



AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

The Irish Agriculture and Food Development Authority

Milk Quality Workshop

9th December 2014

IMQCS Training Programme

Tom Ryan, Teagasc

The Irish Milk Quality Co-Operative Society (IMQCS)

- Established in 1989 to improve standards of installation, servicing and testing of milking machines
- Committee: ICOS, milking machine technicians, milking machine manufacturers and Teagasc
- ICOS provide a chairman and secretary
- Teagasc carries out the training programme
- In recent years, IMQCS has focussed on broader areas of milk quality as well as providing training and certification of the technicians.

IMQCS Milking Machine Training

- Training and certification of milking machine technicians, milk quality advisers, Teagasc staff, Vets, electricians, farmers, etc.
- The course covers installation and testing of milking machines to ISO standards
- Teagasc carries out the training on behalf of IMQCS. IMQCS secretary administers IMQCS activities
- One or two training courses a year
- Course assessment : written exam (mostly online) and

IMQCS Milking Machine Training

- Course participants are obliged to carry out a milking machine test and complete an IMQCS test report sheet for 5 milking machines on farms and submit these for assessment
- A maximum of 16 participants are allowed per course.
- The course fee is €750. Skillnet funding is available, at present, at €375 per course participant



IMQCS Register

- IMQCS maintains a register of trained and certified milking machine technicians.
- The register is updated annually.
- At present there are about 227 on the register.
- The register can be viewed on the www.milkquality.ie
- Annual registration fee of €100
- A refresher course/seminar is mandatory every two years.

Irish Milk Quality Co-Operative Society Ltd.

Tuesday, July 16, 2013

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Welcome to milkquality.ie

The Irish Milk Quality Co-operative Society has its registered office at 84 Merrion Square, Dublin 2.

The organisation was incorporated in 1989 with the aim to improve milk quality standards in Ireland and to ensure that Irish milking machine installation and testing standards equate with the best international standards.

The IMQCS interprets the ISO international standards on milking equipment for use in Ireland and defines further additional recommendations.

The organisation maintains a list of milking machine technicians which have undergone approved training and certification.



-IMQCS-

www.milkquality.ie

Teagasc/IMQCS Recommendations for the installation and the testing of milking machines

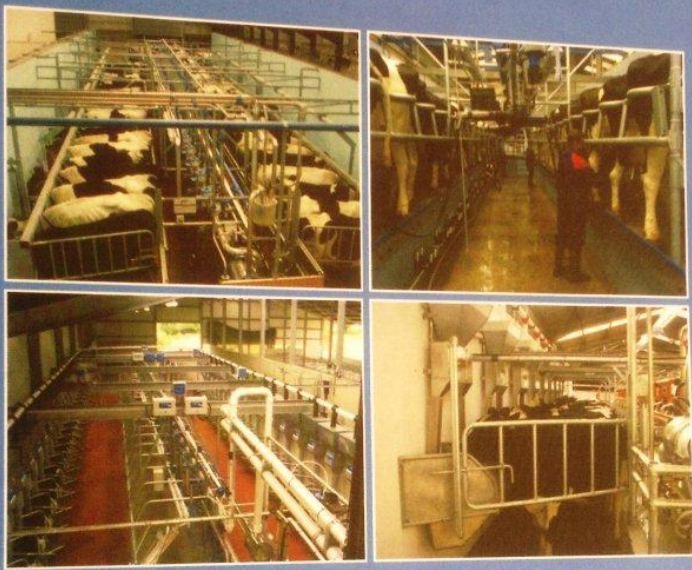


IMQCS
committee
produced this
booklet
- a user
friendly
manual based
on the
relevant ISO
standards

teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY



IMQCS Milking Machine Test Report



Refer to the booklet "Teagasc / IMQCS Recommendations for the installation and the testing of milking machines" and the associated test procedures for the test procedures.



