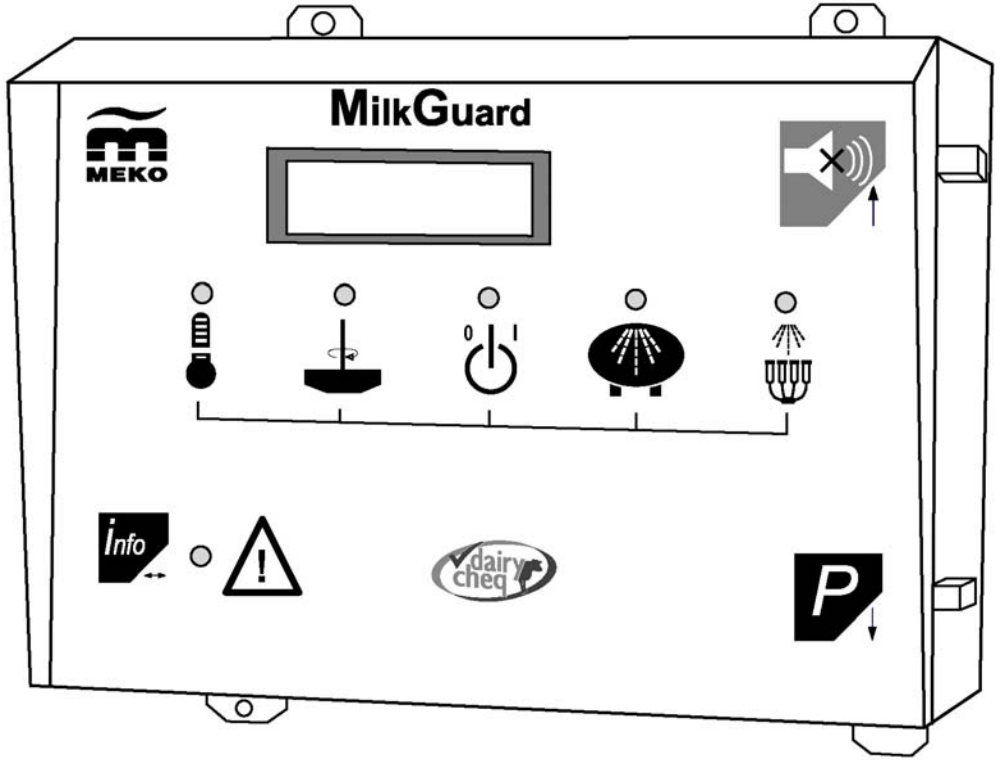
User Manual / Manuel utilisateur
V1.0



dairy cheq MilkGuard™

PREFACE

Thank you for having installed the Dairy Cheq Milkguard. We are confident that the Dairy Cheq Milkguard will exceed your expectations. Our products have been designed for maximum performance, sound operational safety and a long life. First and foremost, the Dairy Cheq Milkguard has been designed to monitor milk storage on a universal range of tank types and sizes.

Designed for the North America, the Dairy Cheq Milkguard is manufactured by Meko Holland B.V. Meko has been manufacturing and selling MilkGuards for over 20 years.

This manual is intended for the end-user of the Dairy Cheq Milkguard. The concise Quick Reference Chart in Appendix B provides brief hands-on instructions while the manual provides detailed information on working with and looking after the Dairy Cheq Milkguard as well as important safety instructions.

The Dairy Cheq Milkguard User Manual is in addition to the user instructions provided with your existing milk harvesting, cooling and storage equipment.

Advice:

- *Hang the Dairy Cheq Milkguard Quick Reference Chart in a clearly visible place near the Dairy Cheq Milkguard.*
- *Keep this user manual in a dry area near the Dairy Cheq Milkguard for quick reference.*
- *Always make sure the main power supply to the Dairy Cheq Milkguard has been turned off before proceeding with any repairs or maintenance work.*

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1 - Introduction

The Dairy Cheq Milkguard monitors such aspects as the temperature conditions of the milk during storage, the agitation conditions in the tank, as well as the various conditions during the tank and pipeline cleaning.

The Dairy Cheq Milkguard should be mounted in an area that is clean and dry. Avoid cleaning the Dairy Cheq Milkguard using running or pressurized water.

The area in which the Dairy Cheq Milkguard is installed must be properly ventilated, clean, relatively free from dust and must not be subject to aggressive or corrosive gases or other substances. The relative air humidity should be between 10 and 90%. The power supply should at all times comply with the specifications shown in Appendix C.

The Dairy Cheq Milkguard should not be put to any other use that is not expressly included in this manual in order to prevent unforeseen risks.

Dairy Cheq Inc, and Meko Holland B.V. will not assume liability for any adjustments or alterations made in terms of the function, the principle or the operation of the Dairy Cheq Milkguard. Such alterations are the sole responsibility of the person making the alterations. Failure to comply with these terms and conditions will render any claims of warranty or liability towards the supplier null and void. Please consult your warranty.

The dairy farmer or producer will remain responsible for the proper cleaning of equipment, storage of the milk in the tank and, consequently, the milk quality. For this reason it is important to take adequate notice of all error indications from the Dairy Cheq Milkguard. It is recommended that after each milking session, the milk temperature be checked and after each cleaning process, the inside of the tank be inspected to ensure that it is clean.

The significant feature of the Dairy Cheq Milkguard is its ability to provide both Producer Warnings and Regulatory Alarms and present those warnings and alarms audibly and visually.

A **Producer Warning** is a powerful management tool for the Producer. In this situation, the Dairy Cheq Milkguard alerts the producer to situations that may result in a Regulatory alarm with enough time for the Producer to take corrective action before the situation deteriorates further.

The **Regulatory Alarms** are controlled by parameters set by local authorities on milk quality.

Abbreviations used in this document:

TCIP	Tank Clean In Place
PCIP	Pipeline Clean In Place
DHI	Dairy Herd Improvement
LED	Light Emmiting Diode
MG	MilkGuard
BTMG	Bulk Tank Milk Grader

2 - MilkGuard Functions and Operations

2.1 General Information:

The lights on the front panel display the condition of the milk tank. The light at the bottom left on the front panel provides an indication whether there is reason for the BTMG (Bulk Tank Milk Grader) driver to be extra vigilant in grading the tank of milk.

There are 3 buttons on the front panel display:

- At the top right next to the display is the acknowledge alarm button; this button allows you to acknowledge various alarms and turn the buzzer off.

- At the bottom left on the front panel you will find the Info button. This button allows you to call up specific menus directly on the display. The first menu selection shows all the regulatory BTMG alarms after the tank was last emptied. Also, other menu options include both producer warnings as well as regulatory alarms, the current time, the last time change and the milking times recorded for the last 18 milkings for DHI (Dairy Herd Improvement) purposes. In addition, all the alarms from last week can be shown as well.

- At the bottom right of the front panel there is a Program key. This key provides access to the internal menu of the Dairy Cheq Milkguard, which is where the producer settings and time settings can be adjusted.

2.2 Producer Warnings and Regulatory Alarms:

The Dairy Cheq Milkguard records temperature and time, determines if there is a milk cooling, storage or wash problem and then provides an alarm to warn the producer. When the milk storage and wash equipment functions well, an alarm will rarely occur. If a problem is detected, a light on the front of the Dairy Cheq Milkguard shows which function had the problem while the display shows the associated time and temperature. The descriptions below show the ways the Dairy Cheq Milkguard alerts producers to a problem. If a problem is detected, take immediate action to solve the situation.

The MilkGuard is capable of producing two indications for a specific problem. A producer warning often occurs first to warn the producer of a situation which is out of acceptable range. This is indicated with a flashing green light with the display showing the warning in lower cased letters. If the problem exceeds the producer warning limits, a regulatory alarm will occur. This is indicated with a red light and the display showing the alarm in capital letters. Only regulatory alarms are stored for BTMG information purposes.

How the MilkGuard alerts you to a problem

MilkGuard Lights

Producer Warnings

	Green on
	Green blinking

Regulatory Alarms

	Red on
	Red blinking

	Off

Auxiliary Light

	blinking

	on

	Off

Buzzer

	on

	off

To acknowledge and turn off buzzer

	Push alarm button

2.2.1 Milk Cooling and Storage Temperature function

If the milk is at the correct temperature, the temperature light will be solid green. At the first milking, the light is off when the temperature is above 5.0ºC/41ºF but still within the allowed cooling time frame, calculated from the end of the milking. Once the milk has been cooled to the correct temperature, the light will become solid green.

