

Theme 7: Milking & milk Hygiene

TESTING & MAINTENANCE OF MILKING MACHINES (Level 3)

Topic	Milking& milk Hygiene
7.1	Instructions hand milking techno & hygiene
7.2	Instructions machine milking good practice
7.3	Problems during milking
7.4	Scoring of teat condition
7.5	Milk production recording
7.6	Calculation of costs hand vs machine milking
7.7	Which milking parlour to choose
7.8	Testing & maintenance of milking machines
7.9	Milking & cleaning routine in milking parlours
7.10	Storage & cooling of milk on farm



1. You will learn about (learning objectives):

- Know the importance of maintenance of milking machines
- Know how testing works
- Which parts should be checked
- What can a farmer do if there is an abnormality
- When should a farmer call in a technician



2. Introduction

The milking parlour is the most important machinery on a dairy farm because it is what you are using to get milk from the cow so that you can sell it.

That being said, it must be thoroughly cleaned and maintained properly so as to avoid spread of bacteria which can cause mastitis to the cows and thus affect milk production on the farm.

For these reasons, your milking machine must be regularly serviced and maintained.



3. Milking machine checks

To make sure your milking machine is working efficiently and not damaging your cows' teats, include these regular daily, weekly and monthly checks in your dairy management



4. Daily checks

Check the vacuum level

- Teats can be damaged when the vacuum isn't at the correct level. This should be: **48 - 50KPA**
- You should also be able to hear the vacuum regulator opening and closing when the cluster is attached to maintain a stable vacuum.



4.1. Check air admission holes are clear

- Air admission holes in the claw piece should be unblocked. Otherwise, milk will be removed more slowly from the claw, leading to large fluctuations in the vacuum. Liner slips can occur, and there will be milk in the liners when the cluster is being taken off. Unblock air admission holes using the proper tool.



4.2. Check teats as cups come off

- Check cows' teats as clusters are removed. If they're discoloured (either red or blue, congested or ringed), there may be a problem such as high vacuum, poor pulsation, over-milking or incorrect liner selection. You should investigate this.



4.3. Check cow behaviour

- Watch the cows when they're milking. If they're unsettled, this may indicate a problem with the milking machine.



4.4. Listen to the pulsators

- Pulsation should be regular. Listen to the pulsators and get the machine tested if they're out of sync.



5. Weekly checks

Check for twisted liners

- Ensure liner markings on the hood and short milk tube are aligned.



5.1. Check filters on pulsator airlines

- Keep the filter on the pulsator airline clean and ensure the pulsation characteristics are satisfactory.



5.2. Listen to the regulator

- When milking, make sure the regulator is admitting air; you should hear a hissing sound. The volume of air should reduce when clusters are attached.



5.3. Check drain valves on the Vacuum line

- The drain valve on the vacuum line should be opened when the milking machine has stopped working. Any milk or water coming from this vacuum line after milking suggests a cracked liner or pulsation tube.



5.4. Check vacuum pump oil system

- Ensure that the nozzles of the oil system aren't blocked for easy flow of oil to the vacuum pump. This lubricates the parts inside the vacuum pump and ensures the vacuum pump is running well. If it's blocked please call a technician to rectify the problem



5.5. Check liner condition

- You should change liners every 2,500 milkings. The technician in charge of servicing the parlour should calculate and tell you when the liners should be replaced depending on the size of the herd and size of the milking parlour.
- **Note:** Liners must be in good condition, as they're the only part of the machine that come into direct contact with the cows' teats. When they're worn, they lose their shape and don't massage the teat correctly, resulting in longer milking times and reduced yields. Worn liners are also a source of bacteria, as they hide in the cracks in the liner.



6. Monthly checks

Check milking times

- The 'milking time' is the time it takes to milk one cow. It will depend on cow yields, but from milk let-down to finish, it will usually be 5 to 7 minutes.



7. Milking machine testing

Routinely servicing and maintaining your milking machine keeps it working effectively and reliably. It also helps reduce the risk of faults developing and inconvenient breakdowns.

The correct vacuum levels, pulsation rate and ratios are essential to remove milk efficiently without damage to the teat or udder. You can check these by performing a static milking machine test.

This service should include:

- Static test monitoring of the system vacuum level
- Pulsation operation
- Vacuum pump output
- Vacuum leakage

The service will probably include service kits for pulsators, milk pump and vacuum pump, milk tubes. You should also arrange a test with a technician if you notice any abnormalities. Looking at teat condition (teat ends and colour) and cow behaviour while you're milking will give you a lot of information about how the milking machine is working.