IMQCS MILKING MACHINE TEST REPORT

Name _____ Address _____
 Date _____ Plant Type _____
 No. of units _____ Tester's Signature _____

IMQCS Reg. no. **37751**

Vacuum and Airflow Test Results

1. Working vacuum at Vm; machine in the milking position (liners plugged) _____ kPa
 Working vacuum recommended with the machine in the milking position (liners plugged) _____ kPa
- 1a. Working vacuum at Vr; machine in the milking position (liners plugged) _____ kPa
- 1b. Working vacuum at Vp; machine in the milking position (liners plugged) _____ kPa
- 1c. Vacuum in the milking system at Vm; machine ready for milking _____ kPa
- 1d. Plant gauge vacuum level; machine ready for milking _____ kPa
- 1e. Vacuum near plant vacuum gauge at Vr; machine ready for milking _____ kPa
- Plant vacuum gauge accuracy (1d-1e) _____ kPa
2. Pump capacity; AFM direct to pump, test gauge at Vp _____ l/min
- 2a. Pump capacity at 50kPa; AFM direct to pump, test gauge at Vp _____ l/min
- 2b. Pump speed _____ rpm
 Estimated pump capacity required _____ l/min
3. Airflow with vacuum system; machine in the milking position (liners plugged), airline only added, regulator(s) plugged, test at A2 and Vr or Vp follow procedures in 10.7 of Teagasc/IMQCS Manual
 Airline leakage (2-3) _____ l/min
4. Airflow with milk system added; machine in the milking position (liners plugged), close claw air admission; test at A2 and Vr or Vp
 Milking system leakage (3-4) _____ l/min
5. Airflow with air admission at claws open; machine in the milking position (liners plugged), test at A2 and Vr or Vp
 Claw air admission (4-5) _____ l/min
6. Airflow with ancillary equipment connected to milking added, machine in the milking position (liners plugged), test at A2 and Vr or Vp
 Milking system ancillary equipment usage (5-6) _____ l/min
7. Airflow with pulsators added; machine in the milking position (liners plugged), test at A2 and Vr or Vp
 Pulsation usage (6-7) _____ l/min
8. Airflow with ancillary equipment connected to airline added; machine in the milking position (liners plugged), test at A2 and Vr or Vp
 Airline ancillary equipment usage (7-8) _____ l/min
9. Manual reserve; machine in the milking position (liners plugged), regulator(s) plugged, drop vacuum 2kPa below no. 1, test at A1 and Vm _____ l/min
10. Effective reserve; machine in the milking position (liners plugged), regulator(s) added, drop vacuum 2kPa below no. 1, test at A1 and Vm _____ l/min
- Regulation loss (9-10) _____ l/min
 Note: Test 16 and 17 must be carried out at routine testing if "Regulation Loss" exceeds 35 litres or 5% of manual reserve, whichever is greater
- Required effective reserve _____ l/min
- Required cleaning reserve _____ l/min
11. Regulation sensitivity (1c-1) _____ kPa
12. Exhaust back pressure (positive pressure); test gauge at Pe _____ kPa
13. Fall-off/attachment vacuum drop; open one unit per 32 units
 Regulation undershoot _____ kPa
14. Regulation undershoot _____ kPa
15. Regulation overshoot _____ kPa
16. Airflow without regulator(s); machine in the milking position (liners plugged), regulator(s) plugged, drop vacuum 2kPa below 1a, test at A1 and Vr _____ l/min
17. Airflow with regulator(s); machine in the milking position (liners plugged), add regulator(s), drop vacuum 2kPa below 1a, test at A1 and Vr _____ l/min
- Regulator leakage (16-17) _____ l/min

Pulsation Test Results

Rate c/min	Max	Min
"b" phase vacuum kPa	Max	Min
Ratio "a+b" % or ms	Max	Min
"a" value % or ms	Max	Min
"b" value % or ms	Max	Min
"c" value % or ms	Max	Min
"d" value % or ms	Max	Min

Pulsation printout attached: yes/no _____
 Simultaneous or Alternate _____
 Limping (< 5%) _____

Liners

Make and identification no. _____
 Calculate date of next liner change _____

Faults

Recommendations

Field Type must always be filled in. Complete tests 9 and 10 or test 13. The result of 13 may be difficult to interpret for milking machines with less than 14 units. Check the "a" phase and "d" phase vacuum levels on the pulsation graphs.



