Product News

New ICAR-approved computerised milk meter calibration procedure

Fig. 1: DeLaval milk meter MM27BC

A new milk meter calibration procedure using ALPRO Windows 7.2 has been approved by ICAR when this procedure is used for the following milk meters:

- DeLaval milk meter MM27BC
- DeLaval milk meter MM25/MM25W

The main advantage of using this calibration procedure instead of other traditional procedures is that it is much faster as bucket milking is not needed.

Briefly the method is based on that the system over a number of milking sessions compares the yield measured by the milk meter to the expected yield of the cows. The system also compares the total bulk tank volume according to the receipt with the total yield in the system. The BIAS of each milk meter is then calculated automatically and must be entered by the service technician into the milk meters.

Note! "Software calibration" is a common name that can be used for this new method.

Note! To see the most recent list of ICAR-approved milk meters and calibration procedures, see
http://www.icar.org/pages/sub_committees/ sc_recording_devices_approved_milkmeters.ht m.
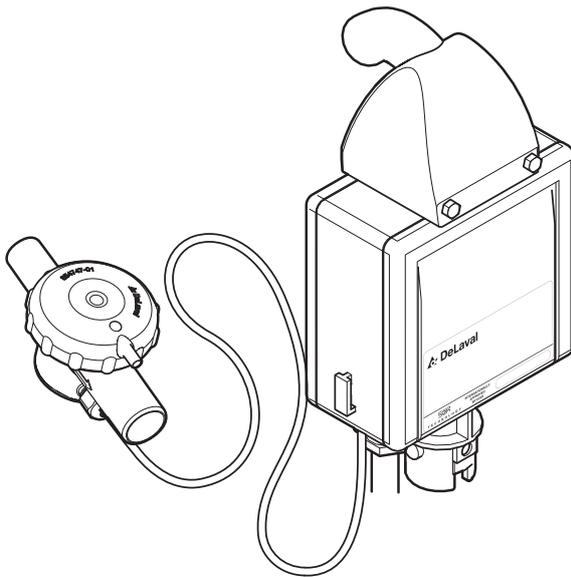
Milk meter calibration in DeLaval DelPro software

The milk meter calibration window in DelPro software 4.3 differs slightly from the one in ALPRO Windows 7.2. Activities are ongoing to adapt the calibration procedure in DelPro software so that it mirrors the one in ALPRO Windows 7.2.

DeLaval milk meter MM15 and milk meter calibration

For DeLaval milk meter MM15, the calibration procedure using ALPRO Windows 7.2 is not ICAR approved.

However, the milk meter calibration in ALPRO Windows 7.2 can be helpful also for MM15 during routine checking and troubleshooting. For more information, see ↳ *Chapter 1 "Appendix: "Milk Meter Calibration" window explained" on page 9*.

When to use the ICAR-approved milk meter calibration procedures

Milk meter calibration types and ICAR approval of the new method

Calibration type	Description	ICAR approval
Recalibration	Performed when it is needed to recalibrate the milk meters. For example, a report might show that one of the milking points does not measure the milk yield properly.	This calibration type is according to manufacturer's procedure (in this case DeLaval). The calibration software module in ALPRO Windows 7.2 is approved for this purpose.
Initial calibration	Performed at new installations to ensure that the milk meters will measure correctly.	
Installation test	Performed once, at least 10 days after installation, to verify that the installation and initial calibration were done correctly.	Only if these tests pass may the milk meters be used for official milk recording according to ICAR guidelines. The calibration software module in ALPRO Windows 7.2 is approved for this purpose.
Routine checking	Performed at least once per year to verify that the milk meters are calibrated correctly.	

How to use the ICAR-approved milk meter calibration procedure

Before using the ICAR-approved computerised milk meter calibration procedure, note that:

■ This milk meter calibration procedure should only be carried out by a trained service technician.

■ By installation there is no need to calibrate the milk meters (keep the BIAS at 1000 for all milk meters). With this new procedure the initial calibration and installation test can be carried out at the same time.

■ By replacing a milk meter in a running installation, the BIAS in the milk meter must be set to the same value as the milk meter that was replaced. Otherwise the calculation will not work.

■ The same step-by-step procedure can be used for all tests and calibration situations (initial calibration, installation test, routine checking and recalibration).

- Plan a day for test and calibration so that at least 300 milkings per milking point have been registered in the system, or at least 30 days have passed since first milking or last calibration.
- Instruct and remind the farmer how to fill in the "Milk yield checklist" (see ↯ *Chapter 1 "Appendix: Milk yield check-list" on page 6*) to keep track of the total milk in the bulk tank and in the system, during at least one week before calibration.
- Ensure that the milk meter installation is properly done by checking the vacuum level, milk meter height, milk tubes, cluster and air bleeds according to the normal calibration routines for the milk meter. For more information, see for example the instructions for MM27BC.
- The ID performance should work normally on the farm. The calibration function does not use data from unidentified cows.
- This new procedure does not replace the traditional one with bucket milking, but is an alternative to it.

