Part of service visit:

■ Service visit 3
■ Service visit 6
■ Service visit 9
■ Service visit 12

Perform this task when the system is in *"Safe"* mode.

■ Perform a short machine test according to the separate manual *VMS Machine Testing*, available on MEMO+.

5 Calibrating the milk meters MM27

5.1 Calibration procedure overview

Calibrating the milk meters MM27 ensures that they measure accurately and that the registered milk yields correspond to actual milk yields.

The calibration procedure is done using a calibration wizard available in AMS Service Tool:

1. The milk of a healthy cow is collected in a milk bucket and weighed.

2. The weight is entered into a calibration wizard in AMS Service Tool.

3. The milk is returned to the receiver and pumped to the tank.

4. The procedure is repeated with the next healthy cow.

5. When *eight* or more cows have been milked, the calibration wizard calculates new correction values for the scale factor and the offset.

6. The milk meters MM27 are updated with the new correction values.

Note! All four milk meters are calibrated with the same average values for the scale factor and the offset.

Note! The procedure is different for the US market.

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5.2 Requirements for an accurate calibration

5.2.1 Number of milked cows

The more cows are milked, the higher the accuracy of the calibration. A minimum of *eight* cows must be milked.

To maximise the accuracy, it is advised to milk animals with a large variation in total milk yield. (The volume of the milk bucket must be large enough for high-yield cows.)

5.2.2 Healthy cow with tank milk

During the calibration procedure, it is *impossible* to perform a cleaning or rinse cycle.

Note! *Do not milk cows with drain or divert milk, such as cows under medical treatment or cows with colostrum.*

Only healthy cows with tank milk can be milked.

> ⚠️ **Caution!**
> **Cleaning water in the system**
> If a cow with drain or divert milk is milked by accident, the milking station initiates a cleaning cycle but cannot purge the milk lines. Cleaning water is left in the system and must be drained manually.

5.2.3 Scales

Scales with a minimum accuracy of ±20 grams are required to weigh the milk.

To simplify the measurement, it is recommended to use a scale with "Tare" function.

Note! *For reporting and follow up, it is important to follow local and national regulations.*

5.3 Annual verification

The accuracy of the milk meters should be verified every twelve months, to discover potential drifting of internal parameters and external factors.

Refer to *"ID 272: Periodic (annual) check of the accuracy of the milk meters MM27"* in chapter *"Preventive maintenance"* on MEMO+.

If the accuracy is outside of the allowed tolerance, the milk meters must be recalibrated.

5.4 Installing the calibration kit

The calibration kit V300 (2150005309) must be ordered separately. Included parts:

- Milk extraction valve, normally open (NO) (C)
- 3 milk tubes, pre-cut, 2 metres (B, J, R)
- 2 gaskets, 25 mm
- 2 clamp rings, 38 mm
- Nipple (Ø20 mm)
- Pinch valve (S)
- Dummy teat (P)
- Pneumatic tube, 1.5 metres (D)
- Plug for the lid of the milk bucket (A)

Other required parts (not included):

- Milk bucket, 30 litres (94544580) (A)
- Bucket lid, 2 inlets (92842780)
- Small bucket, 5 or 10 litres (H)

Preparing the milking station

1. On the GUI, switch to *"Manual (Closed stall)"* mode.

2. Go to the *"Cleaning"* tab and tap *"Program"*.

3. Select *"Local Rinse"* or *"System rinse"* and tap *"Start"*.
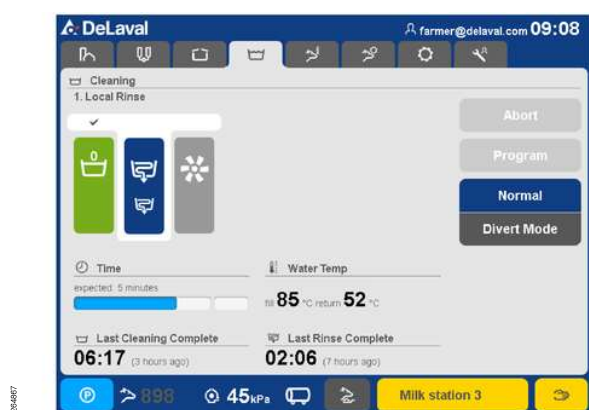
   ⇨ A rinse cycle starts. Wait until it finishes.