Possible situations detected by this function are:

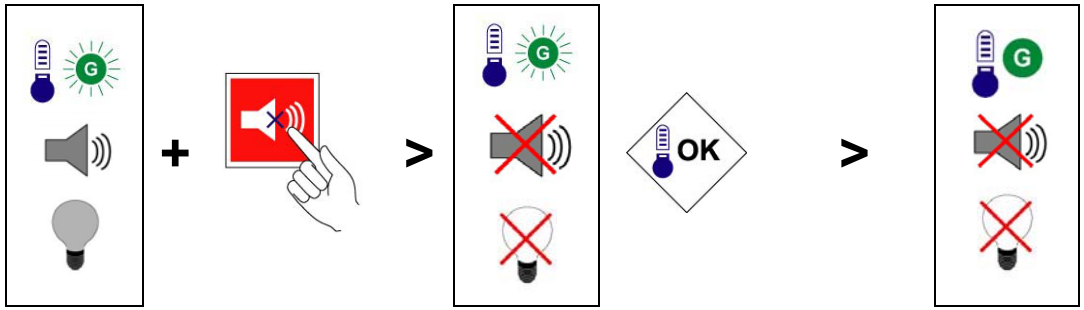
A) Slow cooling alarm – Producer Warning

slow cooling

If the Dairy Cheq Milkguard predicts that after completion of milking, the milk temperature will not drop to below 5.0ºC/41ºF in the time allowed, this warning will occur.

or

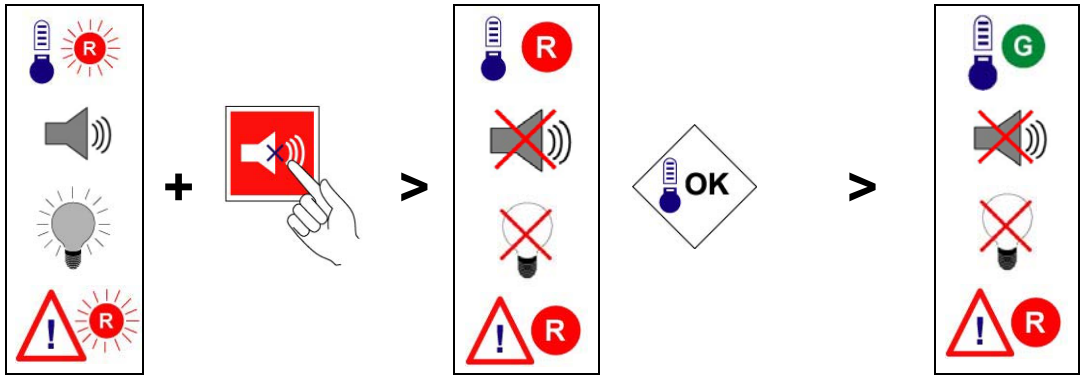
This alarm occurs when the temperature remains above 5.0ºC/41ºF for longer than 15 minutes, and no agitation has been detected.



REGULATORY ALARM:

***SLOW COOLING**

This alarm occurs when the milk temperature has remained above 5.0ºC/41ºF for more than 2 hours after the first milking session and more than 1 hour after the second and subsequent milking sessions.

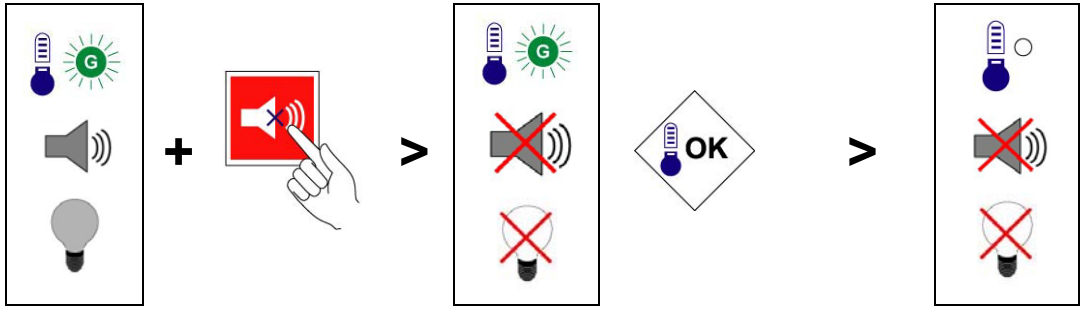


B) High blend temperature alarm

Producer warning

High blend temp

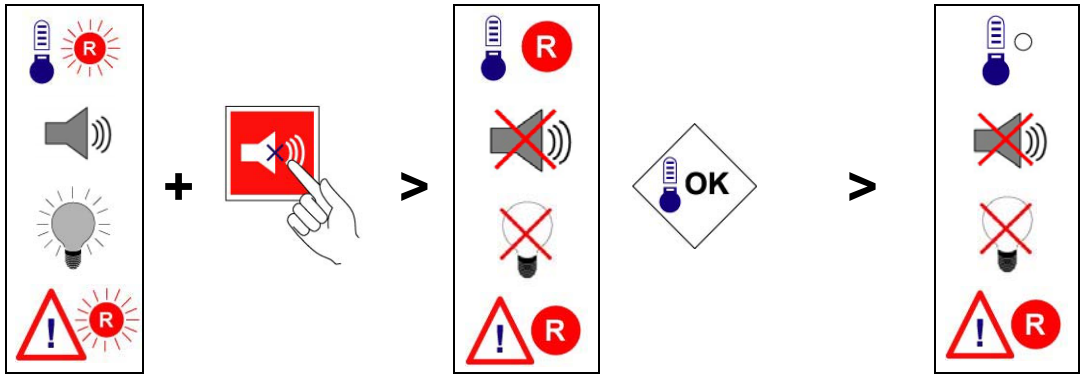
If the milk blend temperature for the second and subsequent milkings reaches the temperature set in menu 3 for longer than 15 minutes, this warning will occur. To change this setting, refer to the section on “Changing Producer Settings”.



REGULATORY ALARM:

***HIGH BLEND TEMP**

This alarm occurs when the milk blend temperature reaches 11.0 ºC/51.8ºF for more than 15 minutes for 2nd and subsequent milkings.

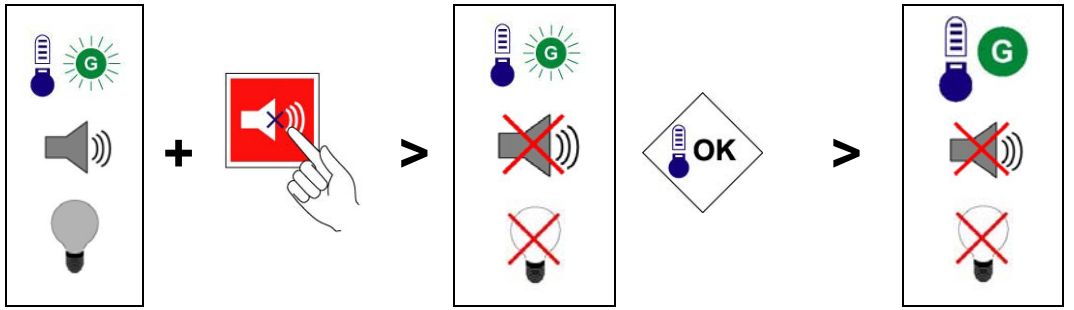


C) Low milk temperature alarm

Producer warning

Temp too low

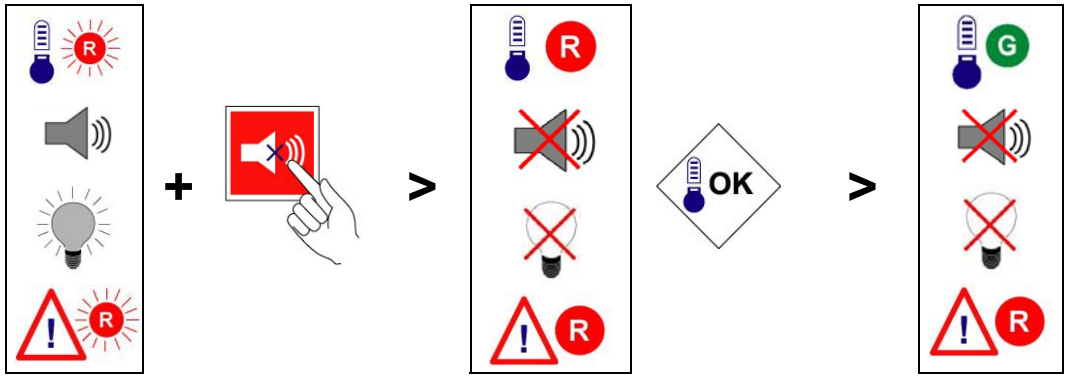
This warning occurs when the milk temperature is below 1.0 ºC/33.8ºF for longer than 15 minutes.



REGULATORY ALARM:

***TEMP TOO LOW**

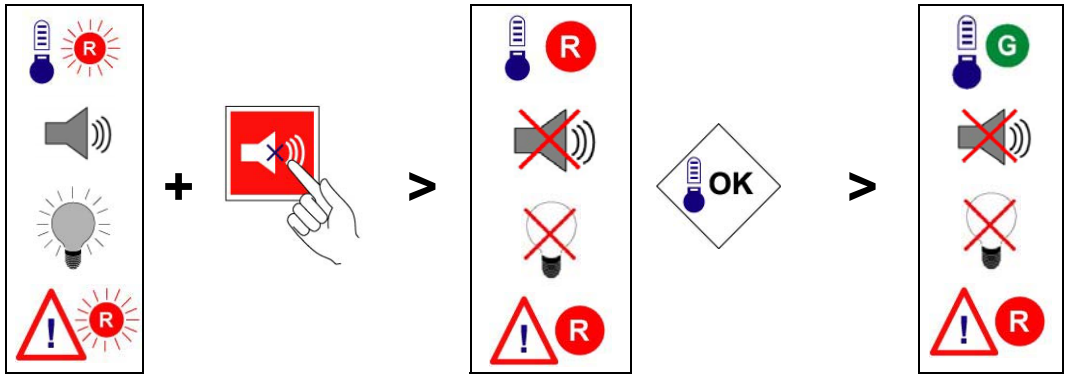
This alarm occurs when the milk temperature is below 0.5 ºC/32.9ºF for longer than 15 minutes.



HIGH MILK STORAGE ALARM, regulatory alarm:

***SLOW COOLING**

This alarm occurs when the milk temperature remains above 5.0ºC/41ºF for longer than 60 minutes and no milking is taking place.