Step-by-step description

On the test day:

1. Open ALPRO Windows 7.2.

2. Open *"Milking ➔ Milk Meter Calibration"*.

3. Click *"Update..."*.

   ⇨ The *"Calculate Factor"* window is opened.

4. In *"Milk in Tank"*, enter the "Milk yield summary" from the checklist, see ↵ *Chapter 1 "Appendix: Milk yield checklist" on page 6*.

5. In *"Milk Measured by Milk Meters"*, enter the "Total yield from milk meters in ALPRO system" from the checklist, see ↵ *Chapter 1 "Appendix: Milk yield checklist" on page 6*.

6. Click *"OK"*.

   ⇨ The *"Calculate Factor"* window is closed.

7. Click *"Calculate new BIAS"*.

   Note! Do not click "Save the new BIAS values..." at this moment. If new BIAS values are saved, you must always update the milk meters with these new values or the calculation will be wrong.

8. Check if a calibration is needed:

   8.1 Check the value in *"Current calibration factor"*. If the value is outside 0.98-1.02, the milk meters need to be calibrated.

   8.2 Check the columns *"Current BIAS"* and *"New BIAS"* in the table. For each milking point calculate *"Current BIAS"* / *"New BIAS"*. If this number is inside the interval 0.97-1.03, the milk meter is OK and does not need to be calibrated.

   Note! For initial calibration it is recommended to always calibrate the milk meters, even if the meters do not need to be calibrated according to the criteria. This is to achieve best performance of the milk metering.

   Note! If one or a small number (less than 10%) of the milk meters are outside the limits, check those milking points for blocked air bleed, bent tubes, etc before deciding regarding

---

DeLaval

calibration. Fix the problem if any and recheck after two weeks to see if a calibration is still needed.

9. If no calibration is needed, click the *"Save File"* button at the upper right corner and store the document for reference. If applicable, give a copy to the officials present for the test. Make sure to close the *"Milk Meter Calibration"* window without saving.

   Note! *For explanations of the columns in the "Milk Meter Calibration" window, see ✋ Chapter 1 "Appendix: "Milk Meter Calibration" window explained" on page 9.*

If a calibration is decided:

10. Click *"Calculate new BIAS"* if not already done, and then click *"Save the new BIAS values..."*.

11. Click *"Print and Save the new BIAS values"*.

12. Take the printed document with the new BIAS values to the milk meters.

13. Update each milk meter with the new BIAS values and make a note in the document for every updated BIAS.

14. Store the document for reference and if applicable give a copy to the official representatives for the test.

Appendix: Milk yield checklist

The milk yield checklist is helpful for keeping track of the total yield from the cows compared to the total yield in the system registered by the milk meters.

During calibration the information in the milk yield checklist is entered in the *"Milk Meter Calibration"* window to determine the *"Current calibration factor"*, which should be close to 1.0.

Note! *All values must be entered as weights (kg or lbs), not as volume.*

To fill in the milk yield checklist:

1. Check the milk yield registered after the milk meters:

    1.1 Write down the milk tank yield (A). This value is on the receipt from the milk truck when the milk was collected.

    1.2 Write down any milk that has been taken out after the milk passed the milk meters (B, C, D). This could be milk for calves, personal consumption or other reasons.

    1.3 Write down the sum of these values in the column "Milk yield summary" (E = A+B+C+D).

2. Check the total milk yield in the system registered by the milk meters:

    2.1 Open ALPRO Windows 7.2.

    2.2 Open *"Milking*
    ➔ *Milking Performance*".

    2.3 Note the total yield, for example by adding the values for today and yesterday together (see the column *"Total Yield"* in the *"Today"* and *"Yesterday"* tables).

    2.4 Write down the total yield in the column "Total yield from milk meters in ALPRO system" (F).

DeLaval

Note! It is important that the tank yield and the total yield from the milk meters are from the same corresponding dates and milking sessions.

Date	Milk passing through the milk meters				Milk yield summary	Total yield from milk meters in ALPRO system
	Tank yield from the collector's receipt	Taken for calves	Taken for personal consumption	Taken for other reasons		
	A	B	C	D	E = A+B+C+D	F

DeLaval

Fig. 2: "Milk Meter Calibration" window

Columns and parameters in the "Milk Meter Calibration" window

Item	Description
"MPC Parlour Pos":	Shows the ALPRO milking point number where the milk meter is placed.
"Count":	Shows the number of values used to calculate the value in the *"Relative Yield"* column.
"StDev":	Shows the statistical variation of the *"Relative Yield"* (not the milk meter). This value should be similar for all milking points.
	If this value is considerably higher for one place compared to the others, it is a good idea to check the installation of the milk meter, air bleed, etc at that place.