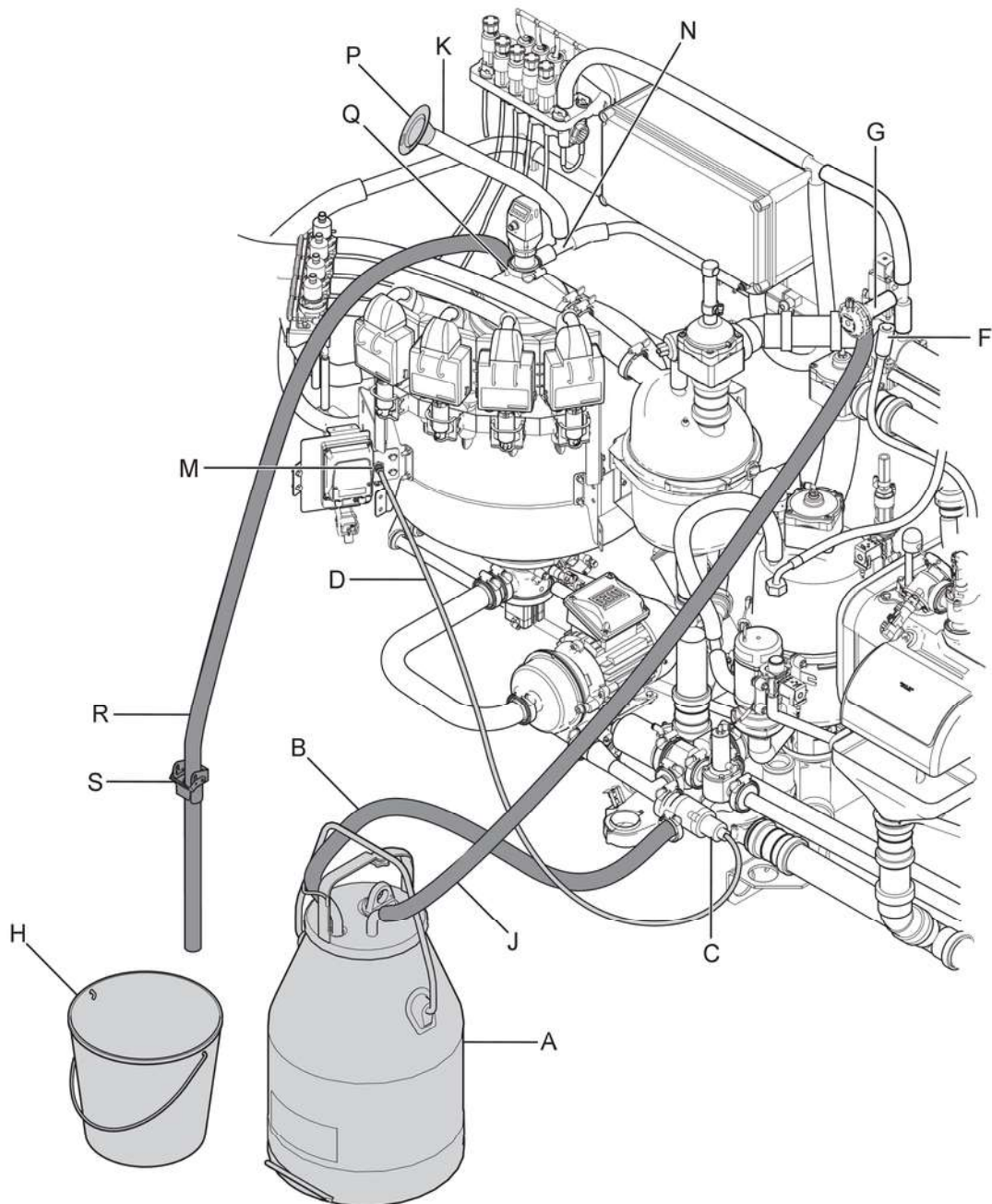*Fig. 136: The "Cleaning" tab with an ongoing "Local Rinse".*

Fig. 137: The milk meter MM27 calibration setup with the calibration valve assembly (H), vacuum and milk tubes (J, R) and a milk bucket.

4. Disconnect the air purge valve from the milk valve group.

5. Install the milk extraction valve (C) in place of the air purge valve.

6. Connect a milk tube (B) between the milk extraction valve and the lid of the milk bucket (A).

7. Connect the pneumatic tube (D) between the milk sampler outlet (M) and the milk extraction valve (C).

Connecting the milk bucket to the vacuum extraction valve

8. Disconnect the tube (F) from the vacuum extraction valve (`A_VacuumExtraction`) (G) in the milk module.

9. Connect a milk tube (J) between the vacuum extraction valve (G) and the lid of the milk bucket.

Connecting the milk return tube

10. Disconnect the short tube (K) between the T-connector (N) and the top of the receiver (Q) (next to the level sensor).

11. Plug the open end of the short tube (K) with a dummy teat (P).

12. Remove the sprayer from the receiver connection (Q).

13. Connect a milk tube (R) to the receiver connection (Q).

14. Add a pinch valve (S) to the tube.

Note! *Always keep the end of the tube clean. Never let it touch the floor.*

5.5 Performing a calibration procedure

In calibration mode, the milk is routed through the air purge valve into the milk bucket, instead of being sent to the tank.

After weighing the milk, it is sucked back to the receiver. The milk pump then sends the milk to the tank.

Note! *In this configuration, it is not possible to run a cleaning or rinse cycle. Only milk healthy cows with milk that can be sent to the tank.*

> ⚠ **Caution!**
>
> **Cleaning water in the system**
>
> If a cow with drain or divert milk is milked by accident, the milking station initiates a cleaning cycle but cannot purge the milk lines. Cleaning water is left in the system and must be drained manually.

