Maintenance and Monitoring of Milking Equipment on the Dairy Farm

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MQ-IQ Consulting
Intelligence for a Quality Milk Harvest
Routine Preventive Maintenance

Parlor breakdowns are extremely expensive

Regular maintenance reduces Emergency Breakdowns

Every parlor needs 3 Notebooks
Routine Preventive Maintenance

3 Notebooks

1. Owner’s Manual (for the entire milking system)

2. Routine Maintenance Manual (Troubleshooting/12 Month Calendar)

3. Maintenance Log Notebook (carbonless duplicate pages)
# Maintenance of Milking Equipment

## 1. Owner’s Manual (paper or digital)

Manufacturer’s Instruction Manual for each parlor component

<table>
<thead>
<tr>
<th>Parlor Component</th>
<th>Description</th>
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<tbody>
<tr>
<td>Vacuum pump</td>
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<tr>
<td>VFD/Regulator</td>
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<tr>
<td>Master controller</td>
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<td>Milk pumps</td>
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<td>Pulsation controller</td>
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<td>Pulsators</td>
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<td>Claw</td>
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<td>Shell &amp; Liner</td>
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<td>Rubber goods</td>
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<td>ACR’s/ Detachers</td>
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<td>Meters</td>
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<td>Plate Cooler</td>
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<td>Bulk Tank</td>
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<td>Refrigeration system</td>
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<td>CIP controller</td>
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<td>Computer program</td>
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<td>Misc. equipment</td>
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</table>
2. Routine Maintenance Manual  (paper or digital)

A Master Spreadsheet for routine maintenance & frequency

For each component listed in the Owner’s Manual

This spreadsheet must be in the front for easy reference

A Troubleshooting Flow Chart

To speed up the diagnosing of malfunctioning equipment

More consistent repairs (dealer or in-house serviceman)
2. Routine Maintenance Manual (paper or digital)

Installation Company’s specific instructions
Install technician’s experiences with certain components
Install technician’s instructions based on system design

12 Month Scheduled Maintenance Calendar
Required service/regular parts replacement (rubber goods; gaskets)
Identifies WHO is responsible for each event
# Maintenance of Milking Equipment

## 12 Month Scheduled Maintenance Calendar (example)

### Milking System Scheduled Service Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
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<td>Pulsator Rebuild and Graph</td>
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<td>Milking Claw Gasket Rebuild</td>
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<td>Milk Pump Seal Replacement</td>
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<td>Parlor Stall Grease</td>
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<td>Parlor Stall Operation Test and Check for Leaks and Cracks</td>
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3. Maintenance Log Notebook (paper or digital)

For each parlor...including “Treated/Fresh Cow” parlors

2 or 3 page carbonless forms

Specific columns with room to write comments

Date, technician, specific problem, diagnosis, specific repair / parts

Follow up instructions, additional repairs/parts, other suggestions
3. Maintenance Log Notebook (paper or digital)

Everything done to the parlor must be written down!

This notebook must be kept where every repair person can use it.

1 copy page must be maintained by equipment company.

Routine pulsator and air flow analysis results are recorded here.

The repair/testing technician must sign and date each entry.
Maintenance of Milking Equipment

Standard Maintenance Schedule

Clean regulator / traps/ pop-off/ flush lobe pumps – monthly

Clean & Rebuild Pulsators - 2500 hours direct style

- 4500 hours in-direct style

Tubing / Gaskets - rubber 6 months

- silicone 12 months

Liners - 1200 – 10,000 milking range (based on liner recommendations

- minimum 90 washings (small herds)

Clean & Re-kit Claws – every 3-6 months
Monitoring of Milking Equipment

Routine Parlor Performance Monitoring

NMC “Procedures for Evaluating Vacuum Levels & Air Flow in Milking Systems”

This document details the exact steps to monitor a milking system.

Routine vacuum & pulsation monitoring are essential.

Use the NMC “Milking System Evaluation Form” as a guide.
Standard Monitoring Schedule

**Biannual*** - complete system evaluation w/ milking time testing

- measure Effective & Manual reserve

**Monthly*** - measure “Vacuum Regulator Efficiency”
- measure vacuum levels w/ milking time testing
- perform “Unit Drop Off” test
- graph pulsators

* - parlors running +18 hrs./day need more frequent evaluation

- parlors running 24 hrs./day = 8760 hrs./year
Standard Monitoring Schedule

Weekly*
- measure vacuum levels
- perform “Unit Drop Off” test
- graph pulsators
- record “Hz“ reading on VFD

* - parlors running +18 hrs./day need more frequent evaluation
- parlors running 24 hrs./day = 8760 hrs./year
Standard Monitoring Schedule

Monthly Milking Time Testing

- 8-12 claw vacuums / pulsator graphs during milking
- use the average claw vacuum @ peak flow to set system vacuum levels

Weekly
- measure receiver operating vacuum (ROV) levels for 10 – 15 minutes
- perform “Unit Drop Off” test during milking (1-2 units)
- graph all pulsators with teat plugs in place and units turned ON
- record Hz reading on VFD
Standard Monitoring Schedule

Biannual
- full milking system air flow analysis
- Effective & Manual Reserve test

Immediately perform a Full Air Flow Analysis
- when the system FAILS the Unit Fall-Off test
- when the ROV changes or varies more than 2 kPa
- pulsators vary more than 3 cycles / min or have Limps > 2%
Questions