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D.H.I.A. Meter Calibration

It is a requirement of National D.H.I.A. that all meters used for official milk recording be tested for accuracy. This test must be performed by the installer before the first official test day and annually thereafter.

The installer should perform the test procedure detailed below, fill out the attached test result sheets and send a copy to the local D.H.I.A. Manager.

Test sheets are available from SAE Afikim. A sample of a completed test sheet is given in Illustration 13.

6.1 Equipment Required

- ✓ Vacuum source providing a stable 10–15 inches of vacuum.
- ✓ Vacuum trap e.g. bucket milker or weigh jar.
- ✓ 25 pound capacity pail.
- ✓ Suction hose fitted at the inlet with the SAE Afikim test restrictor. Part #5200033
- ✓ Accurate scales (minimum resolution 1/10 lb.).
- ✓ 20 Lbs (9.1Kg) of water at approximately 70° F, to which 25cc of table salt has been added. The body of a hypodermic syringe is readily available on most farms and can be used to measure the salt.

6.2 Test Set Up

Assemble the test equipment as shown in Illustration 11.

The arrow on the Test Restrictor must be pointing in the direction of flow of the salt water.

There must be a continuous fall in the 3/4 inch I.D. (20mm) pipe which connects the outlet of the meter to the vacuum trap.

6.3 Test Procedure

Clean the meter lid air bleeds.

Switch on the power to meters.

Switch on vacuum pumps as for milking.

Be sure that the meter is in the Milking Mode (cleaning LED out).

Fill the bucket with 20 Lbs (9.1Kg) of the salt water.

Open the shut-off valve and allow all of the salt water to be drawn from the bucket through the meter to the vacuum trap.

Do not drain the residual water from the meter into the vacuum trap.

Record the meter display in the "Meter" column of the test sheet.

Weigh the test fluid in the vacuum trap and record the figure in the "Bucket" column of the test sheet.

Calculate the "P" value as follows and record in the "P" column of the test sheet:

METER DISPLAY divided by WEIGHT OF SALT WATER IN VACUUM TRAP multiplied by 100 = "P" value.

$$\frac{\text{METER DISPLAY}}{\text{SALT WATER}} = \text{"P"}$$

Drain the residual water from the meter.

Perform this procedure twice. Both "P" values should be in the range of 97% – 103%.

Do not adjust for specific gravity of milk vs. water. (This is accounted for in the test procedure.)

When the testing is complete, thoroughly rinse all equipment with clean water. Salt water is highly corrosive and must not be left in the meter.

6.4 Test Restrictor

This is Afikim part Number 5200033 and available from SAE Afikim at the address on the back of this manual. See Illustration 12.