2.2.2 Agitation monitoring

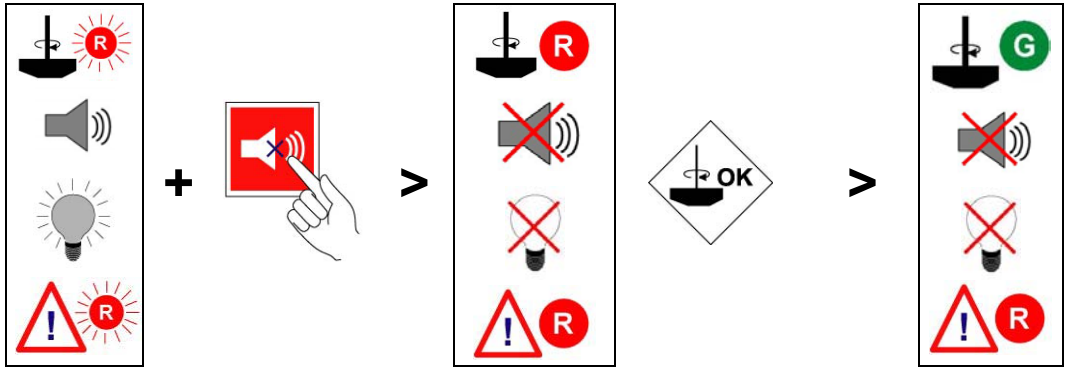
The agitation light is off when the tank is empty and is not being monitored. The agitation light is green when agitation is being detected.

Possible situations detected by an alarm are:

TO LITTLE AGITATION, regulatory alarm

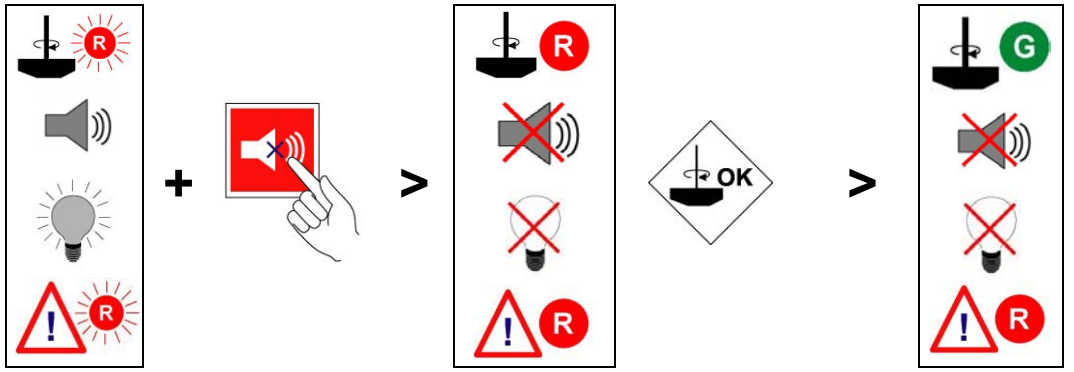
***NO INT AGITAT**

This alarm occurs when the temperature of the milk is below 5.0ºC/41ºF, and the milk is not agitated every 70 minutes for 5 minutes.



TOO MUCH AGITATION, regulatory alarm:

***TOO MUCH AGITAT** This alarm occurs when continuous agitation for longer than 3 hours during a no-milking phase has been detected.



2.2.3 Start Cooling Indicator

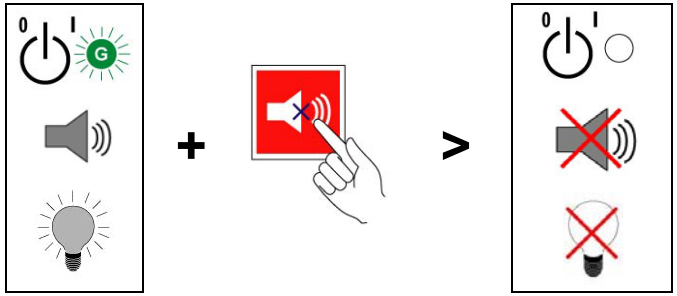
The start cooling light is off if the cooler has been turned on or the tank is off but is within the specified time from the beginning of the first milking.

Possible situations detected by this alarm are:

A) start cooling, producer warning

start cooling

This warning occurs when no temperature drop has been detected at the specific time after the 1st milking session set in menu 2 by the producer (default 30 minutes).

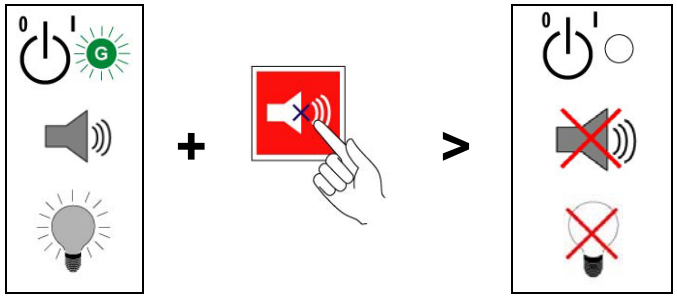


Note: No associated Regulatory alarm.

B) No Fill, producer warning

no milk detected

This warning occurs when no level has been detected in the tank 45 minutes (or value in menu # 9) after the 1st milking session was started.

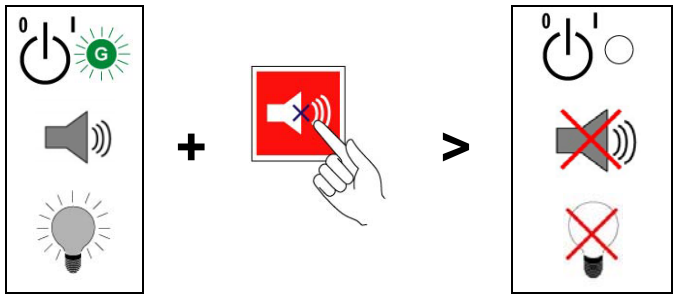


Note: No associated Regulatory alarm.

No pre-cooling, producer warning

no pre-cooling

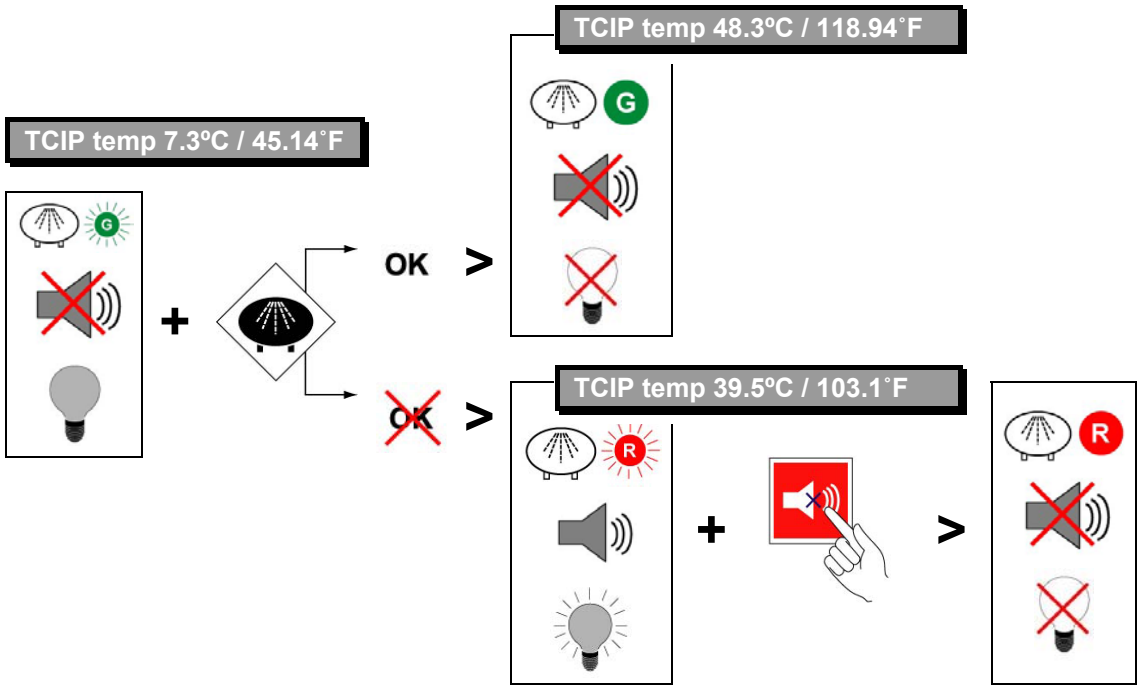
This warning occurs when the producer has selected the 'Precooler on' option in menu 4 (standard setting 'no'), when 5 minutes after the level detection at the start of the 1st milking session the temperature is above 27ºC/80.6ºF. To change this setting, see the section on Changing Producer Settings.



Note: No associated Regulatory alarm.

2.2.4 Tank wash indicator (TCIP)

The tank cleaning light is off when there is milk in the tank, but always on when the tank is empty. This light draws attention to situations needing attention (flashing green light) and alarms(red light). Possible situations that will be detected are:



Not cleaned yet, producer indicator

This situation occurs for as long as no cleaning is detected after the tank has been emptied.

Cleaning sufficient, producer indicator (solid green light)

This situation occurs as soon as the temperature reaches 40 ºC/104ºF for more than 4 consecutive minutes while the tank is being cleaned. If the conductivity sensor is connected (optional), the conductivity of the dump-water of the tank cleaning must also be sufficient for this situation to occur.