Note! *At least eight cows must be milked before the wizard can finish.*

Preparing the milk bucket and scales

1. Place the milk bucket on the scales (without the lid) and press "Tare".

2. Put the lid (with tubes) onto the milk bucket.

Starting the calibration wizard

3. In AMS Service Tool, go to *"MS ➜ Calibrate MM27"*.

4. Click *"Start MM27 calibration wizard"*.

5. The calibration wizard checks if the milk meter firmware version is 7.51 or higher. If the firmware version is too old, the wizard is aborted. Update the firmware.

   ⇨ If the firmware is up to date, a welcome screen is shown.

6. Click *"Start"* to start the calibration procedure.

   ⇨ An overview of the calibration kit installation is shown. Verify that it is correctly installed.

7. Click *"Next"*.

7.1 If the wizard runs for the first time, the calibration procedure is started. Continue below.

7.2 If the wizard was run before (calibration values exist), click *"Yes"* to continue with an extended calibration. Click *"No"* to restart the calibration.

Note! Restarting the calibration erases all previous values (in file `calibrationWizard.xml`).

Removing rest milk from the milk valve group

8. *Note! These steps is redundant with the first cow, since there is no rest milk in the milk valve group.*

Click *"Next"* to suck rest milk (from the previous cow) out of the milk valve group into the milk bucket.

9. Remove the lid (with tubes) and transfer the rest milk from the milk bucket into the small bucket.

10. Put the lid back onto the (empty) milk bucket.

Milking cows

11. Click *"Next"* to open the entrance gate and let in the next cow.

12. *Note! Do not click "Next" until* ↳ *step 20 "Pumping milk to the tank" on page 182.*

Milk the cow.

⇨ The milk is first sucked into the receiver. When all four teats are milked, the milk is sucked into the milk bucket.

13. When the vacuum sound stops, remove the lid (with tubes) and weigh the milk.

14. Enter the weighed amount into the calibration wizard.

Note! The measured value can be discarded if the cow is unsuitable (for example, a cow with three teats) or if a kick-off has manipulated the measured values.

15. Transfer the rest milk (of the previous cow) from the small bucket into the milk bucket.

16. Put the return milk tube into the milk bucket.

17. Open the pinch valve to suck the milk back into the receiver.

18. Close the pinch valve and remove the return milk tube.

Note! Verify that the milk bucket is completely empty. If necessary, empty it over a drain.

19. Put the lid (with tubes) back onto the milk bucket.

Pumping milk to the tank

20. Click *"Next"* to pump the milk to the tank.

Note! After pumping, a small amount of rest milk remains in the milk valve group.

21. Repeat the procedure from ↳ *step 8 "Removing rest milk from the milk valve group" on page 181*.

22. After eight (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the calibration milking

23. Alternatively, select *"No"* to finish the calibration procedure.

⇨ A summary of the extended calibration procedure lists the milk yields reported by the milk meters MM27 and the weighed (actual) value pairs.

24. Click *"Next"* and save the file.

Good values

25. If the values are within a set tolerance, the calibration procedure is finished. The window "Completed successfully" is shown.

25.1 Open the file and continue with ↳ *Chapter 5.9 "Manually updating the milk meter parameters" on page 187*.

25.2 To verify the values, do not remove the three tubes. Continue with ↳ *Chapter 5.6 "Verifying the calibration according to the ICAR installation test" on page 184*.

Inaccurate values

26. If the values are *not* within a set tolerance, the calibration procedure is unsuccessful and must be continued. The window "Inaccurate values" is shown.

Preventive maintenance

26.1 Click *"Yes"* to milk another cow or *"No"* to abort the calibration procedure.

26.2 To milk another cow, continue from ↳ step 8 *"Removing rest milk from the milk valve group" on page 181*.

26.3 Continue milking cows and adding their value pairs until the calibration procedure finishes successfully.

26.4 To abort the calibration procedure, remove the three tubes and restore the milking station to normal operation.

***Note!** After removing the milk extraction valve, some milk leaks out into the milking module. Flush the floor with water.*

Preventive maintenance

5.6 Verifying the calibration according to the ICAR installation test

To meet ICAR installation test requirements, the accuracy of the new milk meter parameters must be verified.

In verification mode, the milk yield of *three* cows is measured and compared using a verification wizard.

Starting the verification wizard

1. In AMS Service Tool, go to *"MS ➔ Verify MM27"*.

2. Click *"Start MM27 verification wizard"*.

3. Click *"Next"* to start the verification procedure.

Milking cows

4. Milk at least *three* cows in verification mode, following the same procedure as in ↳ Chapter 5.5 *"Performing a calibration procedure" on page 180*.

5. After three (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the verification milking

6. Alternatively, select *"No"* to finish the verification test.

7. A summary shows the verification test result and the average deviation between the results from the calibration procedure and the verification test:

   - If the calculated average deviation is below 3%, the milk meters have passed the verification. Continue with ↳ Chapter 5.9 *"Manually updating the milk meter parameters" on page 187*.
   - If the calculated average deviation is above 3%, the milk meters have failed the verification. Additional cows must be milked in an extended calibration procedure. Continue with ↳ Chapter 5.7 *"Performing an extended calibration procedure" on page 185*.