IMQCS MILKING MACHINE TEST REPORT

Name _____ Address _____
 Date _____ Plant Type _____
 No. of units _____ Tester's Signature _____ IMQCS Reg. no. **37751**

Vacuum and Airflow Test Results

- | | |
|--|---|
| <p>1. Working vacuum at Vm; machine in the milking position (liners plugged) _____ kPa
 Working vacuum recommended with the machine in the milking position (liners plugged) _____ kPa</p> <p>1a. Working vacuum at Vr; machine in the milking position (liners plugged) _____ kPa</p> <p>1b. Working vacuum at Vp; machine in the milking position (liners plugged) _____ kPa</p> <p>1c. Vacuum in the milking system at Vm; machine ready for milking _____ kPa</p> <p>1d. Plant gauge vacuum level; machine ready for milking _____ kPa</p> <p>1e. Vacuum near plant vacuum gauge at Vr; machine ready for milking _____ kPa
 Plant vacuum gauge accuracy (1d-1e) _____ kPa</p> <p>2. Pump capacity; AFM direct to pump, test gauge at Vp _____ l/min</p> <p>2a. Pump capacity at 50kPa; AFM direct to pump, test gauge at Vp _____ l/min</p> <p>2b. Pump speed _____ rpm
 Estimated pump capacity required _____ l/min</p> <p>3. Airflow with vacuum system; machine in the milking position (liners plugged), airline only added, regulator(s) plugged, test _____ l/min</p> | <p>6. Airflow with ancillary equipment connected to milkline added, machine in the milking position (liners plugged), test at A2 and Vr or Vp _____ l/min
 Milking system ancillary equipment usage (5-6) _____ l/min</p> <p>7. Airflow with pulsators added; machine in the milking position (liners plugged), test at A2 and Vr or Vp _____ l/min
 Pulsation usage (6-7) _____ l/min</p> <p>8. Airflow with ancillary equipment connected to airline added; machine in the milking position (liners plugged), test at A2 and Vr or Vp _____ l/min
 Airline ancillary equipment usage (7-8) _____ l/min</p> <p>9. Manual reserve; machine in the milking position (liners plugged), regulator(s) plugged, drop vacuum 2kPa below no. 1, test at A1 and Vm _____ l/min</p> <p>10. Effective reserve; machine in the milking position (liners plugged), regulator(s) added, drop vacuum 2kPa below no. 1, test at A1 and Vm _____ l/min
 Regulation loss (9-10) _____ l/min
 Note: Test 16 and 17 must be carried out at routine testing if "Regulation Loss" exceeds 35 litres or 5% of manual reserve, whichever is greater</p> <p>Required effective reserve _____</p> <p>Required cleaning reserve _____</p> <p>11. Regulation sensitivity (1c-1) _____</p> <p>12. Exhaust back pressure (positive pressure); test gauge at Pe _____</p> <p>13. Fall-off/attachment vacuum drop; open one unit per 32 units _____</p> <p>14. Regulation undershoot _____</p> |
|--|---|

Bold items are mandatory for routine tests



Test report books and the service checklist are supplied free of charge



IMQCS SERVICE CHECKLIST

22001

Name: _____ Address: _____
 Date: _____ Plant Type: _____
 No. of units: _____ Farmer's Signature: _____ IMQCS Ref. No.: _____

