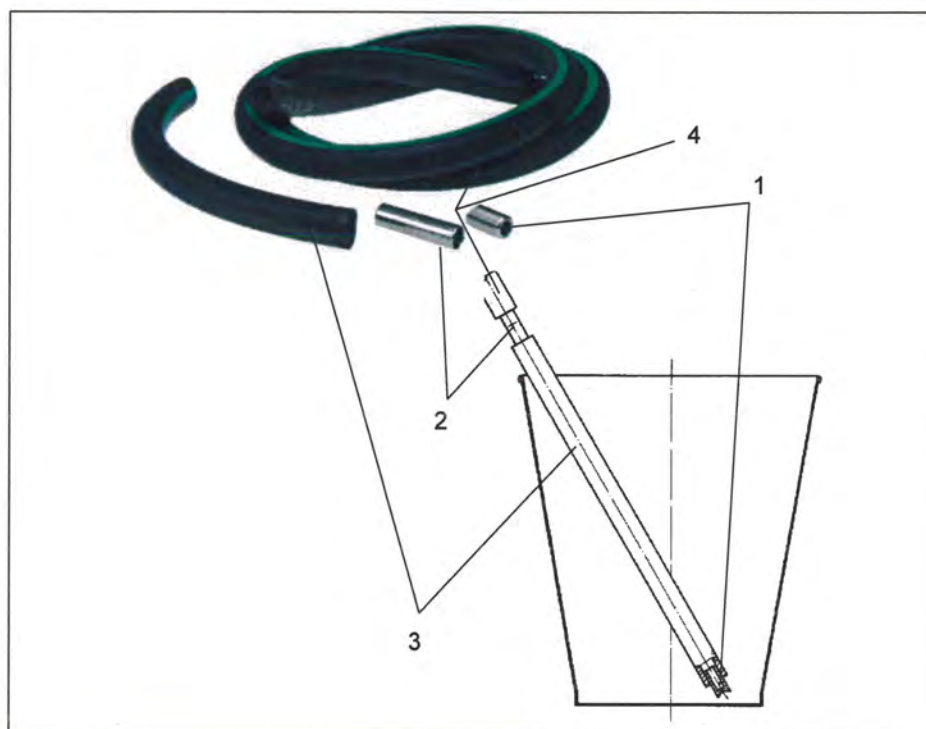
Note!

With METATRON P21 it is the % correction that is displayed and entered (not the meter constant).

01 	02 	03
- When the vacuum pump is switched on METATRON displays the cleaning menu (basic setting). - Press button 3 "System".	- The first page of the "System" menu appears. - Press button 1 "PIN". (only required for setting the % correction)	"Pin" field active (highlighted in black) - Enter PIN using the number keys 0-9 (default setting 9) - Confirm with "OK"
04 	05 	06
Scroll to the 2nd page of the menu with button 6.	- Current correction value displayed: -2%. (2nd "System" page) - Press button 2 "% correction".	"% correction" field active (highlighted in black) - Change % correction Button "9" = higher (+) Button "2" = lower (-)
07 	08 	09
Save new setting by pressing F2 "OK".	Return to "Cleaning" menu by pressing F1 "ESC"	Cleaning menu (basic setting)

Constants		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
% correction	-15 ...	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	... 15

5 Spare parts



Test set-up, compl.

Pos.	Part No.	Description	
-	7161-2862-000	Test set-up, compl.	
1	7161-2464-020	Intake nozzle	Ø 2,8-2,9 mm
2	7161-2627-010	Pipe connection	(with air nozzle)
3	0018-2009-730	Hose	14 x 5,75 x 350
4	0018-3359-730	Hose	14 x 5,75 x 1800

Cleaning agent

Pos.	Part No.	Description	
-	7722-3001-200	CIRCOTOP SF	12,5 kg

PERIODIC CHECKING OF THE "METATRON" MILK METER

Frequency of periodic checking at least once every 12 months.

General

- The testing procedure with water should be carried out with milk meters that are properly cleaned.
- On farms with the improved version of the sampler, the water test must be carried out without a connected flask.

Reference Value

- The "reference value" of the "Metatron" milk meter is the average of two or more measurements with water, found during the water test of the installation test. The reference value can also be determined by milking data from the farm test and installation test, that might be, but not necessarily, stipulated when using the connected sample equipment.
- When proceeding to periodic checking, reference values are handed over for support.

Required Equipment

- A Westfalia water test kit.
 - Tube with flow restrictor with a sucking opening of 2.8 mm.
 - Air inlet of 1.2 mm.
- Electric weigh-beam/scale.
- Some buckets of sufficient capacity.

Test Liquid

- Water; the temperature is not decisive.
- Addition of 40 cc Acid per 20 lbs of water.
- Addition of 1-1/2 ounces salt per 20 lbs. of water (best procedure).

The principle of the test

- Is the reference value stipulated with connected sample equipment, then also carry out the periodic checking with the connected sample equipment.
- Use the start-stop-start button.
- When "stimopuls" appears on the display, keep pressing the start-button until normal pulsation starts.
- Suck 20 lbs. of the test liquid through the meter.
- Read the display value.
- The test liquid is collected in a milk reservoir for recycling.