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5.7 Performing an extended calibration procedure

Starting the extended calibration wizard

1. In AMS Service Tool, go to *"MS ➔ Calibrate MM27"*.

2. Click *"Start MM27 calibration wizard"*.

3. The calibration wizard loads the values from the existing calibration procedure data.

4. Click *"Start"* to start the extended calibration procedure.

Milking cows

5. Milk at least *six* cows in calibration mode, following the same procedure as in ⮝ Chapter 5.5 *"Performing a calibration procedure" on page 180*.

    ⇨ The new values are added to the values from the existing calibration procedure data.

6. After six (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the extended calibration milking

7. Alternatively, select *"No"* to finish the extended calibration test.

    ⇨ A summary of the extended calibration procedure lists the milk yields reported by the milk meters MM27 and the weighed (actual) value pairs.

8. Click *"Next"* and save the file.

Completed successfully

9. If the values are within a set tolerance, the extended calibration procedure is finished. The window "Completed successfully" is shown.

    9.1 Open the file and continue with ⮝ Chapter 5.9 *"Manually updating the milk meter parameters" on page 187*.

    9.2 To verify the values, do not remove the three tubes. Continue with ⮝ Chapter 5.6 *"Verifying the calibration according to the ICAR installation test" on page 184*.

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Preventive maintenance

Inaccurate values

10. If the values are *not* within a set tolerance, the extended calibration procedure is unsuccessful and must be continued. The window "Inaccurate values" is shown.

    10.1 Click *"Yes"* to milk another cow or *"No"* to abort the extended calibration procedure.

    10.2 To milk another cow, continue from ⤷ *step 8 "Removing rest milk from the milk valve group" on page 181*.

    10.3 Continue milking cows and adding their value pairs until the extended calibration procedure finishes successfully.

    10.4 To abort the extended calibration procedure, remove the three tubes and restore the milking station to normal operation.

5.8 Verifying the extended calibration according to the ICAR installation test

1. Repeat the verification test. See ⤷ *Chapter 5.6 "Verifying the calibration according to the ICAR installation test" on page 184*.

2. After three (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the verification milking

3. Alternatively, select *"No"* to finish the extended verification test.

4. A summary shows the extended verification test result and the average deviation between the results from the extended calibration procedure and the extended verification test:

    ■ If the calculated average deviation is below 3%, the milk meters have passed the extended verification. Continue with ⤷ *Chapter 5.9 "Manually updating the milk meter parameters" on page 187*.

    ■ If the calculated average deviation is above 3%, the milk meters have failed the extended verification. Replace the milk meters.

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Preventive maintenance

```
[root@MS1 config]# hardware 7 2
Which node number has the FF you would
like to work with? 101
...
Which parameter would you like to change?
1: Scale factor
2: Air messages sensitivity
3: Alcom address
4: Conductivity calibration factor with
known conductivity
5: Conductivity factor
6: Grams per pulse
7: Pulse width
8: Offset [g]
99: Exit
...
Your choice? 1
FF101 New Scale Factor ? 1.001
...
Your choice? 8
FF101 New offset [unit g] ? 13
```

(A)

(B)

(C)

Fig. 138: The menu `hardware 7 2`.

5.9 Manually updating the milk meter parameters

If the calibration wizard should become disconnected or another problem occurs, the milk meter parameters are saved.

To check or set the values manually, PuTTY can be used.

Note! *The calibration wizard is the preferred calibration method.*

1. Start PuTTY and connect to the milking station IP (e.g. `192.168.168.3`) on port `22` (SSH).

2. Log in as `vms`.

3. Type `hardware 7 2` and press [Enter].

4. Enter the node number `101` and press [Enter] to select the first milk meter.

5. Type `1`, press [Enter], and enter the `New Scale Factor`.

6. Type `8`, press [Enter], and enter the `New Offset`.

7. Type `99` and press [Enter] to exit the configuration page.

8. Repeat the procedure and enter the same values for the three remaining milk meters (with node addresses `102`, `103`, and `104`).

9. When finished, type `hardware 7 1` and press [Enter].

10. Verify that the parameters for all four milk meters have been updated.

Note! *After updating, the accuracy of the milk meter parameters must be verfied.*

6 Calibrating the milk meters MM27 (US only)

6.1 Calibration procedure overview

Calibrating the milk meters MM27 ensures that they measure accurately and that the registered milk yields correspond to actual milk yields.

The calibration procedure is done using a calibration wizard available in AMS Service Tool:

1. The milk of a healthy cow is collected in a milk bucket and weighed.

2. The weight is entered into a calibration wizard in AMS Service Tool.

3. The procedure is repeated with the next healthy cow.

4. When *eight* or more cows have been milked, the calibration wizard calculates new correction values for the scale factor and the offset.

5. The milk meters MM27 are updated with the new correction values.

Note! All four milk meters are calibrated with the same average values for the scale factor and the offset.

6.2 Requirements for an accurate calibration

6.2.1 Number of milked cows

The more cows are milked, the higher the accuracy of the calibration. A minimum of *eight* cows must be milked.

To maximise the accuracy, it is advised to milk animals with a large variation in total milk yield. (The volume of the milk bucket must be large enough for high-yield cows.)

6.2.2 Healthy cow with tank milk

During the calibration procedure, it is *impossible* to perform a cleaning or rinse cycle.