Item	Description
"Relative Yield":	Shows how the milk meter at that place measures compared to the average of all milk meters in the parlour. For example, if the value is 101, the milk meter measures 1% higher than the average level. If the value is 99%, the milk meter measures 1% lower.
"Current BIAS":	Shows the BIAS value present in the milk meter according to the ALPRO system.
"New BIAS":	Shows the new BIAS value calculated by 100 x [*"Current calibration factor"*] x [*"Current BIAS"*] / [*"Relative Yield"*].
"Current calibration factor":	Shows the real weight of the total milk yield divided by the total milk yield in the system registered from the milk meters.

Note! The "Relative Yield" calculation in the "Milk Meter Calibration" window does not include single milk yield values that are outside 70-130% of the expected yield.

Note! After clicking "Save the new BIAS values...", the button is locked and the next calibration is possible first after 300 new registered milk yields per milk meter or after 30 days, whichever occurs first.

Appendix: Alternative method for routine checking

If *"Current calibration factor"* is 0.98-1.02 and the values in the *"Relative Yield"* column are within the limits -3% to 3% according to the table below, the milk meters do not need to be calibrated.

For example, if the *"Current calibration factor"* is 0.99, a milk meter is OK if its value in the *"Relative Yield"* column is inside the interval 96-102. However, if its value is outside 96-102 in this case, calculate *"Current BIAS"* / *"New*

⚡ DeLaval

BIAS". If the result of this calculation is inside the interval 0.97-1.03, the milk meter is still OK. If it is outside, the milk meter must be calibrated.

Value in the *"Relative Yield"* column	*"Current calibration factor"*				
	0.98	**0.99**	**1.00**	**1.01**	**1.02**
95	-3%				
96	-2%	-3%			
97	-1%	-2%	-3%		
98	0%	-1%	-2%	-3%	
99	1%	0%	-1%	-2%	-3%
100	2%	1%	0%	-1%	-2%
101	3%	2%	1%	0%	-1%
102		3%	2%	1%	0%
103			3%	2%	1%
104				3%	2%
105					3%

Senders

Olle Selander

Assortment Manager

On Farm Milk Analysis

Farm Management Support Systems

Henrik Idensjö

Manager Verification & Validation

MEV

DeLaval DelPro system 5.1 (Parlours)

- 040 Safety precautions
- 050 General description
- 061 Planning
- 101 Installation
- 140 Helpfiles – DeLaval DelPro software 5.1 (Parlour:
- 150 Operation
- 151 Operation
  - 1 Configuration Tool 4.12
  - 2 DelPro Database Administration application
  - 3 DelPro software
    - 3.1 Service logs window
    - 3.2 ID system performance window
    - 3.3 Milk meter calibration window
  - 4 DelPro Xtra Importer
- 171 Troubleshooting
- Product News
- Publications (PDF)

3.3 "Milk meter calibration" window

The "Milk meter calibration" window ("System ⇒ Service ⇒ Milk meter calibration") is used to create calibration values for the milk meters.

Note! *The milk meters should only be calibrated by a trained service technician. The calibration procedure is described in Product News 150068.*

The milk meters measure the amount of milk that is transported from the animal to the milk tank. If the milk meters are not calibrated regularly, the amount of milk reported by the milk meters might be higher or lower than the actual amount transported.

Columns and parameters in the "Milk meter calibration" window

Item	Description
"Name":	Shows the name of the parlour that has the milk meters that should be calibrated.
"Calibration date":	Shows when the milk meters were calibrated the last time.
"Calibration factor":	Shows the real weight of the total milk yield divided by the total milk yield in the system registered from the milk meters.
"Parlor position":	Shows the milking point number where the milk meter is placed.
"Number of milkings used for BIAS calculation":	Shows the number of values used to calculate the value in the "Relative yield" column.
"Standard deviation":	Shows the statistical variation of the "Relative yield" (not the milk meter). This value should be similar for all milking points. If this value is considerably higher for one place compared to the others, it is a good idea to check the installation of the milk meter, air bleed, etc at that place.
"Relative yield":	Shows how the milk meter at that place measures compared to the average of all milk meters in the parlour. For example, if the value is 101, the milk meter measures 1% higher than the average level. If the value is 99%, the milk meter measures 1% lower. **Note!** *The "Relative yield" calculation does not include single milk yield values that are outside 70-130% of the expected yield.*
"Previous BIAS":	Shows the BIAS value present in the milk meter according to the DelPro system.
"Current BIAS":	Shows the BIAS value previously present in the milk meter according to the DelPro system.
"New BIAS":	Shows the new BIAS value calculated by 100 x ["Calibration factor"] x ["Current BIAS"] / ["Relative yield"].