Quality of the observations/measurements

- If the first measuring value deviates 0.2 lbs. from the reference value:
meter = correct.
- If the first measuring value deviates more than 0.2 lbs. from the reference value, proceed to a second measuring.

- If duplicate measurements have an average deviation of 0.4 lbs or less from the reference value: meter = correct. When a meter does not come up to this standard during the periodic checking, proceed to a third or fourth measuring.

Deviating meters

- When the measurements do not come up to this standard, the testing procedure with water should be repeated after checking and, if necessary, disassembly of the meter. If it is still impossible to come up to this standard, the meter should be recalibrated/adjusted or replaced.

Replacement or repair of meters

- 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).
- This water test will then serve as "reference value."

Reporting the results

- 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.

Sampling equipment

- Check the sampling equipment for cleanliness and parts.
- Make sure that the sampling equipment is stored in a dry place, free from dust.
- Avoid direct sunlight.



METATRON MILK METERS

The routine test procedure is equal to the “old” Circotop SFL test except for the part “Test liquid” and “Principle of the test”.

General

- The testing procedure with water should be carried out with milk meters that are cleaned properly.
- At farms on which the improved version of the sampling equipment is placed, the water test must be carried out without a connected sample cup.

Reference value

- The “reference value” of the “Metatron” milk meter is the average of two or more measuring with water, found during the water test of the installation test.
- When proceeding to periodic checking, reference values are handed over for support.

Required equipment

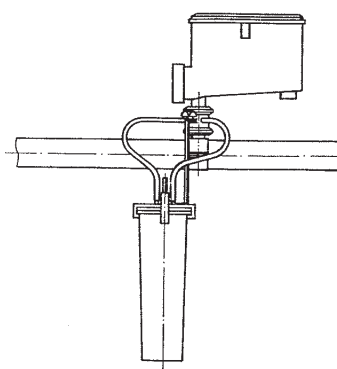
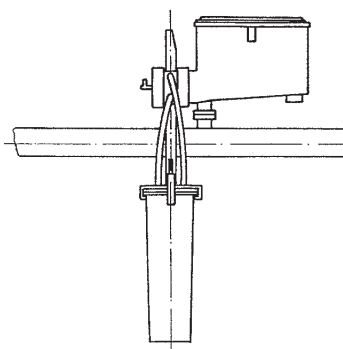
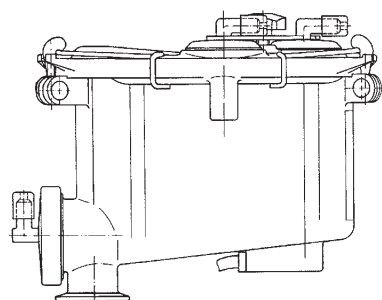
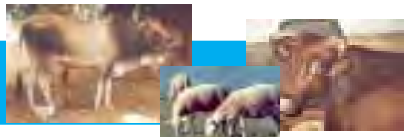
- A Westfalia Separator sucking set:
 - Tube with flow restriction with a sucking opening of 2.8 mm.
 - Air inlet of 1.2 mm.
- Electronic weigh-beam/bascul.
- Some buckets of sufficient capacity.

Test liquid

- Water; the temperature of the water should be between 12 and 25 °C.
- Addition of 70 cc Circotop SF per 10 kg of water.

The principle of the test

- Start with a pre-rinse of the installation using a 0.5% Circotop SF solution (add 50 cc Circotop SF per 10 kg water). No rinsing with plain water afterwards.
- Is the reference value stipulated with connected sample equipment, then also carry out the periodic checking with the connected sample equipment.
- Use the start-stop-start button.
- When “stimopuls” appears on the display, keep pressing the start-button until normal pulsation starts.
- Suck 10 kg of the test liquid through the meter.
- Read the display value.
- The test liquid is collected in a milk reservoir for recycling.



Quality of the observations/measuring

- If the first measuring value deviates 0.1 kg from the reference value: meter = correct.
- If the first measuring value deviates more than 0.1 kg from the reference value, proceed to a second measuring.
- If duplicate measuring have an average deviation of 0.2 kg or less from the reference value: meter = correct. When a meter does not come up to this standard during the periodic checking, proceed to a third or fourth measuring.

Deviating meters

When the measuring do not come up to this standard, the testing procedure with water should be repeated after checking and, if necessary, dismantling of the meter. If it is still impossible to come up to this standard, the meter should be recalibrated/adjusted or replaced.

Replacement or repair of meters

- When meters are replaced or when re-pairs 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).
- This water test will then serve as "reference value".

Reporting the results

- 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 organisation.
- When the sensor-value is changed, the new sensor-value is to be recorded on the measuring form.



Sampling equipment

- Check the sampling equipment for clean-ness and parts.
- See to it that the sampling equipment is stored in a dry place, free from dust.
- Avoid direct sunlight.