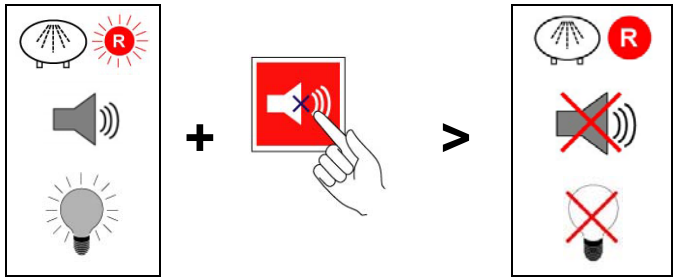
Cleaning insufficient temperature, regulatory alarm (red light)

This alarm occurs when the wash water does not reach 40 ºC/104ºF for a minimum of 4 consecutive minutes during the cleaning of the tank.

Insufficient Cleaning, conductivity (optional), producer warning

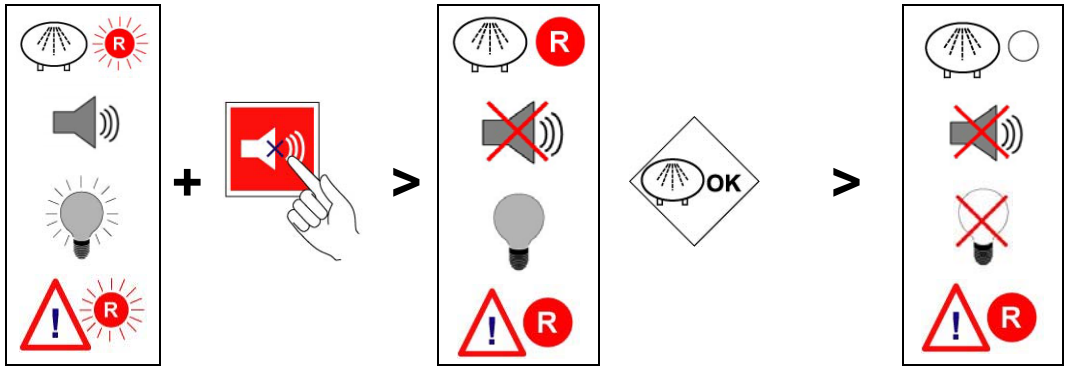
low cond TCIP

This alarm occurs when the conductivity of the dump-water of the main cleaning facility is lower than the value of menu 16 (default '12') as set by the producer. To change this setting, see the section on "Changing Producer Settings".



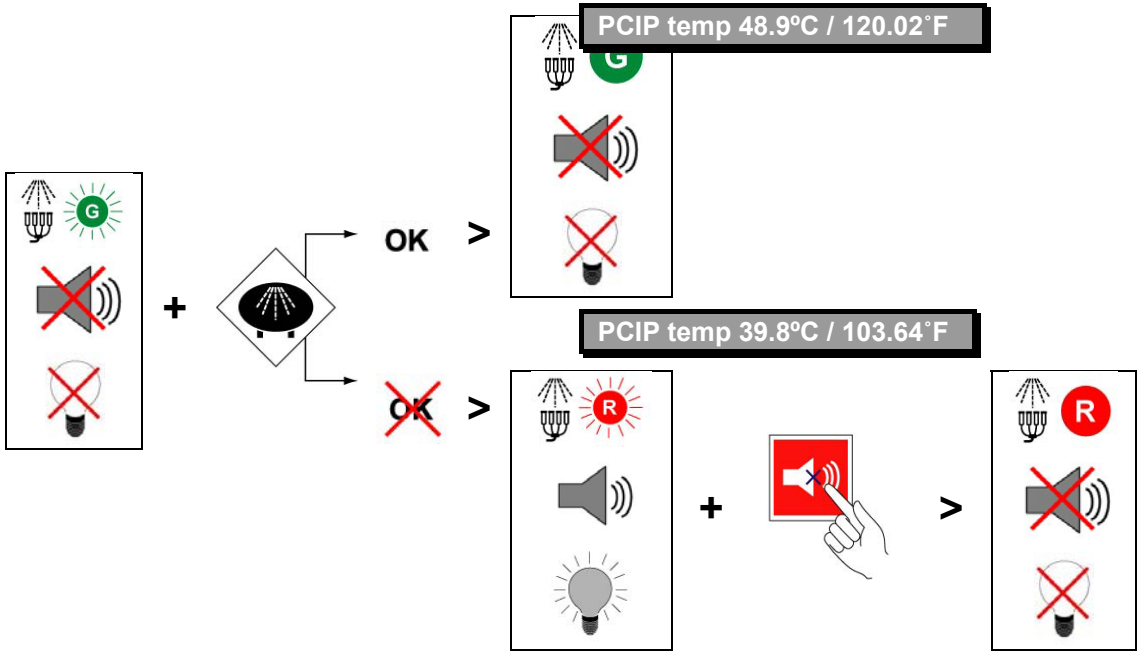
NOT CLEANED, regulatory alarm

***NO TCIP** If the tank has not been cleaned in the last 80 hours, this alarm will be activated.



2.2.5 Pipeline cleaning Indicator (PCIP)

The pipeline cleaning light is off during milking, and always on if no milking occurs. This light draws attention to problems needing attention.
Possible situations that will be detected are:



Not cleaned yet, producer indicator (light off)

This situation occurs for as long as no cleaning is detected after milking has finished.

Cleaning sufficient, producer indicator (solid green light)

This situation occurs as soon as the temperature reaches 40 ºC/104ºF for more than 4 consecutive minutes while the pipeline is being cleaned. If the conductivity sensor is connected (optional), the conductivity of the dump-water of the pipeline cleaning must be sufficient for this situation to occur.

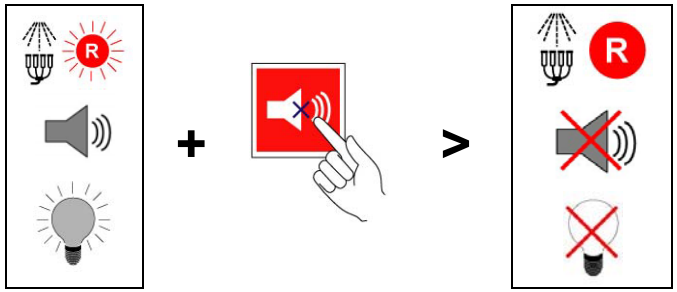
Cleaning insufficient temperature, regulatory alarm (red light)

This alarm occurs during the washing of the pipeline and the temperature does not reach 40ºC/104ºF for at least 4 consecutive minutes.

Cleaning insufficient conductivity (optional), producer warning

Low cond PCIP

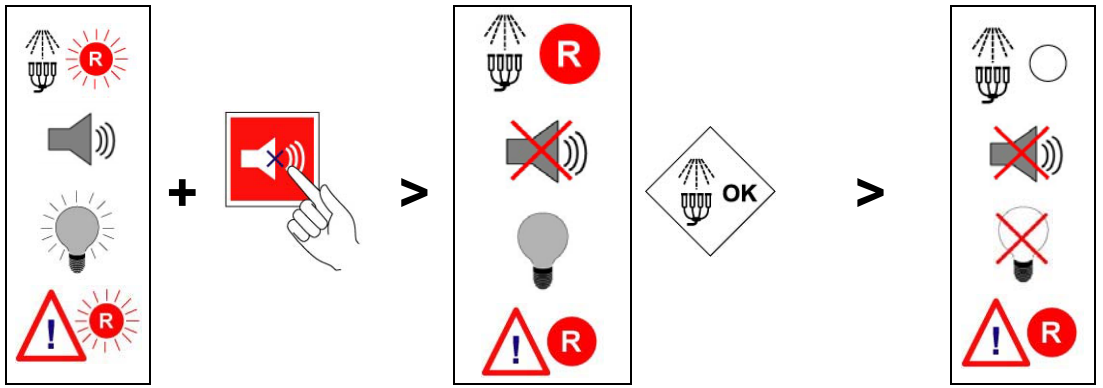
This alarm occurs when the conductivity of the dump-water of the main cleaning facility is lower than the value of menu 16 (default ‘12’) as set by the producer



NOT CLEANED, regulatory alarm

*NO PCIP

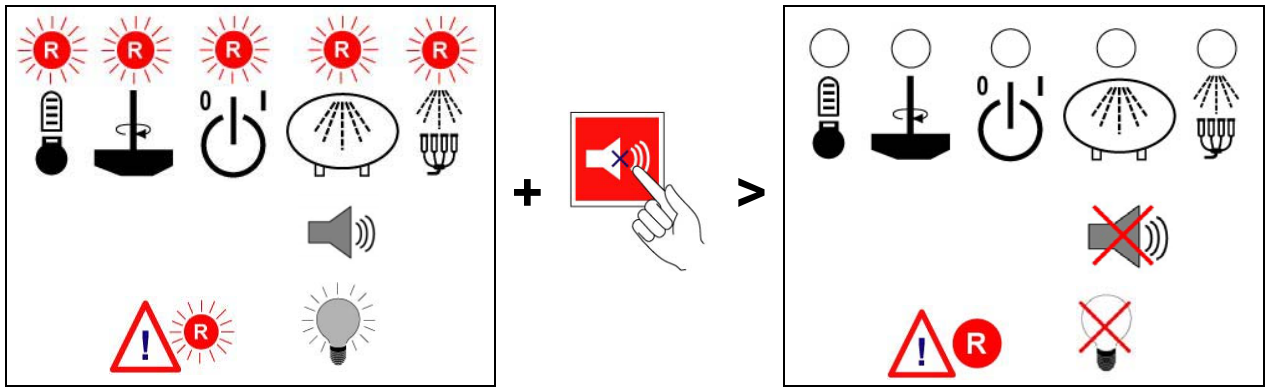
If the pipeline has not been cleaned in the last 22 hours, this alarm will be activated.