Item Checked	Correct		Not Correct	
	Yes	No	Yes	No
Test Points Are test points and testable valves for measuring airflow and vacuum present and correct?				
Washdown Pump Is the tank space filled and in good condition? Is the pump working correctly for and adequate substitution? Are the hoses and control cable in good condition? Are safety valves set and correct, non-adjustable safety valves, not?				
Interceptor Is gasket on lid satisfactory? Is automatic drain valve present and functioning correctly? Does the interceptor appear to be clean? Is the shut-off flap functioning correctly? Does water level (observing an inlet) show correct?				
Down Airline Is the down airline clear internally? Is there an adequate compression fit in the main airline and in the correct direction towards a tank? Is the main airline rigidly fixed? No obstruction of compression of wireless pipe?				
Washdown Receiver Are the air control valve and water heating valve? Are the components in good condition? Does a service kit exist? Is the regulator rigid and complete? Is the regulator correctly fixed for satisfactory operation and safe service?				
Secondary Trap Is gasket on lid satisfactory? Does the lantern flap appear to be clean? Is drain waterback valve functioning correctly? Is the shut-off flap functioning correctly?				
Pulsator Airline Is the pulsator drain valve present and functioning correctly? Is the pulsator airline clean internally? Is there an adequate compression fit in the pulsator airline and in the correct direction? Is gasket sealing rigidly fixed? Is there a lip at the end of the pulsator airline for washing purposes?				
Pulsator Are pulsator rings clean? Have the pulsator rings been changed according to service intervals? Is the clean airline present and functioning correctly? Are filters on air supply to rings clean and free from unnecessary restriction? Is the clean airline free from debris and excessive moisture? Are pulsator and ring tubes in good condition and without restriction or block? Are electrical connections in good condition and free from corrosion?				
Washdown Tubing Condition Are long wash tubes satisfactory? Are long under tubes satisfactory and free from excessive kinks? Are short under tubes satisfactory? Are long and short under tubes satisfactory? Are under or under-recessed satisfactory? Are wash transfer tubes from secondary jets satisfactory? Is the rubberware satisfactory? Is rubber tubing without restrictions?				
Long Pulse Tube Bore Minimum of 10mm? Maximum of 10mm? Minimum of 10mm? Maximum of 10mm?				
Test Is system clean internally? Is the air compressor fully opened? Is the drain pump, regulator, regulator and shut-off valves satisfactory? Is the test water has been changed at service intervals?				

Item Checked	Correct		Not Correct	
	Yes	No	Yes	No
Logic Have the tests been checked at recommended intervals (2000 or 4000 hrs)? No tests or O/M or tests or done, safe subject? Are the automatic substitution engaged correctly? Are lines suitable for the plant? Are lines adequately lagged or covered?				
Logic Milk Lines Are long milk lines free from excessive bends? Is the work of hand 1.5mm bar not greater than 1.5mm?				
Milkline Milkline leads into the top or top flange of milkline and stopped correctly? Is there an adequate compression fit in the milkline towards the aerial? Has the milkline terminal at right height and rigidly supported? Is drainage tap at each low point working satisfactorily? Is compressed air in line to purge milkline in correct direction?				
Receiver Air Are receiving jets free from water? Are the hand valves functioning correctly? Are pulsator pressure valves closed free of obstruction? Are other pulsator parts in good condition?				
Pulsator Cluster Elements (ACE) Are main valve opened or closed, i.e. adequate pulling power in the test? Are the ACE seals in good condition? Does the pulsator shut-off return the ACE to the off position? Are ACEs removed and tested according to the manufacturer's instructions?				
Milk Meters Are the meter pillars rigid in good condition? Has a service kit been fitted? Have the meters been calibrated?				
Overrun Valves Have the diaphragms been changed in accordance with the manufacturer's service intervals?				
Control Valve Pump Wet a new seal to the return valve thread? Is the return valve in good condition? Is the wiring in good condition? Are all unions and joints tight and leak free?				
Diaphragm Milk Pump Are belts tight and in good condition? Are pulleys tight, aligned and in good condition? Is there adequate oil in pumps in actual? Is the pump fitted correctly? Record strokes per minute Are return valves oil? Manual float level/variable speed working correctly? Is diaphragm in good condition? Are all unions and joints tight and leak free?				
Vacuum Gauge Is vacuum gauge visible during milking? Is the vacuum gauge reading zero when stopped? Is the red pointer set to the recommended vacuum level?				
Washline Are points into washline into the top or top flange?				
Jitters Are jitters themselves clean and without obstructions?				
Autowasher Are autowasher tubes and pumps in good condition? Is the autowasher functioning to the manufacturer's guidelines? Has the autowasher been calibrated by dosing volume?				

Ensure proper milk filtration and cooling



Milking machine training facility Kildalton



Existing training room



Existing training room



Existing training room



New milking machine training room



Far end and right of room for three more training milking machines

New milking machine training room



New 4 unit
DeLaval
milking
machine
being
installed



 DeLaval



DeLaval
S
CE











DAIRYMASTER
FOOD QUALITY
AIR PURGE
SYSTEM

DAIRYMASTER
POWER SUPPLY

DAIRYMASTER
AUTOWASHER POWER SUPPLY
AND EQUIPMENT INTERFACE

DAIRYMASTER
AUTOWASHER POWER SUPPLY
AND EQUIPMENT INTERFACE
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DAIRYMASTER



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