Preventive maintenance

Note! Do not milk cows with drain or divert milk, such as cows under medical treatment or cows with colostrum.

> ⚠ **Caution!**
> **Cleaning water in the system**
> If a cow with drain or divert milk is milked by accident, the milking station initiates a cleaning cycle but cannot purge the milk lines. Cleaning water is left in the system and must be drained manually.

6.2.3 Scales

Scales with a minimum accuracy of 20 grams(0.7 ounces) are required to weigh the milk.

To simplify the measurement, it is recommended to use a scale with "Tare" function.

Note! For reporting and follow up, it is important to follow local and national regulations.

6.3 Annual verification

The accuracy of the milk meters should be verified every twelve months, to discover potential drifting of internal parameters and external factors.

Refer to *"ID 272: Periodic (annual) check of the accuracy of the milk meters MM27"* in chapter *"Preventive maintenance"* on MEMO+.

If the accuracy is outside of the allowed tolerance, the milk meters must be recalibrated.

6.4 Installing the calibration kit (US only)

The calibration kit V300 (US only) must be ordered separately. Included parts:

- Milk extraction valve, normally open (NO) (C)
- 2 milk tubes, pre-cut, 2 metres (B, J)
- 2 gaskets, 25 mm
- 2 clamp rings, 38 mm
- Nipple (Ø20 mm)
- Pneumatic tube, 1.5 metres (D)
- Plug for the lid of the milk bucket (A)

Other required parts (not included):

- Milk bucket, 30 litres (94544580) (A)
- Bucket lid, 2 inlets (92842780)

Preparing the milking station

1. On the GUI, switch to *"Manual (Closed stall)"* mode.

2. Go to the *"Cleaning"* tab and tap *"Program"*.

3. Select *"System rinse"* and tap *"Start"*.

   ⇨ A system rinse cycle starts. Wait until it finishes.

Fig. 139: The "Cleaning" tab with an ongoing "Local Rinse".
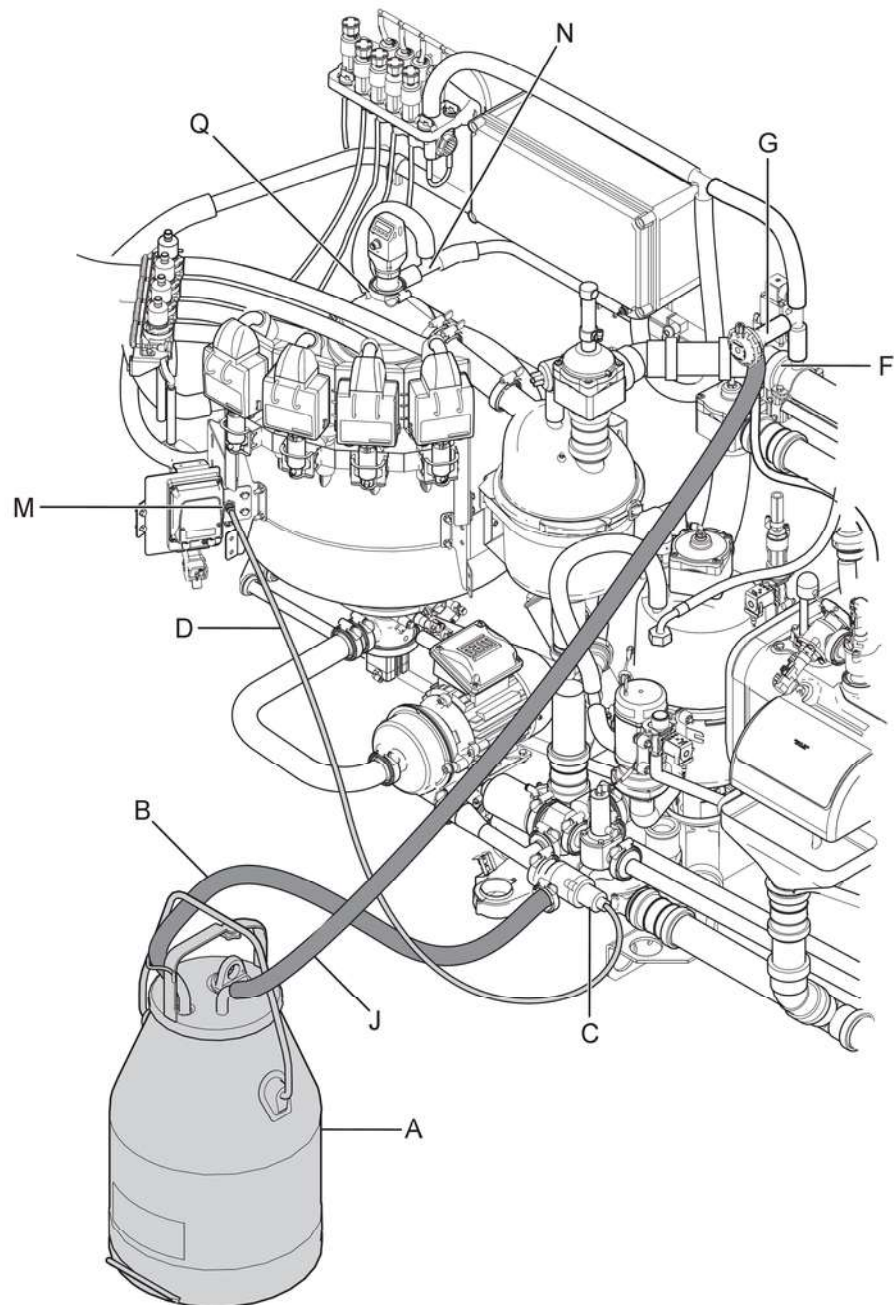
Preventive maintenance

Fig. 140: The milk meter MM27 calibration setup with the calibration valve assembly (H), vacuum and milk tubes (J) and a milk bucket.