2.2.6 Monitoring general operation

The MilkGuard will alarm if sensors are not working properly. The alarm will show all icon lights flashing red. After the alarm is acknowledged, the lights will revert to their original status before the alarm occurred.

Possible situations that will be detected are:



A) TANK SENSOR ERROR, REGULATORY ALARM

*T-SENSOR FAIL	This alarm occurs when the bulk tank sensor is not working properly.

B) PIPELINE SENSOR ERROR, REGULATORY ALARM

*P-SENSOR FAIL	This alarm occurs when the pipeline sensor is not working properly.

C) VACUUM SENSOR ERROR, REGULATORY ALARM

*V-SENSOR FAIL	This alarm occurs when the vacuum sensor is not working properly.

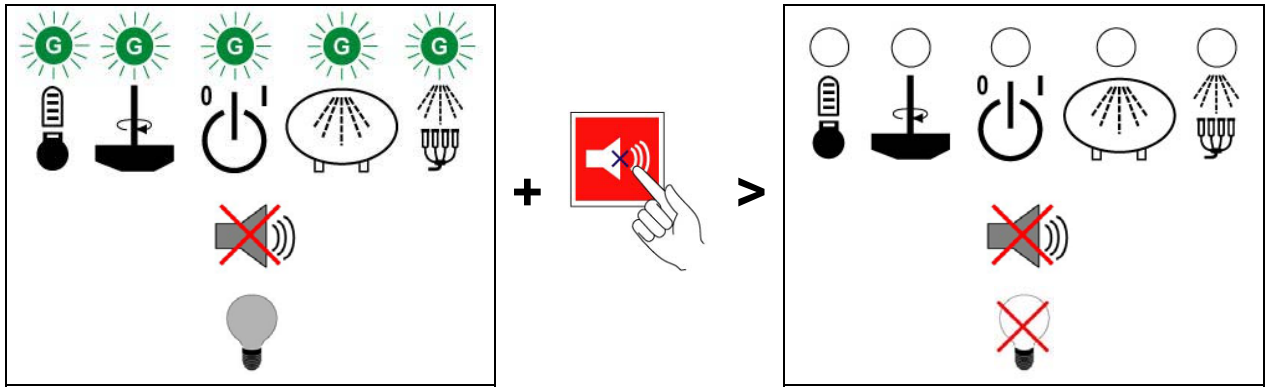
D) ERROR WRITING DATA, REGULATORY ALARM

*WRITING ERROR	This alarm will occur if an error is detected while data is being transferred to the memory card.

E) BACK-UP BATTERY LOW, producer warning

battery low

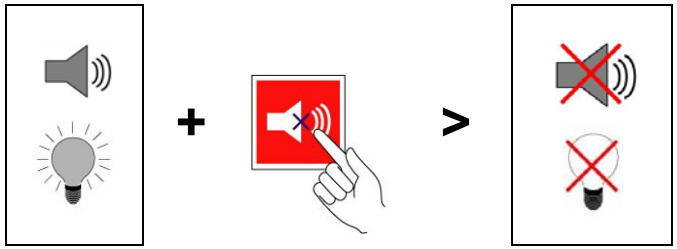
This alarm occurs when the internal back-up battery voltage is running low and the battery needs be replaced. The alarm will show all icon lights flashing green. After the alarm is acknowledged, the lights will revert to their original status before the alarm occurred.



F) EXTERNAL ALARM INPUT, producer warning

alarm input #1

This alarm occurs when the external input signals.



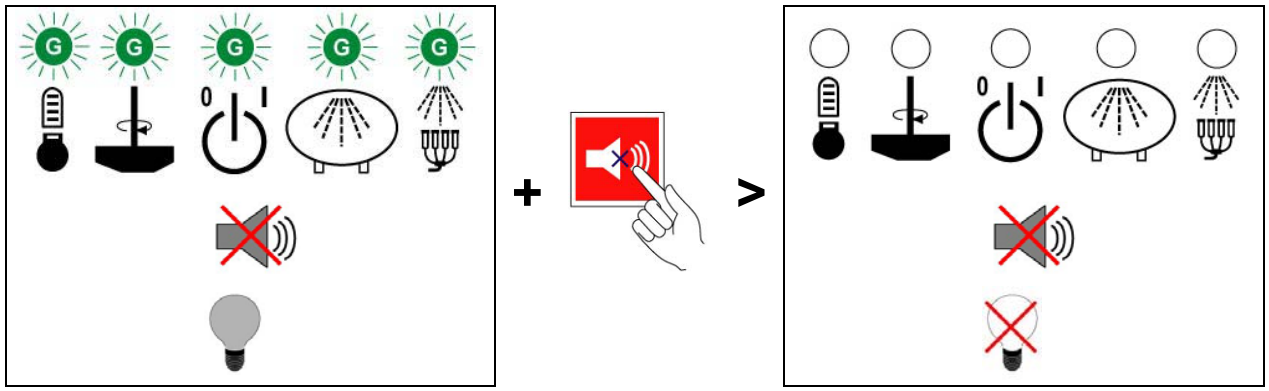
2.2.7 Power Supply Failure

The MilkGuard will alarm in the event that power is not supplied to the unit.
Possible situations that will be detected are:

A) Power down -producer warning

power down

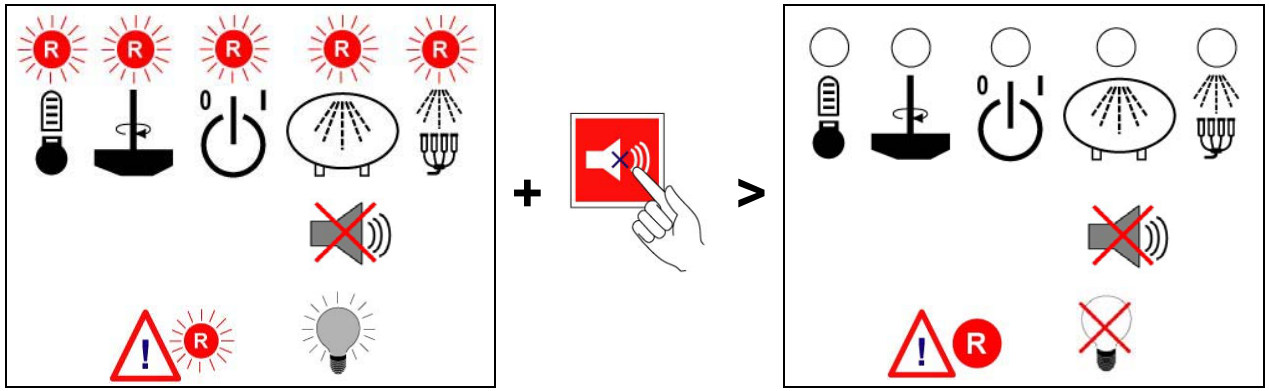
This alarm occurs when the power supply fails for longer than 30 seconds, but shorter than 5 hours. **After the alarm is acknowledged, the lights will revert to their original status before the alarm occurred.**



B) Power down - REGULATORY ALARM

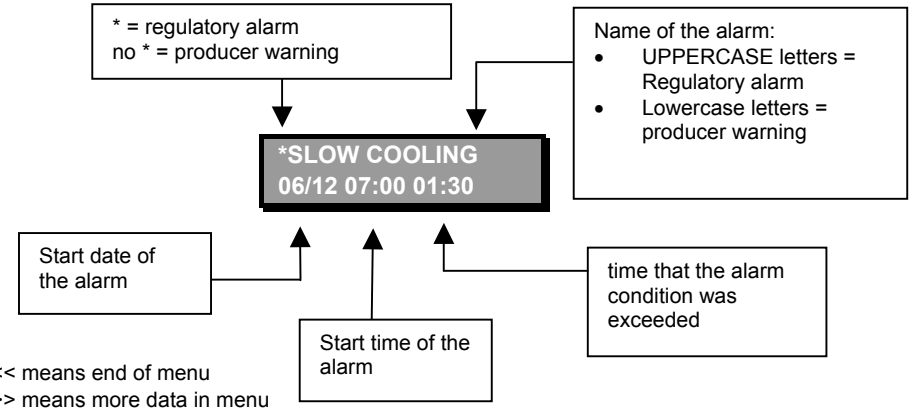
*POWER DOWN

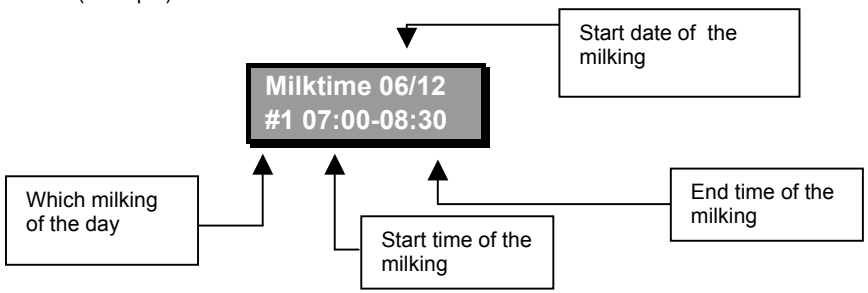
If the power supply fails longer than 5 hours, this alarm occurs. **After the alarm is acknowledged, the lights will revert to their original status before the alarm occurred**



2.3 Information Menus

The information menu allows the producer to call up certain current information and view it on the display. This menu is activated with the Info key, after which the following menu options will be available.