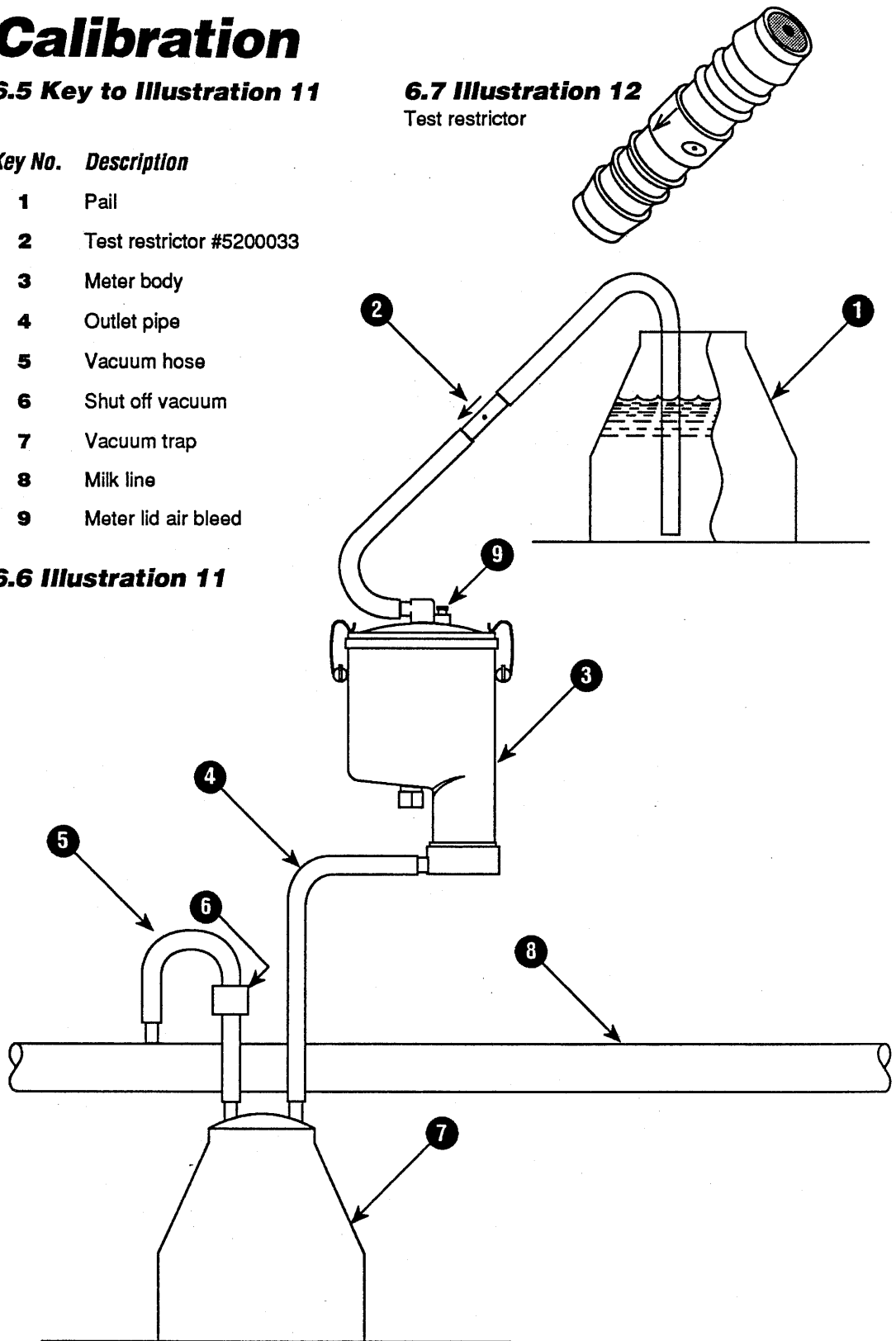
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D.H.I.A. Meter Calibration

6.5 Key to Illustration 11

Key No.	Description
1	Pail
2	Test restrictor #5200033
3	Meter body
4	Outlet pipe
5	Vacuum hose
6	Shut off vacuum
7	Vacuum trap
8	Milk line
9	Meter lid air bleed

6.6 Illustration 11





AFIKIM MILK METERS

- also called
- Fullflow
 - Manuflow
 - Sureflow
 - Afikim/Combina

PERIODIC CHECKING OF THE “AFIKIM” MILK METERS

Frequency of periodic checking at least once in 12 months.

General

The testing procedure with water should be carried out with milk meters that are cleaned properly.

Reference value

- The “reference value” of the “Afikim/Fullflow” milk meter is the average of the two measuring with water, found during the testing procedure with water of the installation test or a reference value determined later.
- When proceeding to periodic checking, the reference values are handed over for support.

Required equipment

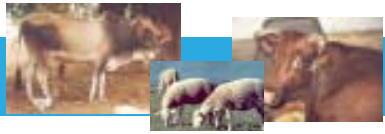
- A Fullwood sucking set:
 - Sucking pipe with a rubber cap and with a sucking opening of 3.5 mm.
 - Air inlet of 1 mm.
- Electronic weigh-beam/Basle.
- Some buckets of sufficient capacity.
- Some receivers for the collecting of testing liquid.
- Thermometer.

Testing liquid

- Water with a temperature of 20 C +/- 5 C.
- Addition of 60 grams of salt per 20 kg of water.

The principle of the test

- Fill a bucket with at least 15 kg of testing liquid.
- Suck a quantity of testing liquid till 12 kg is shown at the display.
- The flowed - and collected quantity of water will be weighed.



Quality of the observations/measureings

- 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.
- The difference between duplicate measuring should not be bigger than 0.1 kg.

Deviating meters

- When the measuring do not come up to this standard, the testing procedure with water should be repeated after checking the equipment, which may include, among other things, straightening up, 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 repairs influence the measuring, the meters are to be tested during the milking, after which the testing procedure with water should be carried out twice.
- 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.