4. Disconnect the air purge valve from the milk valve group.

![DeLaval]

5. Install the milk extraction valve (C) in place of the air purge valve.

6. Connect a milk tube (B) between the milk extraction valve and the lid of the milk bucket (A).

7. Connect the pneumatic tube (D) between the milk sampler outlet (M) and the milk extraction valve (C).

Connecting the milk bucket to the vacuum extraction valve

8. Disconnect the tube (F) from the vacuum extraction valve (`A_VacuumExtraction`) (G) in the milk module.

9. Connect a milk tube (J) between the vacuum extraction valve (G) and the lid of the milk bucket.

6.5 Performing a calibration procedure

In calibration mode, the milk is routed through the air purge valve into the milk bucket, instead of being sent to the tank.

After weighing the milk, it is sucked back to the receiver. The milk pump then sends the milk to the tank.

Note! In this configuration, it is not possible to run a cleaning or rinse cycle. Only milk healthy cows with milk that can be sent to the tank.

> ⚠️ **Caution!**
> **Cleaning water in the system**
> If a cow with drain or divert milk is milked by accident, the milking station initiates a cleaning cycle but cannot purge the milk lines. Cleaning water is left in the system and must be drained manually.

Note! At least eight cows must be milked before the wizard can finish.

Preparing the milk bucket and scales

1. Place the milk bucket on the scales (without the lid) and press "Tare".

2. Put the lid (with tubes) onto the milk bucket.

Starting the calibration wizard

3. In AMS Service Tool, go to *"MS ➔ Calibrate MM27"*.

4. Click *"Start MM27 calibration wizard"*.

5. The calibration wizard checks if the milk meter firmware version is 7.51 or higher. If the firmware version is too old, the wizard is aborted. Update the firmware.

   ⇨ If the firmware is up to date, a welcome screen is shown.

6. Click *"Start"* to start the calibration procedure.

   ⇨ An overview of the calibration kit installation is shown. Verify that it is correctly installed.

7. Click *"Next"*.

7.1 If the wizard runs for the first time, the calibration procedure is started. Continue below.

7.2 If the wizard was run before (calibration values exist), click *"Yes"* to continue with an extended calibration. Click *"No"* to restart the calibration.

> ***Note!*** *Restarting the calibration erases all previous values (in file* `calibrationWizard.xml`*).*

Removing rest milk from the milk valve group

8. ***Note!*** *These steps is redundant with the first cow, since there is no rest milk in the milk valve group.*

Click *"Next"* to suck rest milk (from the previous cow) out of the milk valve group into the milk bucket.

9. Remove the lid (with tubes) and discard the rest milk.

10. Put the lid back onto the (empty) milk bucket.

Milking cows

11. Switch to *"Auto"* mode to open the entrance gate and let in the next cow.

12. ***Note!*** *Do not click "Next" until ↳ step 20 "Pumping milk to the tank" on page 182.*

Milk the cow.

⇨ The milk is first sucked into the receiver. When all four teats are milked, the milk is sucked into the milk bucket.

13. When the vacuum sound stops, switch to *"Manual"* mode.

14. Remove the lid (with tubes) and weigh the milk.

15. Enter the weighed amount into the calibration wizard.

> ***Note!*** *The measured value can be discarded if the cow is unsuitable (for example, a cow with three teats) or if a kick-off has manipulated the measured values.*

16. Remove the lid (with tubes) and save the milk elsewhere.

> ***Note!*** *Verify that the milk bucket is completely empty.*

17. Put the lid (with tubes) back onto the milk bucket.

18. Repeat the procedure from ↳ *step 8 "Removing rest milk from the milk valve group" on page 181*.

19. After eight (or more) cows have been milked, select *"Yes"* to milk another cow.

20. Alternatively, select *"No"* to finish the calibration procedure.

> ⇨ A summary of the extended calibration procedure lists the milk yields reported by the milk meters MM27 and the weighed (actual) value pairs.

21. Click *"Next"* and save the file.

Good values

22. If the values are within a set tolerance, the calibration procedure is finished. The window "Completed successfully" is shown.

> **22.1** Open the file and continue with ↳ *Chapter 5.9 "Manually updating the milk meter parameters" on page 187*.

> **22.2** To verify the values, do not remove the three tubes. Continue with ↳ *Chapter 5.6 "Verifying the calibration according to the ICAR installation test" on page 184*.

Inaccurate values

23. If the values are *not* within a set tolerance, the calibration procedure is unsuccessful and must be continued. The window "Inaccurate values" is shown.

> **23.1** Click *"Yes"* to milk another cow or *"No"* to abort the calibration procedure.

> **23.2** To milk another cow, continue from ↳ *step 8 "Removing rest milk from the milk valve group" on page 181*.

> **23.3** Continue milking cows and adding their value pairs until the calibration procedure finishes successfully.

> **23.4** To abort the calibration procedure, remove the three tubes and restore the milking station to normal operation.

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Note! *After removing the milk extraction valve, some milk leaks out into the milking module. Flush the floor with water.*

6.6 Verifying the calibration according to the ICAR installation test

To meet ICAR installation test requirements, the accuracy of the new milk meter parameters must be verified.

In verification mode, the milk yield of *three* cows is measured and compared using a verification wizard.

Starting the verification wizard

1. In AMS Service Tool, go to *"MS* ➔ *Verify MM27"*.

2. Click *"Start MM27 verification wizard"*.

3. Click *"Next"* to start the verification procedure.

Milking cows

4. Milk at least *three* cows in verification mode, following the same procedure as in ⮜ Chapter 5.5 *"Performing a calibration procedure" on page 180*.

5. After three (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the verification milking

6. Alternatively, select *"No"* to finish the verification test.

7. A summary shows the verification test result and the average deviation between the results from the calibration procedure and the verification test:

   ▪ If the calculated average deviation is below 3%, the milk meters have passed the verification. Continue with ⮜ Chapter 5.9 *"Manually updating the milk meter parameters" on page 187*.

   ▪ If the calculated average deviation is above 3%, the milk meters have failed the verification. Additional cows must be milked in an extended calibration procedure. Continue with ⮜ Chapter 5.7 *"Performing an extended calibration procedure" on page 185*.

6.7 Performing an extended calibration procedure

Starting the extended calibration wizard

1. In AMS Service Tool, go to *"MS*
   ➔ *Calibrate MM27"*.

2. Click *"Start MM27 calibration wizard"*.

3. The calibration wizard loads the values from the existing calibration procedure data.

4. Click *"Start"* to start the extended calibration procedure.

Milking cows

5. Milk at least *six* cows in calibration mode, following the same procedure as in
   ⮑ *Chapter 5.5 "Performing a calibration procedure" on page 180.*

   ⇨ The new values are added to the values from the existing calibration procedure data.

6. After six (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the extended calibration milking

7. Alternatively, select *"No"* to finish the extended calibration test.

   ⇨ A summary of the extended calibration procedure lists the milk yields reported by the milk meters MM27 and the weighed (actual) value pairs.

8. Click *"Next"* and save the file.

Completed successfully

9. If the values are within a set tolerance, the extended calibration procedure is finished. The window "Completed successfully" is shown.

   9.1 Open the file and continue with
   ⮑ *Chapter 5.9 "Manually updating the milk meter parameters" on page 187.*

   9.2 To verify the values, do not remove the three tubes. Continue with
   ⮑ *Chapter 5.6 "Verifying the calibration according to the ICAR installation test" on page 184.*

Preventive maintenance

Inaccurate values

10. If the values are *not* within a set tolerance, the extended calibration procedure is unsuccessful and must be continued. The window "Inaccurate values" is shown.

    10.1 Click *"Yes"* to milk another cow or *"No"* to abort the extended calibration procedure.

    10.2 To milk another cow, continue from ⮡ step 8 *"Removing rest milk from the milk valve group" on page 181*.

    10.3 Continue milking cows and adding their value pairs until the extended calibration procedure finishes successfully.

    10.4 To abort the extended calibration procedure, remove the two tubes and restore the milking station to normal operation.

6.8 Verifying the extended calibration according to the ICAR installation test

1. Repeat the verification test. See ⮡ Chapter 5.6 *"Verifying the calibration according to the ICAR installation test" on page 184*.

2. After three (or more) cows have been milked, select *"Yes"* to milk another cow.

Finishing the verification milking

3. Alternatively, select *"No"* to finish the extended verification test.

4. A summary shows the extended verification test result and the average deviation between the results from the extended calibration procedure and the extended verification test:

- If the calculated average deviation is below 3%, the milk meters have passed the extended verification. Continue with ⮡ Chapter 5.9 *"Manually updating the milk meter parameters" on page 187*.
- If the calculated average deviation is above 3%, the milk meters have failed the extended verification. Replace the milk meters.

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Preventive maintenance

```
[root@MS1 config]# hardware 7 2
Which node number has the FF you would
like to work with? 101
...
Which parameter would you like to change?
1: Scale factor
2: Air messages sensitivity
3: Alcom address
4: Conductivity calibration factor with
known conductivity
5: Conductivity factor
6: Grams per pulse
7: Pulse width
8: Offset [g]
99: Exit
...
Your choice? 1
FF101 New Scale Factor ? 1.001
...
Your choice? 8
FF101 New offset [unit g] ? 13
```

(A)

(B)

(C)

Fig. 141: The menu `hardware 7 2.`

6.9 Manually updating the milk meter parameters

If the calibration wizard should become disconnected or another problem occurs, the milk meter parameters are saved.

To check or set the values manually, PuTTY can be used.

Note! *The calibration wizard is the preferred calibration method.*

1. Start PuTTY and connect to the milking station IP (e.g. `192.168.168.3`) on port `22` (SSH).

2. Log in as `vms`.

3. Type `hardware 7 2` and press [Enter].

4. Enter the node number `101` and press [Enter] to select the first milk meter.

5. Type `1`, press [Enter], and enter the `New Scale Factor`.

6. Type `8`, press [Enter], and enter the `New Offset`.

7. Type `99` and press [Enter] to exit the configuration page.

8. Repeat the procedure and enter the same values for the three remaining milk meters (with node addresses `102`, `103`, and `104`).

9. When finished, type `hardware 7 1` and press [Enter].

10. Verify that the parameters for all four milk meters have been updated.

Note! *After updating, the accuracy of the milk meter parameters must be verfied.*

![DeLaval logo]

7 Blood detection test for MM27

Preparations

1. On the GUI, switch to *"Manual (Closed Stall)"* mode.

2. Run a manual system cleaning and wait for it to finish. Alternatively, perform this task immediately after a scheduled system cleaning.
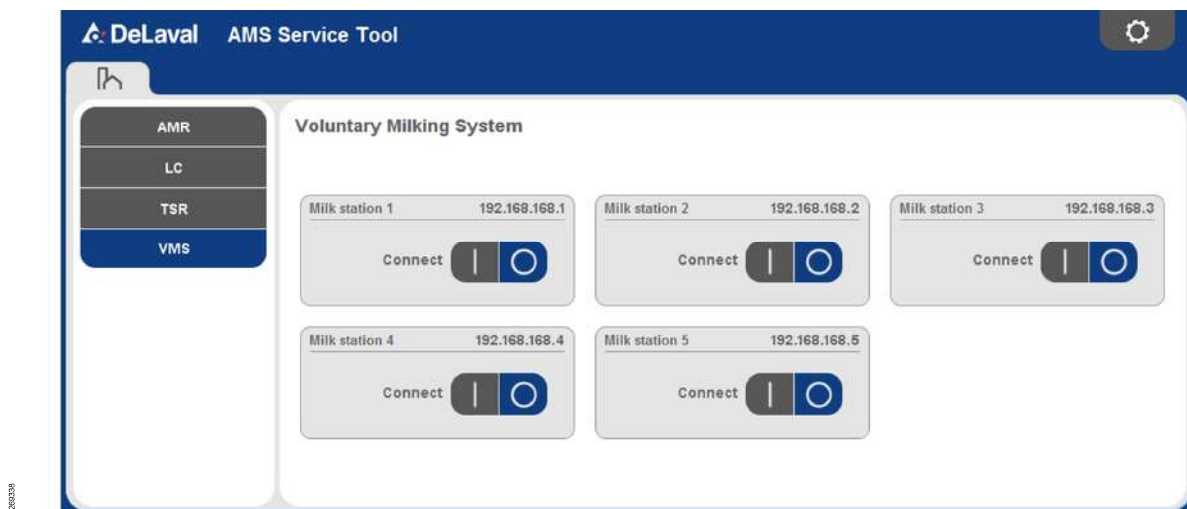
Starting the blood detection test wizard

Fig. 142: Available VMS V300 milking stations in AMS Service Tool.

3. Start AMS Service Tool and connect to the VMS V300 station.

4. On the robot mode box, press the [Lock] button 🔒.

5. In AMS Service Tool, go to *"Diagnostics ➜ Blood Detection"*.

6. Click *"Start blood detection wizard"*.

   ⇨ A welcome screen is shown.
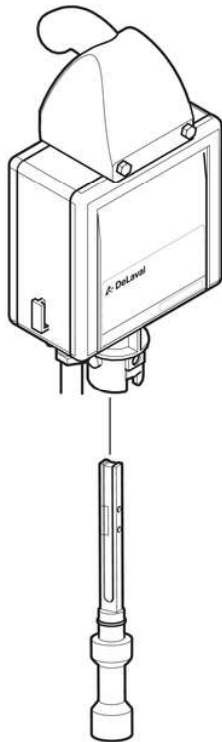
Preventive maintenance

Fig. 143: Inserting the (pink) blood detection test probe into the milk meter MM27.

Starting the blood detection test

7. Clean the test probe using mild detergent and water. Rinse and dry it.

   Note! *Even minor changes or deposits on the surface of the probe negatively affect the test result.*

8. Click *"Next"*.

9. Insert the test probe into the first milk meter.

   ⇨ After a few seconds, the milk meter alternates between `blOC`, a number value and `b. 21`, for example. The `b.` value is the blood measurement in parts per million (ppm). (`b. 21`, for example, equals 2100 ppm.)

10. Enter the value (`21`, for example) into the field *"MM1"*.

11. Remove the test probe.

12. Repeat the test with the remaining three milk meters MM27.

13. When all four test values have been entered, click *"Next"*.

    ⇨ A result window is shown.

Failed test

14. If the values lie outside of the allowed tolerances or differ too much from each other, the blood detection test has failed.

    ⇨ Contact DeLaval support.

Finishing the procedure

15. When all probe tests are done, refit the tubes to the milk meter outlets.