Menu title	Content menu
Alarms since ET – BTMG Alarms	All regulatory alarms since the last time the tank has been emptied, which are important for the BTMG (Bulk Tank Milk Grader) driver. This menu provides information to the BTMG driver about the quality of the tank load he is carrying. After pressing the Info key, this menu will be shown automatically after 5 seconds.
Alarms <7days ALL Alarms	All producer and regulatory alarms of the last 7 days are stored in this menu. This way the producer and the technician can look up all the recent alarms. 

Actual date time	Shows the actual date and time
DHI milk periods	If the second line of this menu shows " tc mm/dd hh:mm", this is the last date/time that the date/time was changed. This menu shows the starting and ending times of the last 18 milking sessions. This menu gives the DHI (Dairy Herd Improvement) inspector information about recent milking times. This data is shown as follows (example): 

3 – Milkguard Menus and Producer Settings

Refer to the Quick Reference Chart for the simplified control instructions found in Appendix B.

3.1 Info menus

In the Info menu, information about alarms and milking times can be viewed on the display.

1. Press 

after which:

   - You are in the INFO menu
   - The first menu item to be shown is: ..... **Alarms since ET – BTMG alarms**

2. Within 5 seconds press 

after which:

   - The next menu item to be shown is: ..... **Alarms <7 days – ALL alarms**

3. Press  or 

to browse through the INFO menu:

Menu title	Menu content
Alarms since ET – BTMG alarms	All regulatory BTMG (Bulk Tank Milk Grader) alarms since the last time the tank was emptied.
Alarms <7 days – ALL alarms	All producer warnings and regulatory alarms from the last 7 days.
Actual date time	Shows actual time and date.
DHI milk periods	Shows the last time that the date/time was changed. Shows also the start and end times of the last 18 milkings for DHI (Dairy Herd Improvement) inspectors.

4. Press 

to open the selected item of the INFO menu:
5. Press 

or 
to browse through the items within the chosen menu.
6. Press 

to leave the menu:
   - You are now back in the INFO menu.
7. Press 
until the Dairy Cheq Milkguard returns to the monitoring screen.

3.2 Changing producer settings

The producer can change a limited number of settings. Follow the steps below to change the settings:

1. On the front panel press 

   - You are now in the PARAMETER menu.
   - The screen will show: .....

menu choice 1
activate MG

2. Press 

or  to browse through the PARAMETER menu.

   - See appendix A for the various menus.
   - For example the screen will show: .....

menu choice 3
max Tblend prod

3. Press 

to activate the selected menu item.
   - For example the screen will show: .....

max Tblend prod
10ºC

4. Press  or 

to change the value of the activated menu
   - For example the screen will show: .....

max Tblend prod
8ºC

5. Press 

to leave the menu item.

6. Press  or 

to select “Cancel” or “Enter”.

   - “Cancel” means: do not accept the new value and return to the old value
   - “Enter” means: Accept the new value and save this. The MilkGuard will sound a short beep.

7. Press 

to activate the choice.
   - For example the screen will show: .....

menu choice 3
max Tblend prod

8. Press  until you have selected menu 1.
   - Now the screen shows: .....

menu choice 1
Activate MG

9. Press 

to activate the monitoring functions of the Dairy Cheq Milkguard.

3.3 BTMG (Bulk Tank Milk Grader) Menu

Before the tank is emptied, the Dairy Cheq Milkguard contributes to an assessment of the quality of the milk as indicated below.

Inspect the BTMG light 

1. **Light is green:**
   Empty the tank: the Dairy Cheq Milkguard has detected no regulatory alarms.

2. **Light is red:**
   Assess the regulatory alarms as follows:

   Press  and after 5 seconds:
   - the display shows the first regulatory alarm of the current tank load.

   Press  or  :
   For example the screen shows: ..... 

   (See chapter 2.3 for explanation of the screen)
   - Browse through the various alarms of the current tank load.

   Use the information shown to determine the quality of the milk in the tank.

3.4 DHI Inspector

In the DHI menu of the INFO menu the milking times of the last 18 milking sessions can be read from the display.

1. Press 

after which:

   - You are in the INFO menu
   - The first menu item to be shown is: .....

   Alarms since ET – BTMG alarms

2. Within 5 seconds press twice 

after which:

   - The display shows the menu title: .....

   Actual date time – mm/dd hh:mm

3. Press once 

after which:

   - The display shows the menu title: .....
   - If the second line shows a date/time, this is the last time that the date & time was changed.....

   DHI milk periods

   DHI milk periods – tc mm/dd hh:mm

4. Press 

to enter the menu:
   - The last milking session is to be shown.
   - For example the screen shows:
     (Refer to section 2.3 for an explanation of the screen)

Milktime 06/12
#1 07:00-08:30

5. Press 

or 
to view the required milking session in the DHI list.

6. Press 

to leave the menu:
   - You are now back in the INFO menu.

7. Press 

until the Dairy Cheq Milkguard returns to the monitoring screen.

3.5 Extracting the long-term memory

With the appropriate software, producers can access historical information of time and temperature readings recorded on the MilkGuard. Information older than 10 days can be accessed by using a blue tooth connection or extracting information from the memory card housed in the MilkGuard unit.
Before taking the card from the Dairy Cheq Milkguard, follow the steps below to add the data of the past few days to the card.

1. On the front panel press 

   - You are now in the PROGRAM menu
   - The screen will show: ..... **menu choice 1 activate MG**

2. Press 

to browse through the menus to menu 20 “write card”. ..... **menu choice 20 write card**

3. Press 

to activate the chosen menu item.

4. Press  or  to select between “Cancel” and “Enter”.
   - “Cancel” means: do not write and return to the PROGRAM menu.
   - “Enter” means: Start writing the memory card.

5. Press  to start writing to the card
   - The MilkGuard will sound a short beep and write the data to the memory card. The progress is shown on the screen in %.

6. Wait until the writing process is finished.

7. Press  until you have selected menu 1. ..... **menu choice 1 activate MG**

8. Press  to activate the Dairy Cheq Milkguard.

9. The memory card is ready for extraction.

Always put the card back into the Dairy Cheq Milkguard, to avoid loss of data.

4 Safety

Please always strictly observe the following safety precautions:

- ***Controls:***
  Ensure all operators have read this manual first.
- ***Hygiene:***
  Observe the usual hygiene rules, which apply to milk processing for human consumption.
- ***Electricity:***
  Be very careful when working on the Dairy Cheq Milkguard electric system. Only allow trained personnel to work on this system.
- ***Water*:**
  Never use a high-pressure cleaner on the parts; never clean the Dairy Cheq Milkguard or parts of it with running water; never use caustic cleaning agents for cleaning the equipment.
- ***Guards:***
  Never remove guards or open box doors, unless for maintenance. Observe the safety precautions. Only allow Dairy Cheq crew or trained personnel to work on this system.
- ***Overall safety:***
  Whenever repairs of any kind are needed on the Dairy Cheq Milkguard, observe the following warning:

Always make sure the main power supply to the Dairy Cheq Milkguard has been turned off before proceeding with any repairs or maintenance work.

5 Transport and Storage

Ensure the equipment has appropriate packaging for transport and storage, i.e. impact resistant and protected against moisture, dust or other harmful substances.

Minimum storage requirements are:

- Clean and dust free;
- Away from caustic, corrosive substances and gases.
- Relative air humidity between 10 and 90%.

Dairy Cheq accepts no responsibility for any transport and storage, unless by order of Dairy Cheq.

6 Maintenance

The Dairy Cheq Milkguard should be maintained according to the following general maintenance instructions:

- Keep the area around the Dairy Cheq Milkguard frost-free.
- Keep the surrounding area clean and free from excessive dust.
- Keep the air humidity between 10 and 90%; keep the area well ventilated to ensure the electrical parts remain completely dry.
- Make sure that the individual parts stay clean and that no water and dirt can splash up from the floor.
- Make sure that the Dairy Cheq Milkguard does not come in contact with explosive, aggressive and corrosive gases and substances, and that no alkaline or acid cleaning agents are allowed to come in contact with the Dairy Cheq Milkguard.
- Never clean the Dairy Cheq Milkguard with running water.
- Arrange for expert maintenance by Dairy Cheq or trained staff to check that the Dairy Cheq Milkguard is working properly.

7 Trouble shooting

Failure indicator	Failure	Cause	Solution
MilkGuard indicates that cleaning is taking place while there is milk in the tank.	The MilkGuard is unable to detect the level in the tank as a result of large temperature fluctuations.	Warm milk flows into the tank near the sensor of the MilkGuard.	Place the milk intake at least 50cm away from the sensor.
			During all milking sessions switch on the agitator before milking is started.
MilkGuard is not working, display is off.	No power supply	Unknown	Ensure power supply
	Faulty fuse	Power supply fluctuates too much (e.g. voltage peaks)	Ensure a good and stable power supply according to the required specifications
		Unknown	Replace the fuse with exactly the same type; If the problem persists: call Dairy Check.
Temperature alarm during empty tank or during cleaning pre-rinse.	Ice on the bottom of the tank after emptying the tank.	Cooling installation causes ice to form on the bottom of the tank.	Contact the supplier of the cooling installation.

Incorrect Start Cooling alarm during 1st milking session.	Alarm while the compressor is on.	Compressor switched on too early.	Turn on bulk tank later
			Reduce time in menu 2 (time at which switching on the compressor is checked).
		Pre-cooling causes the temperature to drop very quickly at the beginning of milking.	Increase time in menu 2 (time at which switching on the compressor is checked).
Other errors in MilkGuard operation.	Unknown	Unknown	Call your Dairy Cheq Milkguard dealer.

8 Removal

After disassembly, dispose of discarded parts in accordance with the local regulations that apply to such materials at the time of removal.