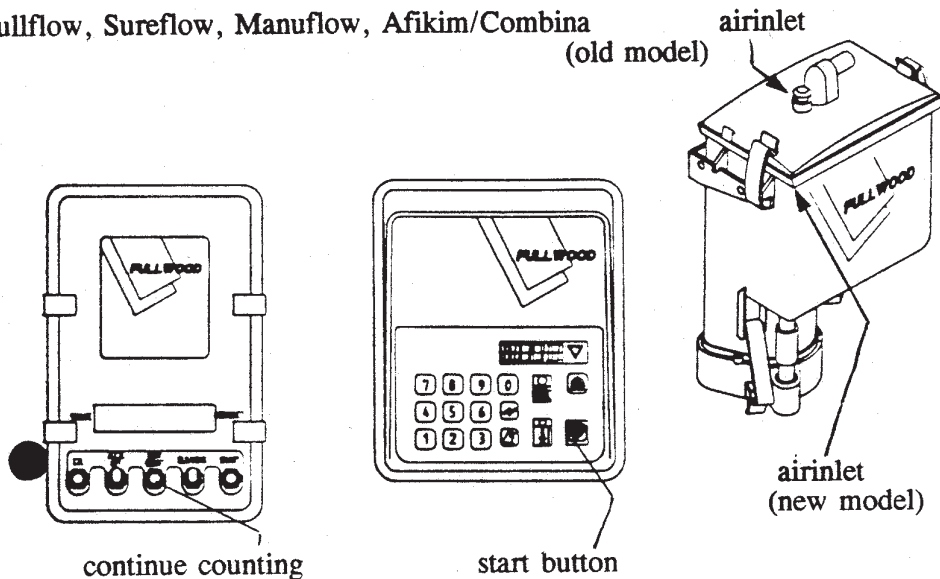
Sampling equipment

- Check the sampling equipment for cleanness and parts.
- See to it that the sampling equipment is stored in a dry place, free from dust.

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Fullflow, Sureflow, Manuflow, Afikim/Combina
(old model)



Standard panel
(MM81)

Info panel
(MM85)

Measuring part

Hints for the sample taker and the farmer for correct sampling by means of Afikim:

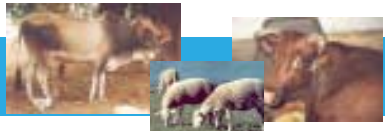
Before sampling

See to it that:

- the air inlet in the milk claw is opened;
- the air inlet of the meter is cleaned and opened (blockage causes a delayed operation of the valve, extra foam formation and deviations in measuring quantities and contents). The air inlet of the meter is on the cover (older types of milk meters) or in the housing of the milk meter in the top of the bypass canal (new type);
- the meter and the sampling equipment are suspended upright;
- the sampling equipment is placed in such a manner, that the arrows on the sampling equipment point in the direction of the milk flow;
- all equipment for sampling contains no water residues. (Uncarefulness in this matter leads to a too low indication of percentages, especially where the first range of cows is concerned).

Taking the sample

- the display of the meter should always be at zero before starting to milk another cow;



- after the cow is off, the sample taker must observe a waiting time before reading off the display and before removing the sample bottles;
- this waiting time (± 30 seconds) is necessary because of the presence of foam in the meter - foam changes into milk -;
- when removing the filled sample bottles, a well-emptied sample bottle should be put in simultaneously;
- then turn over the sample bottle several times, transfuse the milk in the mixture bowl and take a sample by means of the sample spoon;
- it is to be recommended to use a draining rack for good emptying of bowls and bottles;
- it is desirable, that there are some sample bottles extra on the farm during the milk recording. It is strongly advised not to use bottles with colored glass.

The operation panel

- two types of the meter are available, i.e. with a standard panel or with an information panel (see above);
- on the standard panel, the middle switch "Continue Counting" is a switch to continue the same counting and is used when a milking set is kicked off. In such a case, the measured quantity of milk remains on the display and will be added to the measured quantity after replacement of the teat cups;
- at farms where milk meters with information panels are installed, one should press the "start button" twice, shortly one after the other, when the milking set is kicked off, in order to retain the milk quantity that is already measured;
- after taking the meter reading, the meter should be set at zero again. In case of a standard panel the two outer switches "CR" and "Start" must be pressed simultaneously. In case of the information panel, the "start" and "take off" keys (above the start key) should be pressed simultaneously.

After sampling

- the farmer removes the bottles and the sample equipment for a careful cleaning by hand;
- store the sample equipment and bottles on a dry place, free from dust.

Farmer, do rinse your equipment with acids on a regular basis!