8. Types of milking machine tests

Milking machine tests can be classified into different types:

Dry tests, wet tests and milking-time tests.

These tests are carried out by a technician.

1. Dry tests

Dry tests are conducted with the machine running but not milking, and with

only air flowing through the machine. This type of test has been described

loosely, but incorrectly, as “static testing”. Examples of dry tests include

vacuum levels and vacuum fluctuations in various parts of the system,

vacuum pump and reserve capacity, and testing of pulsators.



8.1. Types of milking machine tests. Cont'd..

2. Wet tests

Wet tests are performed with the machine running without milking the cows, but having both air and liquid (water) flowing through the machine. Examples of wet tests include vacuum

level and fluctuations in pipelines and clusters, vacuum drop across

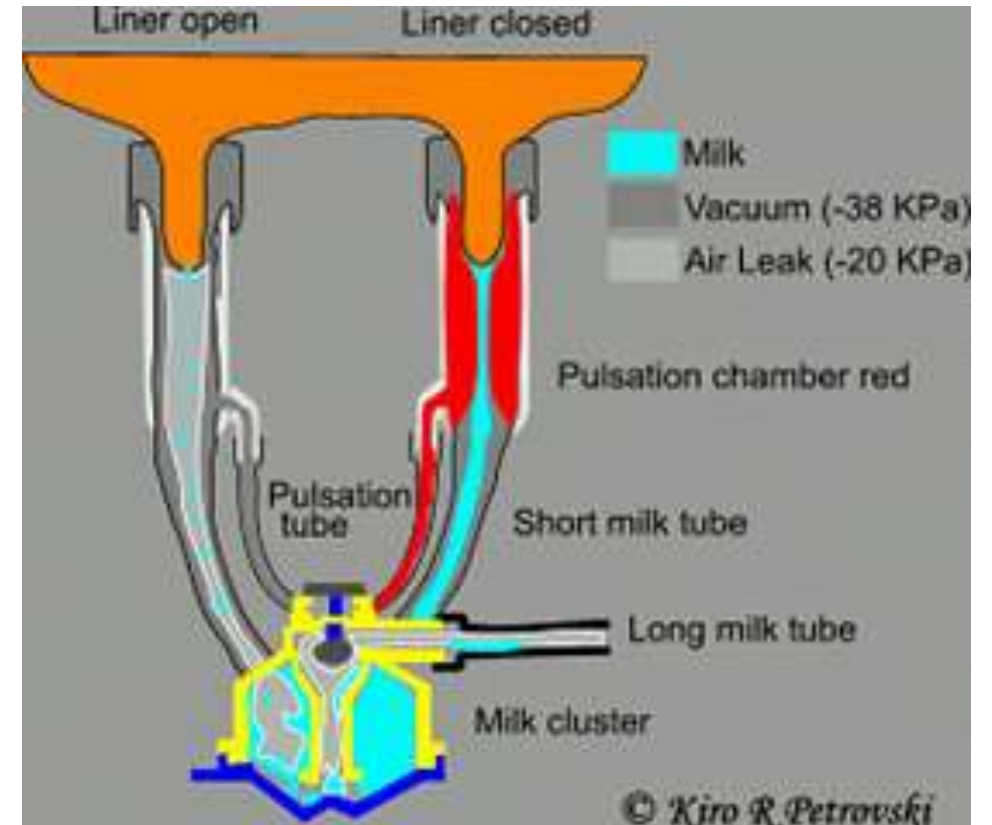
components, measurement of liquid discharge rate from a releaser milk pump.

3. Milking-time tests

Milking-time tests describe measurements or observations made while

milking cows. The results of milking-time tests are the best and most direct

indicator of the performance of any milking system .



9. Milking machine test report

The Test Report is used mainly to record the required performance tests. These will include airflow and vacuum readings, vacuum pump and releaser milk pump tests and tests of the machines vacuum gauge level and fluctuations in pipelines and clusters, vacuum drop across components, measurement of liquid discharge rate from a releaser milk pump.

The Test Report should also show pulsation tests

Summary

The Summary form is used to record recommendations for each fault identified in the visual observations and/or test report observations.

Recommendations should be brief but clear enough for the farm manager



MILKING MACHINE TEST REPORT

Name of the farm

Address

Date

Number of Units

Testers signature

Vacuum and air flow tests

Pulsation tests

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Liners

Faults

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Recommendations

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10. How often should the milking machine be serviced?

A milking parlour will usually need service at least twice a year, to ensure it is working well. But in case of any abnormality, the farmer should let the technician know so that they can troubleshoot and rectify the abnormality at hand.

A milking machine test should be carried out at least twice a year by an independent, suitably qualified technician.