Appendices

Appendix A: Producer menu list

The producer can set the following menus:

Menu no.	Menu name	Explanation	Default value	Range
1	Activate MG	Leave the PARAMETER menu and return to the monitoring functions screen.	-	-
2	SC alarm time	After monitoring the first milk in the tank, the time at which it is checked if the cooling is switched on.	30 min.	20-600 min.
3	Max Tblend	Warning max. allowable milk blend temperature, from the 2nd milking session	10˚C / 50˚F	7-11˚C / 44.6-51.8˚F
4	Precooler	Pre-cooler present Yes/No? If "Yes", the Dairy Cheq Milkguard checks if the pre-cooler is switched on during the 1st milking session	No	Yes/No
5	Show time 12/24h	Set time display to 24h or to am/pm	12h	24h/am-pm
6	Show temp °C/F	Temperature display °C/F	°C	°C/F:
7	Time : hour	Current time setting: hours	-	0-23
8	Time : min.	Current time setting: minutes	-	0-59
9	No fill time	At this time after the start of the 1st milking, the filling of the tank is being monitored.	45 min.	30-900 min.
10	Act tank/pipe T	Shows actual value of all temp sensors	-	-

11	Act conduct 1+2	Shows the actual value of both conductivity sensors	-	-
12	Actual limits	Show actual limit values of the Dairy Cheq Milkguard	-	-
13	Act battery volt	Show actual battery voltage	-	>2.7
14	Test I/O	Test all digital inputs and outputs	-	-
15	TCIP conduct y/n	Conductivity sensor present Yes/No? If "Yes", the Dairy Cheq Milkguard checks during the main cleaning cycle of the tank for the conductivity value of the drainwater.	No	Yes/No
16	TCIP low cond	If menu 15=”yes”, the MilkGuard will alert if the measured value is lower than the value set in this menu	12	8 – 45
17	PCIP conduct y/n	Conductivity sensor present Yes/No? If "Yes", the Dairy Cheq Milkguard checks during the main cleaning cycle of the pipeline for the conductivity value of the drainwater.	No	Yes/No
18	PCIP low cond	If menu 17=”yes”, the MilkGuard will alert if the measured value is lower than the value set in this menu	12	8 – 45
19	MaxThightime2	Warning max. cooling time during cooling time monitoring from beginning of milking.	150 min.	60-180 min.
20	Write card	Write the data from the internal memory to the memory card.	-	-
29	Load defaults P	Set all previous values to the default value	-	-

Appendix B:

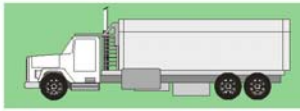
Dairy Cheq Milkguard Quick Reference Chart with warning / alarm list

SYMBOL		SCREEN	FUNCTION
	☒		Milk temperature not monitored or milk temperature too high, but in time frame for cooling down
	G	Tm 00.0ºC 00:00	MILK TEMPERATURE OK
	G	slow cooling	Producer warning cooling to slow directly after milking or no agitation when cooler should be on
		high blend temp	Producer warning milk-blend temperature too high (user defined limit: menu 3)
		Temp too low	Producer warning low milk temperature
	R	* SLOW COOLING	Coolingtime after milking was too long or the milk temperature was too high too long during storage of the milk
		* HIGH BLEND TEMP	Milk-blend temperature too high for too long
		* TEMP TOO LOW	Milk temperature too low
	☒		Agitation not monitored
	G	Tm 00.0ºC 00:00	AGITATING OK
	R	* NO INT AGIT	Milk not agitated (or too little agitated) for too long
		* TOO MUCH AGIT	Milk too long agitated in one period

SYMBOL		SCREEN	FUNCTION
	☒		No switched off cooling detected
	G	start cooling	Cooling not switched on in time
		no milk detected	No milk in tank at first milking
		no pre-cooling	No pre-cooling at first milking
	☒	Tm 00.0ºC 00:00	No cleaning information, milk in tank
	G	tank CIP 00.0ºC	**Tank cleaned on good conditions (temp and conductivity if installed)**
	G	no TCIP	Tank not cleaned yet
		low cond TCIP	Tank cleaned, but with insufficient chemical concentration
	R	* INSUFF TCIP	Tank cleaned, but with insufficient temperature during a too short time
		* NO TCIP	Tank not cleaned for too long
	☒		No cleaning information, milking in progress
	G	pipe CIP 00.0ºC	**Pipe cleaned on good conditions (temp and conductivity if installed)**
	G	no PCIP	Pipe not cleaned yet
		low cond PCIP	Pipe cleaned, but with insufficient chemical concentration
	R	* INSUFF PCIP	Pipe cleaned, but with insufficient temperature during a too short time
		* NO PCIP	Pipe not cleaned for too long

SYMBOL		SCREEN	FUNCTION
	G		No regulatory alarms detected during the present tank load
	R		WARNING: a regulatory alarm occured during the present tank load!
ALL LIGHTS	G	power down	Producer warning power down too long
		low battery	Voltage backup battery too low
	R	T SENSOR FAIL	Failure in tank sensor
		P SENSOR FAIL	Failure in pipe sensor
		V SENSOR FAIL	Failure in vacuum sensor
		WRITING ERROR	Error during writing internal memory on the memory card
		POWER DOWN	Power down too long

- Acknowledge the Alarm: The sound stops, the light will stay flashing green or solid red until the alarm condition is corrected.
- Press this button for 8 seconds to delay the present alarm for a longer time.

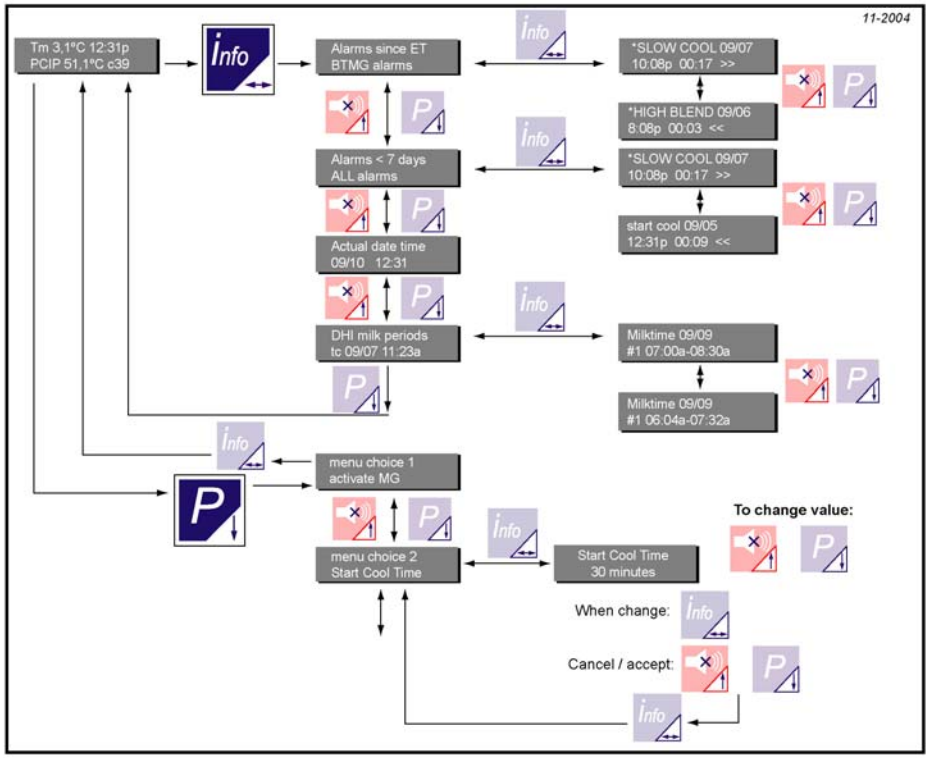


- Check if the Bulk Tank Milk Grader indicator is green or red.
- If red, press the Info-button. Check all the regular alarms of this tankload on the display.

The Dairy Cheq Milkguard is only an aid to monitor the operation of the cooling and cleaning system. The end-user remains responsible at all times for proper storage of his milk, and the proper operation of his cooling and milking equipment.

If an alarm condition occurs, have your milk storage equipment tested by a qualified technician. *11-2004*

Backside:


11-2004
Tm 3,1°C 12:31p
PCIP 51,1°C c39
Info
Alarms since ET
BTMG alarms
*SLOW COOL 09/07
10:08p 00:17 >>
*HIGH BLEND 09/06
8:08p 00:03 <<
Alarms < 7 days
ALL alarms
*SLOW COOL 09/07
10:08p 00:17 >>
start cool 09/05
12:31p 00:09 <<
Actual date time
09/10 12:31
DHI milk periods
tc 09/07 11:23a
Milktime 09/09
#1 07:00a-08:30a
Milktime 09/09
#1 06:04a-07:32a
menu choice 1
activate MG
menu choice 2
Start Cool Time
Start Cool Time
30 minutes
To change value:
When change:
Cancel / accept:

Producer menu list:

Menu no.	Menu name	Explanation	Dafault value
1	Activate MG	Leave the PARAMETER menu and return to the monitoring functions screen.	
2	StartCool time	After monitoring the first milk in the tank, the time at which it is checked if the cooling is switched on.	30 min.
3	Max blendtemp P	Producer warning max. allowable milk blend temperature, from the 2nd milking session	10ºC / 50ºF
4	Precooler on.off	Pre-cooler present Yes/No? If "Yes", the Dairy Cheq MilkGuard checks if the pre-cooler is switched on during the 1st milking session	No
5	Show time 12/24h	Set time display to 24h or to am/pm	12h
6	Show temp	Temperature display °C/F	ºC
7	time : hour	Current time setting: hours	
8	time : min.	Current time setting: minutes	
9	no fill time	On this time after the start of the 1st milking, the filling of the tank is being monitored	45 min.
10	act tank/pipe T	Shows actual value of all sensors	
11	act conduct 1+2	Shows the actual value of both conductivity sensors	
12	actual limits	Show actual limit values of the Dairy Cheq MilkGuard	
13	act battery volt	Show actual battery voltage	
14	test I/O	Test all digital inputs and outputs	
15	TCIP conduct y/n	Conductivity sensor present Yes/No? If "Yes", the Dairy Cheq MilkGuard checks during the main cleaning cycle of the tank for the conductivity value of the drainwater	No
16	TCIP low cond	If menu 15="yes", the MilkGuard will alert if the measured value is lower than the value set in this menu	12
17	PCIP low conduct y/n	Conductivity sensor present Yes/No? If "Yes", the Dairy Cheq MilkGuard checks during the main cleaning cycle of the pipe for the conductivity value of the drainwater.	No
18	PCIP low cond	If menu 17="yes", the MilkGuard will alert if the measured value is lower than the value set in this menu	12
19	SlowCool2 time P	Producer warning max. cooling time during cooling time monitoring from beginning of milking.	150 min.
20	Write card	Write the data from the internal memory to the memory card.	
29	Load defaults P	Set all previous values to the default value	

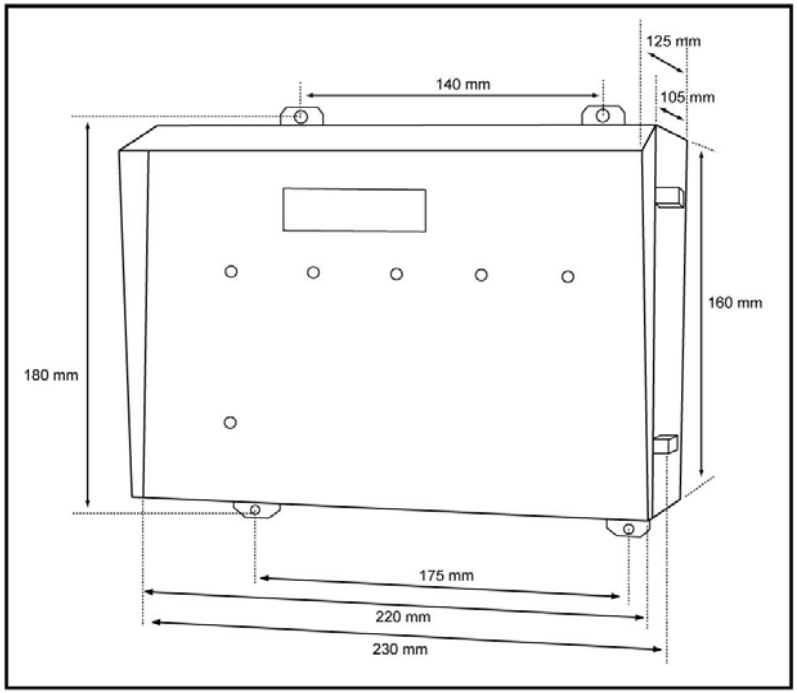
Appendix C:

Technical Specifications

General:

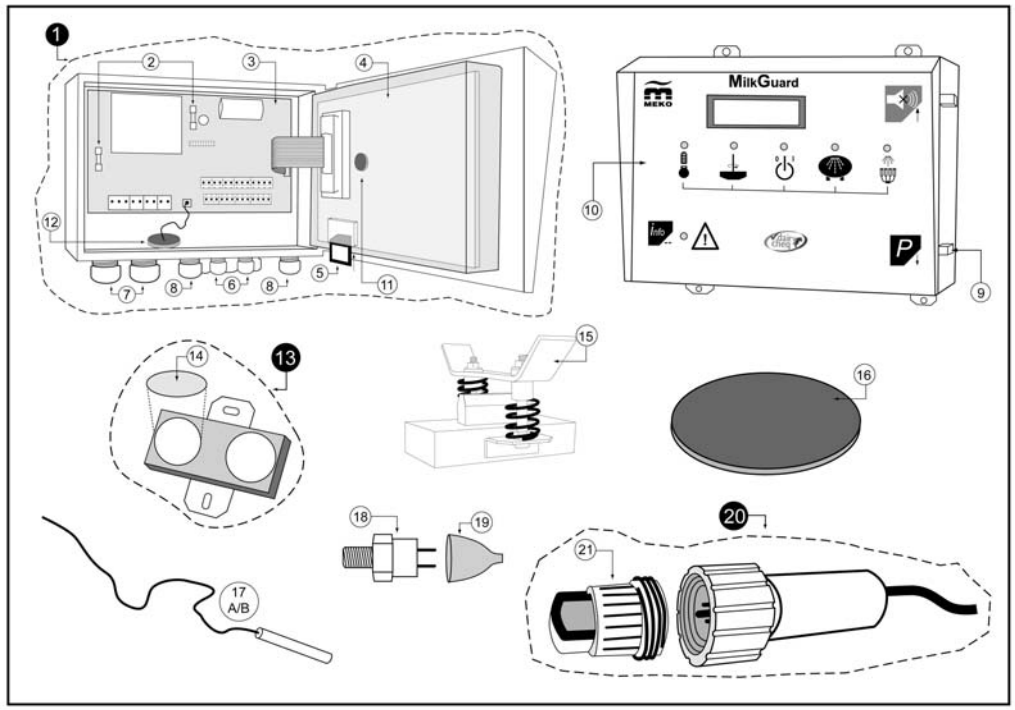
Material housing : Stainless steel 304
Weight : 2.5 kg

Power supply	22-27VAC, 50/60Hz, N+L+Earth
Power consumption	14W
Internal fusing power supply	1A
Internal fusing low voltage	1A
External fusing power supply	>1A
Output relay	Max 27VAC, 3A
Transformer box	240 or 120 VAC to 24 VAC
Fuse	Little Fuse BLF 0.5 A



Appendix D:

Spare Parts



LIST OF COMPONENTS		
Pos	**Art. no.**	
Sam	MG030	MilkGuard CMM99up-EE standard 24VAC incl. Tank and pipeline sensor
1	MG026	MilkGuard CMM99up-EE 24VAC box incl. memory card, excl. sensors
2	MG015	Fuse 1A slow
3	MG054	Power supply board CMM99up-EE 24VAC
4	MG054-1	Control board CMM99up-EE
5	MG055	Memory card CMM99up-EE 32Mb
6	MG070	Box connector M12 + nut
7	MG071	Box connector M16 + nut
8	MG072	Box connector M20 + nut
9	MG073	Door hinge
10	MG074	Front panel CMM99up-EE
11	MG075	Battery CMM99up-EE 3V
12	MG076	Beeper CMM99up-EE
13	MG049	Tank sensor MilkGuard incl. pad
14	MG049-1	Pad for external MilkGuard sensor
15	MG049-2	Bracket mounting set 99up
16	MG012	Rubber cover 92mm
17A	MG047-50	Pipeline sensor cable length 15mtr / 50ft
17B	MG047-75	Pipeline sensor cable length 22mtr / 75ft
18	MG051	Vacuum sensor ¼” 20kPA
19	MG048-2	Rubber cover vacuum sensor
20A	MG050-50	Conductivity sensor cpl cable-length 15mtr / 50 ft

20B	MG050-75	Conductivity sensor cpl cable-length 22mtr / 75 ft
21	MG050-1	Conductivity sensor cup 28mm
	MG014	Fuse power supply Little fuse BLF 0.5 A
	MG044-220	Transformer box 240-24 VAC
	MG044-110	Transformer box 120-24 VAC
	MG023	Bluetooth PCB
	MG023-1	Bluetooh antenna cable
	MG023-2	Bluetooth antenna
	MG046	Bluetooth USB adapter + software
		Auto Dialler
	MG039	External Alarm light

The MilkGuard Has Nema 4X rating and is CSA approved
Surge test passed according to IEC 1000-4-5/EN 61000-4-5-Electromagnatic Compatibility Requirements Part 5: Surge withstand immunity Requirements

Apendix E: Warranty

PLEASE REFER TO THE WARRANTY SUPPLIED WITH YOUR DAIRY CHEQ MILKGUARD FOR DETAILS.

FOR ONTARIO RESIDENTS, PLEASE CONSULT THE WARRANTY DETAILS PROVIDED ON THE REVERSE SIDE OF THE TIME AND TEMPERATURE RECORDER ORDER FORM.

Warantee procedures.
When a part needs to be replaced Dairy Cheq will ship this part within 48 hours to any location in Ontario and within 3 business day in other provinces of Ontario.
Within the warrantee period parts will be shipped without charge. All units unther the Ontario roll-out program will have no labour charged for the repair and/or replacement of these parts.
Old parts need to be shipped to Dairy Cheq within 5 business days. Cots fors shipment will be for the shipping part and will not be reimbursed by Dairy Cheq If parts are not received within this period, the previous shipped parts, shipped by Dairy Cheq or its dealer will be invoiced

Parts need to be shipped to:
Dairy Cheq Inc.
5-60 Baffin Place
Waterloo Ontario
N2V 1Z7 Canada
Phone: 1-866-849-3610
1-519-746-6150
Fax: 519-884-8508
e-mail: info@dairycheq.com
www.dairycheq.com

MilkGuard Manufacturer:
Meko Holland B.V.
Narcisstraat 14
P.O.box 138
9400 AC ASSEN
The Netherlands
www.meko.nl

Notes: