Wedholms

LELY NAUTILUS

Instructions

WinMasterMobileCom

English

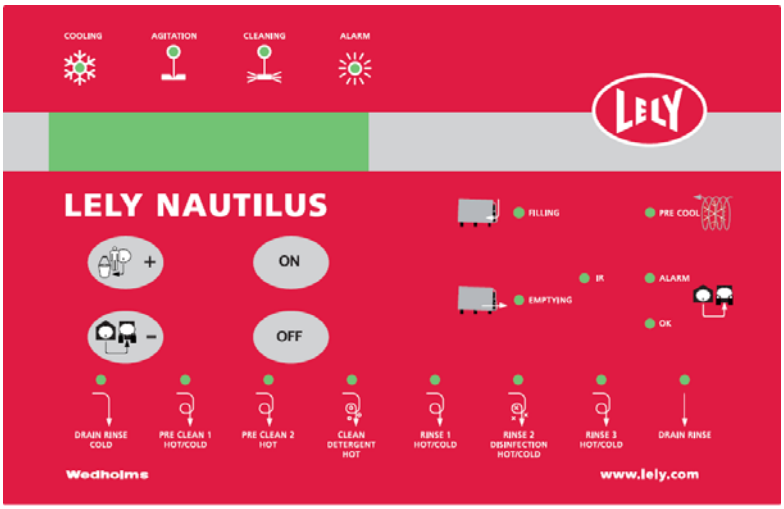
Version 1-100427

Contents

Product description

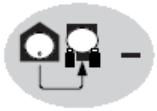
WinMasterMobileCom, “WMMC”, is the control system for Wedholms’ milk-cooling tanks. Cooling, cleaning, and agitation are controlled from WMMC. All functions are individually programmable. The control system also contains a monitoring function that includes 22 different alarms.

All alarms and events are logged and shown on the display. Information can also be transferred to a computer using the optional product WinLink and the associated program WinGraph, which, together, enable you to go back and view a history of previous alarms and events. This information can also be sent from WMMC to an email address via GSM (optional), and then viewed using the program WinGraph.



There are four buttons for navigation: the Farmer button, the Driver button, the On button, and the Off button. The buttons are always indicated by **[]** in these instructions.

[Farmer/+]
- Menu access for Farmer
- Change menu
- Increase value



[Driver/-]
- Menu access For Driver
- Change menu
- Decrease value

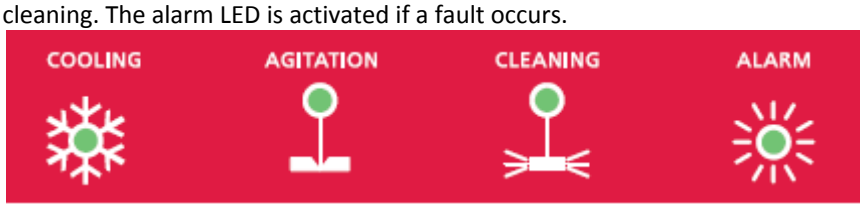
[On]
- Confirm/Select
- Start functions

[Off]
- Back
- Stop functions

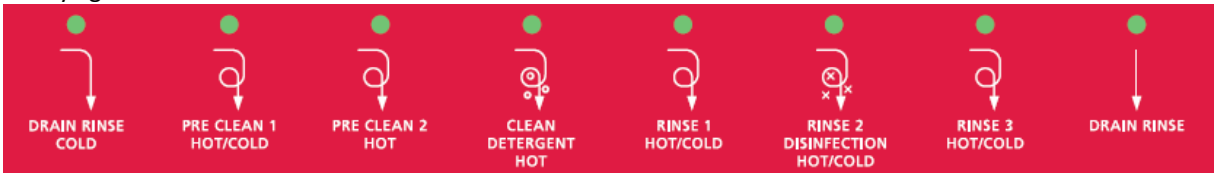
The display shows the current menu and function, and, if necessary, a message for proceeding further. Text that appears on the display is indicated by “ ” in these instructions.

Always return WMMC to Menu “0” after performing an activity.

For each activity in WMMC, there is an LED that lights up when the function is active: cooling, agitation, cleaning. The alarm LED is activated if a fault occurs.

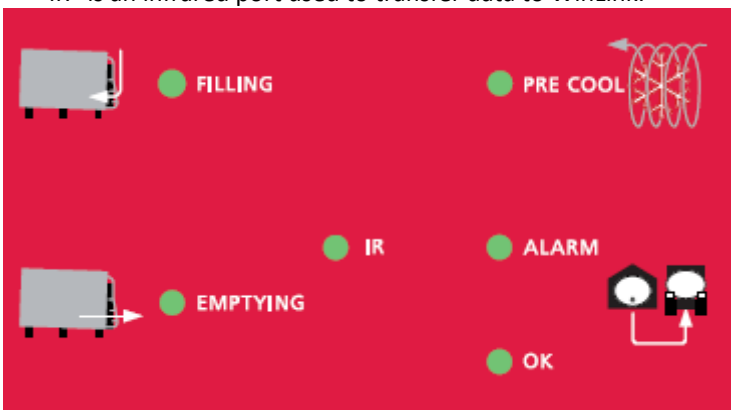


During cleaning, the LED for the current phase flashes. Once the phase is complete, the LED changes to a steady light.



Other LEDs on the WMMC display indicate the functions that are active: Filling, Emptying, Pre-Cool and, IR transmission.

- "Filling" and "Emptying" are active when a robot is used.
  "Emptying" can also be active without a robot.
- "Pre-Cool" is activated when pre-cooling (optional) is taking place.
- "Alarm" and "OK" are active when Tank Guard (optional) is used.
- "IR" is an infrared port used to transfer data to WinLink.



Menus

WMMC has 11 menus to enable further navigation in the system. The **Farmer (F)** and **Driver (D)** have different access to the menus, as indicated below.

0	Start	**F**	**D**
1	Emptying		**D**
2	Cleaning	**F**	**D**
3	Cooling	**F**	
4	Filling	**F**	
5	Agitation	**F**	
6	Settings	**F**	
7	Test	**F**	
8	Information	**F**	
9	Control	**F**	
10	Tank Guard	**F**	
11	IR Transfer	**F**	

Menu 0

Menu “0” is the starting point in WMMC. The display shows the number of the current menu, the temperature of the milk, the current time, and what to do to go further into the menus.

Always return WMMC to the starting point, Menu “0”, between activities.

Menu 1 - Emptying

Menu “1 EMPTYING” can only be accessed with **[Driver/-]**. Two courses of action are available: tank - not connected to a robot, and tank - connected to a robot.

Starting emptying – not connected to a robot

Emptying is accessed by pressing **[Driver/-]**. During emptying, the “Agitation” LED lights up green and the “Emptying” LED flashes yellow.

1. Go to Menu 1. The display now shows Menu “1 EMPTYING”. Confirm with **[On].**

2. The display now shows Menu “1.3 EMPTYING PRESS ON”, and the time counts down from 120” to 0” (”=seconds), during which the agitator will run. Start emptying by confirming the message on the display with **[On]**.

Wait until the time has reached 0” before taking a sample and then starting emptying.

“1.4 EMPTYING” is displayed whilst emptying is in progress. Once emptying is complete, press [**Off].**

3. As soon as emptying finishes, the next step is automatically shown on the display, Menu “2 CLEANING”. If cleaning is required, press **[On]**, otherwise press **[Off]**.

See also quick instructions for emptying, on page 54.

Starting emptying – connected to a robot

Emptying is accessed by pressing **[Driver/-]**. During emptying, the "Agitation" LED lights up green and the "Emptying" LED flashes yellow.

1. Go to Menu "1 EMPTYING". The display now shows Menu "1 EMPTYING". Confirm with **[On]**. A signal is now sent to the robot.

2. The display then shows Menu "1.2 EMPTYING WAIT", and continues to do so whilst the robot completes the filling process.

3. When a signal comes back from the robot, the display will show Menu "1.3 EMPTYING PRESS ON", and the time will count down from 120" to 0" ("=seconds), during which the agitator will run. Start emptying by confirming the message on the display with **[On].**

Wait until the time has reached 0" before taking a sample and then starting emptying.

4. "1.4 EMPTYING" is displayed whilst emptying is in progress. Once emptying is complete, press **[Off]**.

5. As soon as emptying finishes, the next step is automatically shown on the display, Menu "2 CLEANING". If cleaning is required, press **[On],** otherwise press **[Off]**.

See also quick instructions for emptying, on page 54.

Menu 2 - Cleaning

There are 4 basic programs for cleaning the tank. Each basic program comprises a number of phases.

Programs

- **Complete cleaning**
  Comprises up to 8 phases.
- **Short cleaning**
  Comprises phases 2, 4 and 6
- **Cold rinse**
  Comprises phase 1
- **Warm rinse**
  Comprises phase 7 with hot water

Phases

1. **"**Drain rinse cold"
2. "Pre Clean 1, Hot/Cold"
3. "Pre Clean 2, Hot"
4. "Clean detergent, Hot"
5. "Rinse 1, Hot/Cold"
6. "Rinse 2, Disinfection, Hot/Cold"
7. "Rinse 3, Hot/Cold"
8. "Drain Rinse"

It is recommended that "Complete cleaning" always be used after emptying. See also the section "Programming the cleaning program".

Description of the cleaning phases

1. **Drain Rinse – Cold**
   Rinses out milk residue. Drains through an additional drain valve if one is installed.

2. **Pre Clean 1 – Hot/Cold**
   Rinses with a mixture of hot and cold water. Drains through an additional drain valve if one is installed.

3. **Pre Clean 2 – Hot**
   Rinses with hot water.

4. **Clean Detergent – Hot**
   Main cleaning with hot water and detergent. If detergent and acid are used in the same cleaning cycle, the detergent is used in this phase and the acid in phase 6. Otherwise, acid is also used in this phase. If a heater is installed, it is used in this phase.

5. **Rinse 1 – Hot/Cold**
   Rinses with a mixture of hot and cold water.

6. **Rinse 2 Disinfection - Hot/Cold**
   Rinses with hot or cold water. If detergent and acid are used in the same cleaning cycle, acid is used in this phase.

7. **Rinse 3 – Hot/Cold**
   Rinses with hot or cold water.

8. **Drain Rinse**
   Additional draining time

Starting cleaning

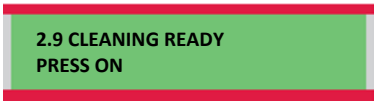
The cleaning program is accessible via both the Farmer button and the Driver button. Before cleaning, the LEDs for all the phases included in the selected cleaning program start flashing. When each phase is complete, the flashing changes to a steady light. Throughout the entire cleaning program, the “Cleaning” LED lights up green.

1. Go to Menu “2 CLEANING”. Confirm with **[On]**.

2. The display shows Menu “2.1 COMPLETE CLEANING”. Select the program by moving up and down using **[Farmer/+]** and **[Driver/-]**. After 15 seconds, the program starts automatically and this is indicated on the display.

3. When the program starts and during the entire cleaning cycle, both “>CLEANING ON<” and the current temperature are displayed.

4. Once cleaning is finished, “2.9 CLEANING READY” is displayed. Check the cleaning result and confirm with **[On].** The display will then show Menu “3 COOLING”



When a robot is used, the message “CLEANING ON” is never displayed, and the tank starts cooling as soon as the cleaning program is complete.

Cancelling cleaning currently in progress

1. Press **[Off]** to pause the cleaning program whilst cleaning is in progress. Menu “2.5 CLEANING STOPPED” is now shown on the display. To continue cleaning, press **[On]**.

2. Press and hold **[Off]** for one second. ”+/- FOR MANUAL STEP PRESS OFF FOR STOP CLEANING“ is now displayed.

3. Press and hold **[Off]** for more than 15 seconds to cancel cleaning.

Manually changing phase whilst cleaning is in progress

It is possible to move back and forth between the various phases of the selected cleaning program whilst cleaning is in progress.

1. Whilst cleaning is in progress, press **[Off]** to stop the cleaning program. Menu “2.5 CLEANING STOPPED” is now shown on the display.

2. Press and hold **[Off]** for one second. “+/- FOR MANUAL STEP” is displayed and the LED for phase 1 lights up.
   Press **[Farmer/+]** to step up, phase 1-8.
   Press **[Driver/-]** to step down, phase 1-8.

3. Once the desired phase is selected, press **[On]** to restart cleaning. “>CLEANING ON<” is once again displayed. Once the selected phase has been completed, the program will continue with the subsequent phases. If a phase is selected that is not included in the selected program, the next subsequent phase that is included will be started. If neither the selected phase nor any subsequent phase is included in the selected program, cleaning will then cancelled.

Those phases that have been skipped over will continue to flash throughout the entire cleaning program.

Programming the cleaning program

The cleaning programs in WMMC can be programmed to suit specific requirements. All changes are made in Menu “6 SETTINGS”.
To see how the settings can be changed and to see a table of all the parameters, see Menu “6 SETTINGS”.

To obtain the best possible cleaning result, it is important that WMMC be programmed for the farm’s local conditions. The temperature of the water is the parameter that affects the cleaning result the most.

- At high temperatures, the quantity of water and detergent can be reduced.
- The cleaning temperature must be at least 43°C at the end of the main cleaning phase, in order for the milk residue to be dissolved and rinsed out of the tank.
- Alarm A18 Clean temp low is activated if the cleaning temperature is not reached, parameter 6.4N.

This temperature, 6.4N, must be programmed to at least 43°C.

Cleaning phases

In the cleaning program “Complete cleaning”, it is possible to select the phases that are to be included, **parameters 6.4T, U, V, W, and X.** The phases used in the other cleaning programs cannot be changed. Phases 1, 2, and 4 are always included in “Complete cleaning”.

At least one rinse phase must always be included.
If a robot is used, phase 8 must always be selected in order for complete draining to occur before milk is allowed to enter the tank.

Filling, circulation, and draining

The amount of water that goes into the tank during filling is controlled by a float. To change the amount of water that goes into the tank, raise or lower the screw that controls the float. This screw is located on the side of WMMC.

If filling is slow because of, for example, low water pressure, the tank has a setting that stops the filling process and proceeds with the cleaning, **parameter 6.4A**.

If filling is stopped by parameter 6.4A and not by the float, alarm A11 Level indicator is activated.

In order to prevent the proteins in the milk from burning and becoming stuck to the tank, hot water alone should not be used in phase 2. **Parameter 6.4J** adjusts how much cold water is used. The rest of the water is hot.

The temperature of the water in phase 2 must not exceed 37°C.

If only cold water is used in phase 5, a vacuum may form in the tank and the pump will not circulate the water. **Parameter 6.4K** adjusts how much cold water is used. The rest of the water is hot. There should be equal quantities of hot and cold water in this phase.

The tank can be programmed to use hot water instead of cold in phases 6 and 7, **parameter 6.4Y**.

If additional time is required to heat up the water, a pause can be programmed between phases 2 and 3, **parameter 6.4O**.

Once the tank has been filled to the level set by the float, the pump starts. WMMC makes it possible to set the pump's circulation time in the rinse phases (2, 3, 5, 6, and 7), **parameter 6.4B**, and in the main cleaning phase, **parameter 6.4C**.

Once circulation is complete, the outlet valve is opened. The time for which the outlet valve is open is programmed both in phases 1-7, **parameter 6.4D**, and in phase 8, **parameter 6.4E**.

Phase 8 is used with a robot, when additional time for draining is required. The length of time it takes to drain the tank depends on the inclination of the tank. On average, around **40-50 litres per minute** are drained.

Detergent

The tank may be cleaned both with detergent, alkaline, and disinfectant, acid, (hereinafter called detergent and acid). Both detergent and acid can be used in the same or in different cleaning cycles.
See the example below for how parameters **6.4F and 6.4G** are programmed. The option that should be chosen depends on which type of detergent and acid are used.

Example: (**6.4F, 6,4G** => event)
0,0 => both detergent and acid are used in the same cleaning cycle every time.
1,1 => first cleaning cycle with detergent, second cleaning cycle with acid.
2,1 => first two cleaning cycles with detergent, third cleaning cycle with acid.

When detergent and acid are used in the same cleaning cycle (0,0), the detergent is used in phase 4 and the acid in phase 6. When detergent and acid are not used in the same cleaning cycle, the acid is also used in phase 4.

6.4F can be set to 0-4
6.4G should be set to 0 if 6.4F is set to 0
6.4G should be set to 1 if 6.4F is set to 1-4

The amount of detergent to be dosed depends on the detergent used. The normal concentration of detergent during cleaning is 0.4-0.6%. The length of time for which the dosing pumps operate is programmed in **parameters 6.4H and 6.4I.** The dosing pumps fill one decilitre in around 15 seconds.

If both detergent and acid are used in the same cleaning cycle, phase 7 must be used.

Optional equipment

Heater

An optional heater is available. In WMMC, **parameter 6.4L** is set to the temperature to which the water should be heated. The heater only operates during main cleaning, phase 4. Main cleaning will continue until the programmed temperature is reached, but not for a time that is less than the programmed circulation time. See also the section "Options, Heater".

If a heater is used, parameter 6.9C is set to Y.

Drain valve

If the rinsing water is to be directed to a different drain, then an additional drain valve can be fitted. The rinse water in phases 1 and 2 goes to this additional valve while the water from other phases goes to the usual valve. In WMMC, **parameters 6.4S and 6.9B** indicate whether the additional valve is fitted**.**

Conductivity sensor

In order to be sure that the tank is using sufficient detergent during the main cleaning phase, a conductivity sensor is available. This sensor measures the electrical conductivity of the cleaning water. The higher the conductivity, the more detergent there is in the water. In WMMC, **parameters 6.4P and 6.4Q** are set to the measured values that must be reached in order for the tank not to activate alarms **A15 Dos Pump Deterg.** and **A16 Dos Pump Disinf.** See also the section "Options, Conductivity Sensor".

Recommended water volumes

The table below states the water volumes that are recommended in order to achieve good cleaning function. Adjustments should be made for any specific conditions that may exist.

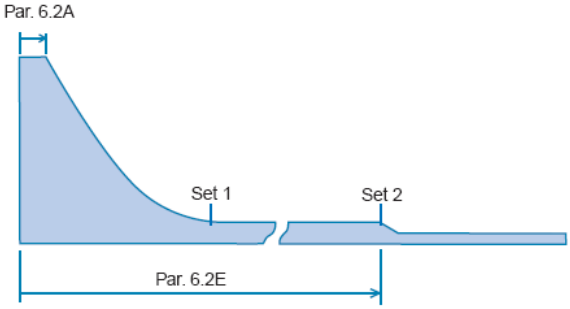
Tank	1600-5000	6000-8000	9000-12000	14000-18000	20000-30000	Robot 4000-6000	Robot 7000-12000	Robot 14000->14000
Water volume	**55l**	**80l**	**95l**	**110l**	**130l**	**55l**	**95l**	**110l**

The water volume is dependent on the temperature of the incoming water. At the end of the cleaning phase (4), the temperature should be around 50 degrees.

Menu 3 - Cooling

Throughout the entire cooling cycle, the “Cooling” LED lights up yellow. When delayed start of cooling is selected, the LED flashes before cooling commences. Cooling is started either from Menu “3 COOLING” or after cleaning has finished. When emptying, cooling is stopped as soon as emptying is activated.

The cooling cycle has two breakpoints, which means that it can be divided into two stages. The milk is first cooled down to a desired temperature (Set 1), then, after a pre-selected number of hours, it is further cooled to the next temperature (Set 2).



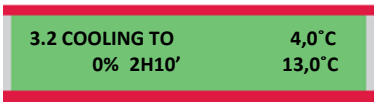
Cooling from Menu 0

1. Go to Menu “3 COOLING”. Press [On].

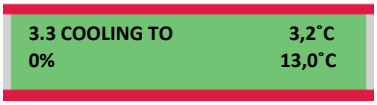
2. The display now shows Menu “3.1 COOLING DELAY 30’“ (’ = minutes). To start cooling straight away, press [**On]** for 5 seconds, otherwise cooling starts automatically after the programmed start delay.

3. Once cooling has started, Menu “3.2 COOLING TO 4.0˚C 0% 2H10’ 13.0˚C” is displayed. Line two shows the time to Set 2 and the current temperature of the milk.

   To go directly on to Set 2, press **[On]** for five seconds.



4. Once set 2 has been reached, Menu “3.3 COOLING TO 3.2˚C 0% 13.0˚C” is displayed. Line two displays the current temperature of the milk.



All times and temperatures are only examples and can be changed as required.

Cooling after cleaning

Before cooling is started, the manual outlet valve should be closed and the cleaning result checked.

1. Once cleaning has been completed, the display shows Menu “2.9 CLEANING READY PRESS ON”. Press **[On]** to confirm the cleaning.

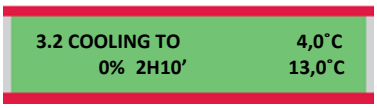
2. Menu “3 COOLING” is displayed. Press **[On]** to start cooling.

3. Menu “3.1 COOLING DELAY 30’ “ is now displayed. (’ = minutes). Cooling starts automatically after the programmed start delay. To start cooling straight away press **[On]** for 5 seconds.

With a robot, cooling starts automatically after cleaning.

Cancelling cooling

1. To cancel cooling whilst activity in progress, press **[Off]**.

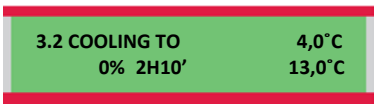


2. The display now shows “CONTINUE PRESS ON, STOP PRESS OFF”.

3. To stop cooling, press **[Off]**. Cooling stops and Menu “0” is shown on the display.

Leaving Menu 3 – Cooling whilst activity in progress

1. To leave Menu “3 COOLING” whilst activity in progress, press **[Off]**.



2. The display now shows “CONTINUE PRESS ON, STOP PRESS OFF”. To leave the menu without stopping the cooling, press **[On]**.

3. Menu “3 COOLING” is now shown on the display. Other menus are accessible whilst cooling is in progress.

If emptying or cleaning is started, cooling is stopped.

Programming cooling

Cooling in WMMC can be programmed to suit various specific requirements. All changes are made in Menu “6 SETTINGS”. To see how the settings can be changed and to see a table of all parameters, see the section “Recommended factory settings”.

When the tank is started for the first milking, there is a delay before the compressor starts. This delay is programmed in **parameter 6.2A**. This is so that the compressor will not start before the milk reaches the agitator. If the compressor starts too soon, ice can build up in the tank.

The two breakpoints are set in **parameters 6.2C and D**. The time that the tank cools to breakpoint 1 is set in **parameter 6.2E**, calculated from when the compressor starts. After this point, the tank cools to breakpoint 2.

If the compressor runs for longer without stopping than the time set in **parameter 6.2B**, alarm **A19 Slow cooling** is activated.

If, after an hour from when the compressor starts, the milk is warmer than the temperature set in **parameter 6.2K**, alarm **A 17 Warm milk 60’** is activated.

Optional equipment

Delayed start of compressor 2

If the tank has more than one compressor, a delay can be set before the second compressor starts. This is an option that must be ordered. This delay is set in **parameter 6.2F**. The delay is calculated from when the first compressor starts and is only active during Set 1. If there are four compressors, they are connected together so that two compressors count as compressor 1 and the other two as compressor 2.

Capacity regulator

If the tank is equipped with a Wedholms’ capacity regulator, **parameter 6.2G** is used to change the length of time for which it should be active, calculated from the end of the delay time (only active during breakpoint 1). See also the section “Options, Capacity regulator”.

Tube Cooler

If a Wedholms’ Tube Cooler is used, three parameters should be adjusted: **Parameter 6.2H** should be set to **ON;** the time for which the Tube Cooler is to work after the milk pump has stopped should be set in **6.2I;** and the compressor that the Tube Cooler is connected to should be set in **6.2J**. See also the section “Options, Tube Cooler”.

Menu 4 - Filling

This function should **only** be used if the milking system is controlled from WMMC. If such a system is used, see the special instructions attached.

If conventional milking is used and the milking is not controlled by WMMC (by far the most common scenario), this function should **never** be used and the “Filling” LED will always be off.

If a robot is used, filling will be controlled by the robot and this menu will **never** be used. However, when the robot is filling the tank, the “Filling” LED will light up to indicate communication between the tank and the robot.

If the filling function is switched on, cleaning of the tank cannot be performed.

Menu 5 - Agitation

Whilst agitation is in progress, the “Agitation” LED lights up.
Agitation occurs **automatically** under the following circumstances:

- When the compressor is running during cooling.
- When the cleaning pump is running during cleaning.
- Cyclically during the periods when the milk is being kept cool, as per a pre-installed program.
  See Programming Agitation.
- When emptying of the tank begins.
  See Programming Agitation.

Agitation can also be performed **manually**, but for a maximum of one hour at a time:

1. Go to Menu “5 AGITATION”.

2. Press **[On]** to start agitation. The display now shows “5.1 AGITATION”.

Cancelling agitation

1. To cancel Menu “5 AGITATION” whilst activity in progress, press **[Off]** when the display is showing “5.1 AGITATION”.

2. The display now shows “CONTINUE PRESS ON, STOP PRESS OFF”. To stop agitation, press **[Off]**

3. Agitation stops and Menu “0” is shown on the display.

Leaving Menu 5 – Agitation whilst activity in progress

1. To leave Menu “5 AGITATION” whilst activity in progress, press **[Off]** when the display is showing “5.1 AGITATION”.

2. The display now shows “CONTINUE PRESS ON, STOP PRESS OFF”. To leave the menu without stopping agitation, press **[On]**.

3. Menu “0” is now shown on the display. Other menus are accessible during cooling.

If emptying or cleaning is started, agitation is stopped.

Programming agitation

During the periods in the cooling cycle when the compressor is not running, the agitator runs according to a programmable schedule. The length of time for which the agitator should run is set in **parameter 6.3A,** and the length of the pause between agitations is set in **parameter 6.3B**. Example: If 6.3A is set to 2 and 6.3B is set to 13, the agitator will run for 2 minutes then stop for 13 minutes before running for a further 2 minutes.

Parameter 6.3D sets the length of time that agitation should occur when the tank is being emptied.

The agitator can run at a lower speed when there is little milk in the tank. **Parameter 6.3C** sets the length of time that this slow agitation should run, calculated from when the compressor starts.

Slow agitation only functions in tanks with an agitator, i.e. tanks 1600l-8000l.
Slow agitation only runs when the milk is warmer than 14 degrees.

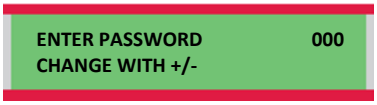
Menu 6 - Settings

Code for changing settings: 169

To change the parameters in menus 6.1 – 6.9, **code 169** must first be entered. If no activity occurs for one hour, WMMC returns to Menu "0". Once the code has been input, it remains active for 3 minutes, during which Menu 6 can be entered and exited freely.

1. Go to Menu "6 SETTINGS". Confirm with **[On]**.

2. Enter the code **(169)** to gain access to the menu. Starting with the last digit, increase and decrease the value using **[Farmer/+]** and **[Driver/-].** Confirm with **[On]** for each digit.



3. Menu "6.1 ALARM SETTINGS" is now shown on the display. Scroll to the desired menu and confirm with **[On]**.

To cancel, press [Off] until Menu "0" is displayed. Changed parameters are saved when Menu 6 is exited.

The following menus, with a number of associated parameters, are available for making any necessary adjustments:

6.1 Alarm settings
6.2 Cooling settings
6.3 Agitation settings
6.4 Cleaning settings
6.5 Robot settings
6.6 Time/Log/ID settings
6.7 Temperature level
6.8 Language
6.9 Alarm options

Changing parameters

1. Select the menu/parameter by scrolling with **[Farmer/+]** and **[Driver/-]**.
2. Press **[On]**. The selected parameter value flashes.
3. Change by pressing **[Farmer/+]** and **[Driver/-]** until the desired value is reached.
4. Press **[Off]** once to return from adjustment mode.

Recommended factory settings

The pre-programmed settings from the factory are **recommended values** for an average tank. However, conditions on farms can vary greatly regarding water pressure, water temperature, detergent, etc. This means that the settings **should be adjusted according to those specific circumstances** for the tank to function well.

ALARM SETTINGS			1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000	
6.1	A	ALARM OUTPUT	NC	NC	NC	NC	NC		*	*	*	* Lely NO, Others NC
6.1	B	HIGH TEMP SENSOR	A	A	A	A	A		A	A	A	
6.1	C	LOW TEMP SENSOR	A	A	A	A	A		A	A	A	
6.1	D	AGIT INACTIVATED	A	A	A	A	A		A	A	A	
6.1	E	AGIT ACTIVATED	A	A	A	A	A		A	A	A	
6.1	F	COMP1 INACTIVATED	A	A	A	A	A		A	A	A	
6.1	G	COMP1 ACTIVATED	A	A	A	A	A		A	A	A	
6.1	H	COMP2 INACTIVATED	I	I	I	I	I		I	I	I	
6.1	I	COMP ACTIVATED	I	I	I	I	I		I	I	I	
6.1	J	CLEAN PUMP INACT	I	I	I	I	I		I	I	I	
6.1	K	CLEAN PUMP ACTIV	I	I	I	I	I		I	I	I	
6.1	L	LEVEL INDICATOR	I	I	I	I	I		I	I	I	
6.1	F	EMPTY PROD CAN	I	I	I	I	I		I	I	I	
6.1	N	OUTLET VALVE OPEN	I	I	I	I	I		I	I	I	
6.1	O	OUTLET VALVE CLOSED	I	I	I	I	I		I	I	I	
6.1	P	DOS PUMP DETERGENT	I	I	I	I	I		I	I	I	
6.1	Q	DOS PUMP DISINFECTION	I	I	I	I	I		I	I	I	
6.1	R	WARM MILK 60M	A	A	A	A	A		A	A	A	
6.1	S	CLEAN TEMP LOW	I	I	I	I	I		I	I	I	
6.1	T	SLOW COOLING	A	A	A	A	A		I	I	I	
6.1	U	HEATER ACTIVATED	I	I	I	I	I		I	I	I	

CONT. ALARM SETTINGS			1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000
6.1	V	HEATER ACTIVATED	I	I	I	I	I		I	I	I
6.1	W	FILLING VALVE OPEN	A	A	A	A	A		A	A	A
6.1	X	FILLING VALVE CLOSED	A	A	A	A	A		A	A	A
COOLING SETTINGS											
6.2	A	DELAY START	35	35	35	35	35		45	45	45
6.2	B	TIME TO ALARM	210	210	210	210	210		360	600	700
6.2	C	SET 1	3,5	3,5	3,5	3,5	3,5		4,0	4,0	4,0
6.2	D	SET 2	3,2	3,2	3,2	3,2	3,2		3,2	3,2	3,2
6.2	E	SET 1 IN	28	28	28	28	28		4	7	8
6.2	F	DELAY COMP2 IN	0	0	0	0	0		0	0	0
6.2	G	ICE PROTECTION	205	205	205	205	205		205	360	420
6.2	H	PRE-COOLER	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF
6.2	I	PRE-COOL DELAY	15	15	15	15	15		15	15	15
6.2	J	PRE-COOLER = COMP 1	1	1	1	1	1		1	1	1
6.2	K	WARM MILK 60'	17	17	17	17	17		22	22	22
AGITATION SETTINGS											
6.3	A	CYCLICAL TIME ON	2	2	2	2	2		2	2	2
6.3	B	CYCLICAL PAUSE	13	13	13	13	13		13	13	13
6.3	C	LOW SPEED IN	0	0	0	0	0		0	0	0
6.3	D	AGIT WHEN EMPTY	2	2	2	2	2		2	2	2
6.3	E	AGIT LAST MILKING	0	0	0	0	0		0	0	0

CLEANING SETTINGS			1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000	
6.4	A	FILLING TIME	5'00''	8'00''	11'00''	16'00''	18'00''		5'00''	11'00''	16'00''	
6.4	B	CIRC. RINSE	3'00"	3'00"	3'00"	3'00"	3'00"		3'00"	3'00"	3'00"	
6.4	C	CIRC. WASHING	8'	8'	8'	8'	8'		6'	6'	8'	
6.4	D	DRAIN STEP	1'10"	2'00"	2'00"	2'45"	3'10"		1'30"	2'00"	2'45"	
6.4	E	DRAIN END	2'00"	2'00"	2'00"	2'00"	2'00"		2'00"	2'00"	2'00"	
6.4	F	DOS. TYPE DETERGENT	1	1	1	1	1		1	1	1	
6.4	G	DOS. TYPE DISINFECTION	1	1	1	1	1		1	1	1	
6.4	H	DOSING DETERGENT	0'45"	1'00"	1'10"	1'25"	1'45"		0'45"	1'10"	1'25''	
6.4	I	DOSING DISINFECTION	0'45''	1'00"	1'10"	1'25"	1'45"		0'45"	1'10"	1'25"	
6.4	J	COLD WATER 2	0'20"	0'30"	0'30"	0'45"	0'45"		0'20"	0'30"	0'45"	
6.4	K	COLD WATER 5	1'30"	2'10"	3'10"	5'10"	6'10"		1'30"	3'10"	5'10"	
6.4	L	HEATER	50	50	50	50	50		50	50	50	
6.4	F	DELAY PUMP	0**	0**	0**	0**	0**		0**	0**	0**	**See comment at end
6.4	N	ALARM TEMP	43,0	43,0	43,0	43,0	43,0		43,0	43,0	43,0	
6.4	O	PAUSE AFTER 2	0'	0'	0'	0'	0'		0'	0'	0'	
6.4	P	ALARM DETERGENT	0	0	0	0	0		0	0	0	
6.4	Q	ALARM DISINFECTION	0	0	0	0	0		0	0	0	
6.4	R	MANUAL STEPPING	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	
6.4	S	DRAIN VALVE 2	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	
6.4	T	SELECT PHASE 3	ON	ON	ON	ON	ON		ON	ON	ON	
6.4	U	SELECT PHASE 5	ON	ON	ON	ON	ON		ON	ON	ON	
6.4	V	SELECT PHASE 6	ON	ON	ON	ON	ON		ON	ON	ON	
6.4	W	SELECT PHASE 7	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	
6.4	X	SELECT PHASE 8	OFF	OFF	OFF	OFF	OFF		ON	ON	ON	
6.4	Y	WARM WATER PHASE 6-7	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	

ROBOT SETTINGS		1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000	
6.5	A ROBOT	N	N	N	N	N		L***	L***	L***	*** Regardless of robot:L
6.5	B AGIT BEFORE COOLING	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF	
6.5	C REQUEST EMPTY	NO	NO	NO	NO	NO		NO	NO	NO	
6.5	D ALLOW CLEANING	NO	NO	NO	NO	NO		NO	NO	NO	
6.5	E CLEANING	NO	NO	NO	NO	NO		NO	NO	NO	
6.5	F MILK PUMP	NO	NO	NO	NO	NO		NO	NO	NO	
TIME/LOG/ID SET											
6.6	A YEAR	9	9	9	9	9		9	9	9	
6.6	B MONTH	10	10	10	10	10		10	10	10	
6.6	C DAY	21	21	21	21	21		21	21	21	
6.6	D HOUR	14	14	14	14	14		14	14	14	
6.6	E MINUTE	55	55	55	55	55		55	55	55	
6.6	F LOGGING FREQUENCY	7	7	7	7	7		7	7	7	
6.6	G ID No 1										
6.6	H ID No 2										
6.6	I ID No 3										
6.6	J ID No 4										
TEMPERATURE/LEVEL											
6.7	A TOTAL DIFF	0,6	0,6	0,6	0,6	0,6		0,6	0,6	0,6	
6.7	B TEMP UNIT	C	C	C	C	C		C	C	C	
6.7	C LOW LIMIT	1,9	1,9	1,9	1,9	1,9		1,9	1,9	1,9	
6.7	D HIGH LIMIT	5,0	5,0	5,0	5,0	5,0		5,0	5,0	5,0	

CONT. TEMPERATURE/LEVEL			1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000
6.7	E	CALIBRATION									
6.7	F	DECIMALS	1	1	1	1	1		1	1	1
6.7	G	CALIBR AMBIENT									
6.7	H	LOW LEVEL									
6.7	I	HIGH LEVEL									
6.7	J	LEVEL OFFSET									
6.7	K	LEVEL GAIN									
6.7	L	H12									
6.7	F	H50									
6.7	N	H75									
6.7	O	H100									
6.7	P	LEVEL	OFF	OFF	OFF	OFF	OFF		OFF	OFF	OFF

LANGUAGE											
6.8	A	ENGLISH									
6.8	B										
6.8	C										
6.8	D										

ALARM OPTIONS											
6.9	A	COMP2 ALARMS	N	N	N	N	N		N	N	N
6.9	B	OUTLET VALVE ALARM	N	N	N	N	N		N	N	N
6.9	C	HEATER ALARM	N	N	N	N	N		N	N	N
6.9	D	FILL VALVE ALARMS	N	N	N	N	N		N	N	N

AMOUNT OF WATER	1600-5000	6000-8000	9000-12000	14000-18000	20000-30000		Robot 4000 - 6000	Robot 7000-12000	Robot 14000->14000
	55l	80l	95l	110l	130l		55l	95l	110l

**If version 1.2.11 or earlier is installed then the time set in 6.4M must be higher than the time in 6.4A.
To check which version is installed, switch off the power. When the power is turned on again,
the version number will be shown on the second row of the display for a few seconds.

Explanation of all parameters

6.1 Alarm settings

There are two types of alarm:
A = **Active alarm**. Red light lights up on the panel. If the tank is connected to a robot or external alarm system, an alarm signal is sent there.
I = **Informative alarm**. Red light lights up on the panel.

Setting	Unit
6.1A: Alarm Output Parameter depends on what type of robot is used. NO = Normally Open, NC = Normally Closed	NO/NC
6.1B: High Temp Sensor Alarm **A22** if the temperature sensor measures a temperature that is too high (>78°C), or is short-circuited	A/I
6.1C: Low Temp Sensor Alarm **A22** if the temperature sensor measures a value that is too low (<0°C) or has lost contact	A/I
6.1D: Agitator Inactivated Alarm **A1** if the agitator is not running when it should be	A/I
6.1E: Agitator Activated Alarm **A2** if the agitator is running when it should not be	A/I
6.1F: Comp 1 Inactivated Alarm **A3** if compressor 1 is not running when it should be	A/I
6.1G: Comp 1 Activated Alarm **A4** if compressor 1 is running when it should not be	A/I
6.1H: Comp 2 Inactivated Alarm **A5** if compressor 2 is not running when it should be	A/I
6.1I: Comp 2 Activated Alarm **A6** if compressor 2 is running when it should not be	A/I
6.1J: Clean Pump Inactivated Alarm **A7** if the cleaning pump is not running when it should be	A/I
6.1K: Clean Pump Activated Alarm **A8** if the cleaning pump is running when it should not be	A/I
6.1L: Level Indicator Alarm **A11** if, during filling, the water does not reach the specified level before filling is stopped by the timer set in 6.4A	A/I
6.1M: Empty Prod Can Alarm **A12** when detergent dispenser (alkaline) and/or acid dispenser is almost empty	A/I
6.1N: Outlet Valve Open (option) Alarm **A13** if outlet valve is open when it should be closed	A/I

6.1O: Outlet Valve Closed (option) A/I
Alarm **A14** if emptying valve is closed when it should be open

6.1P: Dos Pump Detergent (option) A/I
Alarm **A15** if the amount of detergent (alkaline) in the water during cleaning is lower than the value set in 6.4P

6.1Q: Dos Pump Disinfection (option) A/I
Alarm **A16** if the amount of acid in the water during cleaning is lower than the value set in 6.4Q

6.1R: Warm Milk 60' A/I
Alarm **A17** if the temperature of the milk does not reach the temperature set in 6.2K within 60 minutes, calculated from when the compressor starts

6.1S: Clean Temp Low A/I
Alarm **A18** if the cleaning temperature set in 6.4N is not reached by the end of phase 4

6.1T: Slow Cooling A/I
Alarm **A19** if the compressor has run continuously for longer than the time set in 6.2B

6.1U: Heater Activated (option) A/I
Alarm **A10** if the heater is in running when it should not be

6.1V: Heater Inactivated (option) A/I
Alarm **A9** if the heater is not running when it should be

6.1W: Filling Valve Open (option) A/I
Alarm **A20** if the filling valve is open when it should be closed

6.1X: Filling Valve Closed (option) A/I
Alarm **A21** if the filling valve is closed when it should be open.
The alarm is also activated if filling has been going on for 30 minutes and cooling has not been switched on

6.2 Cooling settings

Setting	Unit
6.2A: Delay Start The time that the tank waits before the compressor switches on after cooling has started	Minutes
6.2B: Time To Alarm Alarm A18 Slow Cooling activates if the compressor has run continuously for longer than the time set here	Minutes
6.2C: Set 1 The tank cools the milk to this temperature up to the time set in 6.2E	°C
6.2D: Set 2 The tank cools the milk to this temperature after the time set in 6.2E	°C
6.2E: Set 1 in The tank cools to the temperature set in 6.2C up to this time, and to the temperature set in 6.2D after this time	Hours
6.2F: Delay Comp 2 (option) The length of time between when the first compressor starts and when the second compressor starts. Only compressor 1 runs during the period of time set here. Once this has elapsed, both compressor 1 and 2 run. Note: When both compressors start up, compressor 2 always starts five seconds after compressor 1. Note: Delay of compressor 2 only functions during Breakpoint 1 (see 6.2C-E)	Hours
6.2G: Capacity Regulator (option) The time during which the capacity regulator runs Note: Only runs during Breakpoint 1 (see 6.2C-E)	Minutes
6.2H: Pre-Cooler (option) If a Wedholms' pre-cooler is used, this parameter is set to ON	ON/OFF
6.2I: Pre Cooler Delay (option) The period of time for which the compressor runs along with the pre-cooler after the milk pump has stopped	Seconds
6.2J: Pre Cooler = Compressor (option) Which of the compressors the Tube Cooler is linked to	Number
6.2K: Warm Milk 60' If this temperature is not reached within 60 minutes of the compressor starting, alarm A17 Warm Milk 60' is activated	°C

6.3 Agitation settings

Setting	Unit
6.3A: Cycle Time On This parameter along with 6.3B controls the agitator during cooling whilst the compressor is not running. If the compressor is running, then the agitator will always run too. Example: If 6.3A is set to 2 and 6.3B is set to 13, the agitator will cyclically run for 2 minutes and rest for 13 minutes	Minutes
6.3B: Cycle Pause See 6.3A	Minutes
6.3C: Low Speed In The time for which the agitator will run at half speed **Note:** Only functions with an agitator **Note:** Only functions when the milk is warmer than 14 degrees.	Minutes
6.3D: Agit When Empty The time for which the agitator will run after emptying has started	Minutes
6.3E: Agit Last Milking Function removed	Minutes

6.4 Cleaning settings

Setting	Unit
6.4A: Filling Time The filling of the tank with water is stopped by a level sensor. If filling is slow, this parameter will stop the filling at the value that has been set and proceed with cleaning. Alarm **A11** will then be activated	Minutes' Seconds''
6.4B: Circ. Rinse The length of time that the cleaning pump runs in phases 2, 3, 5, 6, and 7	Minutes' Seconds''
6.4C: Circ. Washing The length of time that the cleaning pump runs in phase 4	Minutes
6.4D: Drain Step The length of time that the drain valve is open in phase 1-7	Minutes' Seconds''
6.4E: Drain End The time that the drain valve is open in phase 8 **Note:** Phase 8 must be used with a robot. See 6.4X	Minutes' Seconds''
6.4F: Dos. Type Deterg This parameter along with 6.4G checks when detergent and disinfectant (acid) are used. Example: (6.4F, 6.4G => event) 0,0 => both detergent and acid are used in the same cleaning cycle every time 1,1 => first cleaning cycle with detergent, second cleaning cycle with acid 2.1 => first two cleaning cycles with detergent, third cleaning with acid. When detergent and acid are used in the same cleaning cycle (0,0), the detergent is used in phase 4 and the acid in phase 6. When detergent and acid are not used in the same cleaning cycle, the acid is also used in phase 4. **Note:** 6.4F can be set to 0-4 6.4G should be set to 0 if 6.4F is set to 0 6.4G must be set to 1 if 6.4F is set to 1-4	Number
6.4G: Dos. Type Disinf. See 6.4F	Number
6.4H: Dosing Deterg The length of time that the dosing pump for the detergent runs. The dosing pump pumps 1 decilitre in approximately 15 seconds	Minutes' Seconds''
6.4I: Dosing Disinf The length of time that the dosing pump for the acid runs The dosing pump pumps 1 decilitre in approximately 15 seconds	Minutes' Seconds''
6.4J: Cold Water 2 The length of time that cold water is filled in phase 2. The remaining amount of water in the phase is hot. The temperature of the water in phase 2 must not exceed 37 degrees. Otherwise, there is a risk that the milk residue will burn and stick to the tank	Minutes' Seconds''

6.4K: Cold Water 5 — Minutes' Seconds''

The length of time that cold water is filled in phase 5. The remaining amount of water in the phase is hot. There should be approximately equal quantities of hot and cold water.

6.4L: Heater (option) — °C

The heater runs until this temperature is reached
Note: 6.9C must be set to Y, otherwise cleaning will not wait until the correct temperature is reached
Note: The heater is only active in phase 4

6.4M: Delay Pump — Minutes' Seconds''

Function removed
Note: If version 1.2.11 or earlier is installed, the time in this parameter must be greater than the time in parameter 6.4A

6.4N: Alarm Temp — °C

Alarm **A 18** will be activated if the temperature set here is not reached by the end of phase 4
Note: This temperature should be set to at least 43 degrees

6.4O: Pause after 2 — Minutes

The length of the pause after phase 2. This pause is used if there is a limited amount of hot water available and additional time is needed to heat more

6.4P: Alarm Detergent (option) — Value 0-99

Alarm if the water does not contain this amount of detergent during cleaning

6.4Q: Alarm Disinfect (option) — Value 0-99

Alarm if the water does not contain this amount of disinfectant during cleaning

6.4R: Manual Stepping — ON/OFF

Function removed. Stepping always allowed

6.4S: Drain Valve (option) — ON/OFF

If an additional drain valve is installed, this parameter should be set to ON.
The additional valve is used in phases 1 and 2

6.4T: Select Phase 3 — ON/OFF

ON if phase 3 is to be used

6.4U: Select Phase 5 — ON/OFF

ON if phase 5 is to be used

6.4V: Select Phase 6 — ON/OFF

ON if phase 6 is to be used

6.4W: Select Phase 7 — ON/OFF

ON if phase 7 is to be used

6.4X: Select Phase 8 — ON/OFF

ON if phase 8 is to be used
Note: Must be used if there is a robot

6.4Y: WW Phase 6 - 7 ON/OFF
ON if hot instead of cold water is to be used in phases 6 and 7

6.4Y: WW Phase 6 - 7 ON/OFF
ON if hot instead of cold water is to be used in phases 6 and 7

6.5 Robot settings

If no robot is used, set 6.5A to N and ignore the rest of the parameters.

Setting	Unit
6.5A: Robot Indicates what kind of robot is used. N = No robot. All robots today use L	N/L/D
6.5B: Agit Before Cool Function removed	ON/OFF
6.5C: Request Empty NO = Normally Open, NC Normally Closed	NO/NC
6.5D: Allow Cleaning NO = Normally Open, NC Normally Closed	NO/NC
6.5E: Cleaning NO = Normally Open, NC Normally Closed	NO/NC
6.5F: Milk Pump NO = Normally Open, NC Normally Closed	NO/NC

6.6 Time/Log/ID settings

Setting	Unit
6.6A: Year Sets the WMMC clock: Year. Example: 9 => 2009	Value
6.6B: Month Sets the WMMC clock: Month	Value
6.6C: Day Sets the WMMC clock: Day	Value
6.6D: Hour Sets the WMMC clock: Hour	Value
6.6E: Minute Sets the WMMC clock: Minute	Value
6.6F: Logging Each Sets how often WMMC saves operating information about the tank	Minutes
6.6G: ID No. 1 1 Sets the tank's ID number, Digits 1 and 2	Number
6.6H: ID No. 1 2 Sets the tank's ID number, Digits 3 and 4	Number
6.6I: Id No. 1 3 Sets the tank's ID number, Digits 5 and 6	Number
6.6J: ID No. 1 4 Sets the tank's ID number, Digits 7 and 8	Number

6.7 Temperature Level

Setting	Unit
6.7A: Total Diff °C Sets the temperature difference above Breakpoint 1 and 2 (6.2C and D) at which the compressor will start Example: 6.7A Total Diff = 0.6°C, 6.2C Breakpoint 1 = 3.5°C => The compressor will start at 4.1°C and stop at 3.5°C	
6.7B: Temp Unit Function removed	C/F
6.7C: Low Limit The lowest value that Breakpoints 1 and 2 (6.2C and D) can be set to	°C
6.7D: High Limit The highest value that Breakpoints 1 and 2 (6.2C and D) can be set to	°C
6.7E: Calibration For calibrating the thermometer. The correct temperature is entered	°C
6.7F: Decimals The number of decimal places, 0 or 1 **Note:** If set to 0 decimal places, 3.9 => 3	Number
6.7G: Calibr Ambient (option) For calibrating the thermometer that measures the ambient temperature	°C
6.7H: Low Level (option) For measuring the level	Litres
6.7I: High Level (option) For measuring the level	Litres
6.7J: Level Offset (option) For measuring the level	Centimetres
6.7K: Level Gain (option) For measuring the level	Centimetres
6.7L: H12 (option) For measuring the level	Centimetres
6.7M: H50 (option) For measuring the level	Centimetres
6.7N: H75 (option) For measuring the level	Centimetres
6.7O: H100 (option) For measuring the level	Centimetres
6.7P: Level (option) For measuring the level	ON/OFF

6.8 Language

WMMC is currently available in 16 different languages. The languages are divided into five groups, with English being available in each group. WMMC is installed with one of these groups, and it is possible to change to another language within the group in menu 6.8. If a language is required that is not included in the group currently installed, a new installation including the required group must be performed.

Group North:	**Group West:**	**Group East:**	**Group South:**	**Group South-east:**
Swedish	German	Russian	Dutch	Italian
Norwegian	Danish	Polish	French	Greek
Finnish	Icelandic	Lithuanian	Spanish	Turkish
English	English	English	English	English

To change language: When the required language is shown on the display, parameter 6.8 LANGUAGE in Menu "6 SETTINGS", press [On]. The language will change when [OFF] is pressed to leave the settings menu.

6.9 Alarm Options

Setting	Unit
6.9A: Comp 2 Alarms (option) Activates the parameters 6.1H and 6.1I	Y/N
6.9B: Outlet Valve Alarms (option) Activates the parameters 6.1N and 6.1O	Y/N
6.9C: Heater Alarms (option) Activates the parameters 6.1U and 6.1V. This parameter must be set to Y if there is a heater, otherwise phase 4 in the cleaning cycle will not stop until the temperature set in 6.4L has been reached	Y/N
6.9D Fill Valve Alarms (option) Activates the parameters 6.1W and 6.1X	Y/N

Menu 7 - Test

Menu “7 Test” enables all the activities in WMMC to be tested manually. The function being tested only runs for as long as **[On]** is kept pressed in.

No test can be performed when a function is running. If there is any attempt to do so, the following message is shown on the display: “NOT ALLOWED FUNCTION(S) IN PROGRESS”

7A Agitator
Agitation runs at the slow speed for the first 10 seconds and then increases to full speed.
7B Cold water direct
7C Hot water
7D Cold water
7E Outlet valve
7F Inlet valve
7G Drain valve 1
7H Drain valve 2
7I Mag valv ice protect
7J Mag valv pre-cooling
7K Mag valv tank cooling
7L Cleaning pump
7M Compressor 1
7N Compressor 2
7O Signal alarm
7P Heater
7Q Request to empty
7R Cleaning
7S Disinf pump
7T Detergent pump
7U Analog inputs:
Temperature 0, Temperature 1, Volume, Conductivity.

1. Go to Menu “7 TEST”.

2. Confirm with **[On]**. “7A AGITATOR” is now displayed. Test agitation by pressing **[On],** or scroll to the desired option using **[Farmer/+]** and **[Driver/-]** and confirm with **[On]**.

To cancel, press [Off] once to return to Menu “7 TEST”, or twice to go to Menu “0”.

Menu 8 - Information

Menu “8 INFORMATION” contains information regarding the tank manufacturer Wedholms AB.

8A Wedholms AB
8B Tel. +46 155-28 03 80
8C Fax.+46 155-21 44 54
8D info@wedholms.se
8E www.wedholms.com (used when resetting, see Reset page 45)

1. Go to Menu “8 INFORMATION”.

2. Confirm with **[On]**. “8A WEDHOLMS AB” is now displayed. To go further press **[Farmer/+]** and **[Driver/-]**.

To cancel, press [Off] once to return to Menu “8 INFORMATION”, or twice to go to Menu “0”.

Menu 9 - Control

The following can be seen in Menu “9 CONTROL”:

9.2	Control cooling	The 5 most recent cooling times and running times for the compressor
9.2	Control cleaning	Maximum temperature of the 5 most recent cleaning cycles and the 5 most recently used cleaning programs
9.3	Control alarm	The 10 most recent alarms

1. Go to Menu “9 CONTROL”.

2. Confirm with **[On]**. The first option “9.1 CONTROL COOLING” is now shown on the display. Select by pressing **[On]** or use **[Farmer/+]** and **[Driver/-]** to scroll to the desired option and then confirm with **[On]**.

To cancel, press [Off] once to return to Menu “9 CONTROL”, or twice to go to Menu “0”.

Menu 10 – Tank Guard

WMMC Tank Guard is an additional control and transmission system used by specific dairies. Suppliers to these dairies can read more in the specific information manual for the Tank Guard functions.

Other users should not turn on Tank Guard when the program for these users is not complete.

Parameter 10A should be set to OFF

Menu 11 – IR Transfer

IR transfer is used to transmit information to a WinLink unit (optional). See also the section “Options, WinLink”.

IR transmission to WinLink can take place at any time when the system is running. Fit WinLink into the two top right-hand screw holes in the WMMC unit. Then start WinLink by pressing “W”. When the LED “U” on WinLink flashes, proceed as follows:

1. Go to Menu “11 IR TRANSFER”. Confirm with **[On]**.

2. The display now shows “11 IR TRANSFER”. If WinLink is fitted and ready, start the transfer by pressing **[On]**. Otherwise, fit WinLink, start and wait until it is ready, and then confirm commencement of IR Transfer with **[On]**.

3. “IR TRANSFER IN PROGRESS” is now displayed. To cancel, press **[Off]**, otherwise wait until the transfer is complete.

To cancel the transfer, press [Off] and WMMC will return directly to Menu “0”.

4. After about 30 seconds the transfer will be complete, but WinLink will need a further 60 seconds to process the information. WMMC will be ready to use again after 30 seconds. The LED “U” that was a steady light during the transfer has now changed to a flashing light. WinLink can now be turned off by pressing **[W]** and then removing it from the WMMC unit.

5. Once the transfer is complete, WMMC automatically returns to the start, and Menu “0” is shown on the display.

Alarms

There are 22 alarms in WMMC. When an alarm is activated, the red "Alarm" LED lights up. Alarms can be programmed to be either an I-alarm (Informative alarm) or an A-alarm (Active alarms).

Alarms that are programmed "I" light up red alarm indicators, but do not activate an output signal.
Alarms programmed "A" light up red alarm indicators. A signal is also sent to an external alarm system or robot.

Alarms are programmed in Menu 6.1, see also chapter Menu "6 SETTINGS".

Types of alarms

A1 Agit inactivated
A2 Agit activated
A3 Comp. 1 inactivated
A4 Comp. 1 activated
A5 Comp. 2 inactivated
A6 Comp. 2 activated
A7 Clean pump inactiv.
A8 Clean pump activated
A9 Heater inactivated
A10 Heater activated
A11 Level indicator
A12 Empty clean prod can
A13 Outlet valve open
A14 Outlet valve closed
A15 Dos. pump deterg.
A16 Dos. pump disinf.
A17 Warm milk 60'
A18 Clean temp low
A19 Slow cooling
A20 Filling valve open
A21 Filling valve closed
A22 Temp sensor fault

Viewing and acknowledging alarms

Alarms that have been activated should be viewed and acknowledged before any process is started. Viewing and acknowledging alarms can only be performed from Menu "0".

1. When a red alarm indicator is lit, press **[Farmer/+]** to find out which alarm has been activated. The display then shows which alarm has been activated, e.g. "EMPTY CLEAN PROD CAN".

2. If more than one alarm has been triggered, then press **[Farmer/+]** multiple times. One alarm is shown each time the button is pressed.

3. Continue to press **[Farmer/+].** Once the last alarm has been shown, the text "PRESS ON TO CLEAR ALARMS" will appear on the display. Press **[On]**. The red alarm LED now goes out and the alarms are cleared.

The 10 most recent alarms can be viewed in Menu 9.3.

Viewing and acknowledging alarms whilst activity in progress

Alarms can be viewed and acknowledged during cooling and agitation. This is not possible during any of the other functions.

1. Press **[Off]** during the cooling or agitation currently in progress. The display then shows “CONTINUE PRESS ON STOP PRESS OFF”.

2. Press **[On]**. The display returns to Menu “3 COOLING” while cooling continues.

3. Press **[Off]** and Menu “0” is displayed. Alarms can now be viewed and acknowledged by scrolling through each alarm with **[Farmer/+]**.

4. Once the last alarm has been displayed, the text “PRESS ON TO CLEAR ALARMS” will appear on the display. Press **[On]** . The red alarm LED goes out and the alarms are then cleared.

Troubleshooting

Error	Cause	Check	Solution
The control system locks up	Memory overload	-	Do reset 1 and reset 2.
Unable to scroll through the menus	Memory overload	-	Do reset 1 and reset 2.
Alarm	**Cause**	**Check**	**Solution**
A1 Agit inactivated	Motor overheated	Test agitator in menu 7A. MA:1 (Klixon) in agitator motor has broken. No circuit between 61-63.	
A2 Agit activated	1. Agitator is running 2. Compressor controlled by countdown timer		1. Replace bottom card
A3 Comp. 1 inactivated	1. Contactor off 2. Pressure switch triggered 3. Motor protection cut out 4. Fan not running	Test contactor in menu 7M.	1. Replace
A4 Comp. 1 activated	1. Contactor on 2. Compressor controlled by countdown timer	1. Contactor 2. -	1. Replace 2. None
A5 Comp. 2 inactivated	1. Contactor off 2. Pressure switch triggered 3. Motor protection cut out	Test contactor in menu 7N.	Change
A6 Comp. 2 activated	1. Contactor on 2. Compressor controlled by countdown timer	1. Contactor 2. -	1. Change 2. None
A7 Clean pump inactiv.	1. Contactor off 2. Motor overheated	Test contactor in menu 7L.	Replace
A8 Clean pump activated	1. Contactor on	Contactor	Replace
A9 Heater inactivated	1. Contactor off 2. Thermal protection tripped	Test contactor in menu 7P.	1. Replace 2. Reset thermal protection
A10 Heater activated	1. Contactor on	Contactor	Replace
A11 Level indicator	1. Water level is not reached during cleaning	Level monitor and float.	1. Clean the filters in the valves. 2. Increase the time in 6.4A.
A12 Empty clean prod can	1. Out of detergent or disinfectant	The level monitors.	Fill with detergent
A13 Outlet valve open	1. Feedback incorrectly connected 2. Valve opened manually or by other object	1. Feedback 2. -	1. Change 2. -
A14 Outlet valve closed	1. Feedback incorrectly connected 2. No feedback	1. Test valve in menu 7E 2. Solenoid valve and compressed air	1. Change 2. -
A15 Dos. pump deterg.	1. Too low concentration of detergent	Dosing pump detergent and its hoses. Check dosing time in menu 7T.	Increase dosing time. Hose in pump should be replaced once a year.

A16 Dos. pump disinf.	1. Too low concentration of disinfectant	Dosing pump disinfectant and its hoses. Check dosing time in menu 7S.	Increase dosing time. Hose in pump should be replaced once a year.
A17 Warm milk 60’	1. Too slow cooling at first milking. Set temp not reached in 1 hr	Cooling system. Check parameters in menu 6.2K	Clean the condenser.
A18 Clean temp low	1. Too low water temperature at end of cleaning phase	Check parameters in menu 6.4N.	Increase incoming water temperature. Increase water volume.
A19 Slow cooling	1. Compressor runs beyond set alarm time	Check time in menu 6.2B high ambient temp low ambient temp. Heat recovery incorrectly adjusted.	Clean the condenser.
A20 Filling valve open	1. Feedback incorrectly connected 2. Valve opened manually or by other object	Feedback	Change
A21 Filling valve closed	1. Feedback incorrectly connected 2. No feedback 3. Milking proceeds for over 30 minutes without cooling 4. Function FILLING is turned on, Menu 4	1. Test valve in menu 7F 2. Solenoid valve and compressed air 3. – 4. turn off function FILLING	1. Change 2. – 3. Start cooling
A22 Temp sensor fault	1. Wrong value, sensor	Terminal blocks 71 and 72.	Replace sensor.

Reset

There are two ways to do a reset, however, both should be performed if a reset is required. It is important that reset 1 is always performed after reset 2.

Copy the memory before reset 2 is performed, if its contents are to be saved.

Reset 1

All functions currently in progress are completely stopped.

1. Switch off the power to the tank.
2. Switch the power on again whilst pressing and holding **[Off]** for approximately 10 seconds.

Reset 2

All the memory in the system is cleared, but the settings remain unchanged.

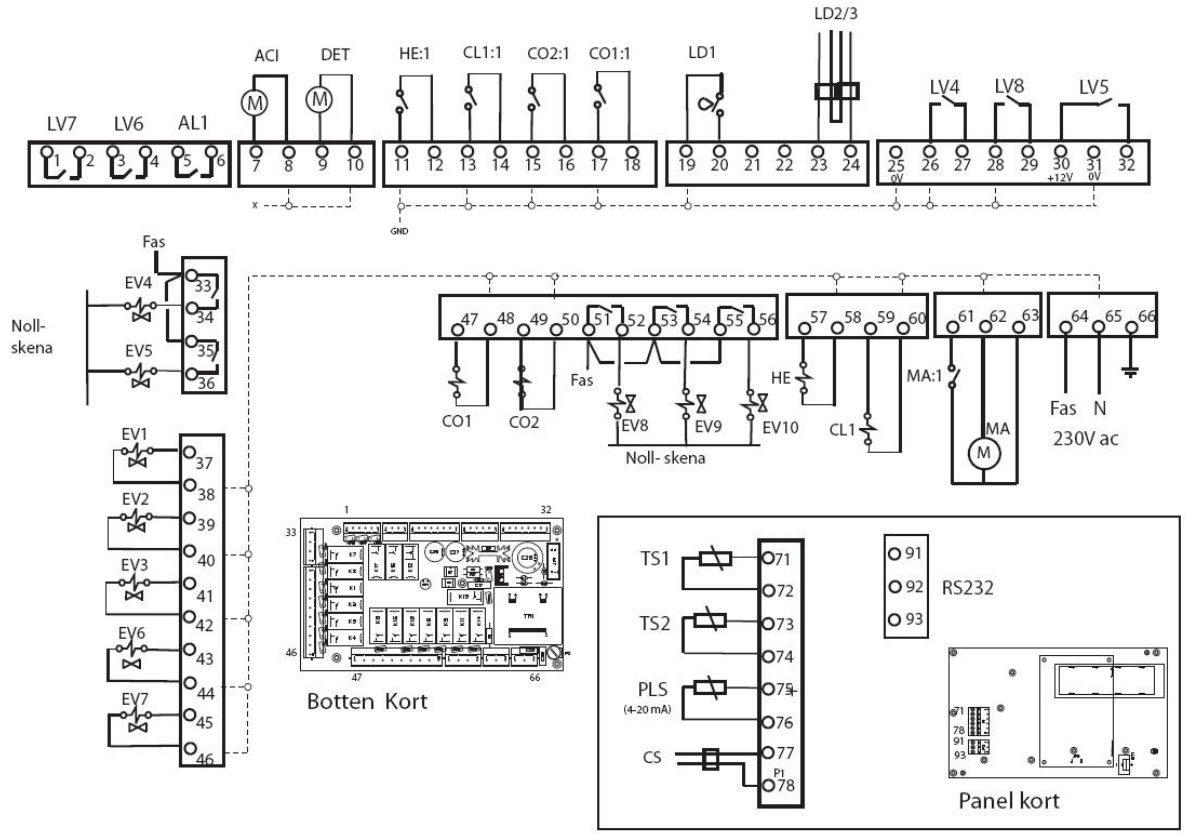
1. Go to Menu 8E, www.wedholms.com.
2. Press and hold **[On]** until Menu "8 INFORMATION" is redisplayed, approximately 25 seconds.

It is recommended that a reset be performed before the tank is first put in operation, and twice a year. This is to avoid the memory becoming full.

Changing contrast

1. Press and hold **[Off]**.
   Then adjust the contrast using **[Farmer/+]** and **[Driver/-]**.
   [Farmer/+]: Reduces the contrast
   [Driver/-]: Increases the contrast
1. When the desired contrast is reached, release **[Off]**.

Connection diagram



Inputs	
MA	Agitator
EV1	Solenoid valve Cold water direct
EV2	Solenoid valve Hot water
EV3	Solenoid valve Cold water
EV4	Solenoid valve Outlet valve tank
EV5	Solenoid valve Inlet valve tank
EV6	Solenoid valve Drain valve no. 1
EV7	Solenoid valve Drain valve no. 2
EV8	Solenoid valve Capacity regulator
EV9	Solenoid valve Tube cooler
EV10	Solenoid valve Cooling tank
CL1	Contactor cleaning pump
CO1	Contactor compressor 1
CO2	Contactor compressor 2
DET	Dos pump detergent
ACI	Dos pump disinfection
AL1	Alarm 1
HE	Contactor heater
LV6	“Request to empty”-signal to robot
LV7	“Cleaning” signal to robot

Outputs	
MA:1	Feedback Agitator
CO1:1	Feedback Contactor compressor 1
CO2:1	Feedback Contactor compressor 2
CL1:1	Feedback Contactor cleaning pump
HE:1	Feedback Contactor heater
TS1	Sensor Temperature tank
TS2	Sensor Ambient temperature
LD1	Level indicator washing
LD2/3	Conductive Sensor detergent
LV4	Position Sensor outlet valve
LV5	Position Sensor filling valve
LV8	Feedback Milk pump
CS	Conductive Sensor cleaning
PLS	Level sensor
RS232	Connection PC

Options

Heater

General

Wedholms' heater is offered as an option for farms with poor access to hot water for cleaning. The heater is connected into the cleaning-water system, and when the water flows through the heater during the cleaning process, the water is heated. Installation of the heater can be requested when ordering and purchasing a new tank. Alternatively, a heater can be purchased separately for self-installation in an already existing system.

Function

The heater is only active in cleaning phase 4. This phase runs until the temperature set in WMMC is reached.

The temperature that is required to be reached is set in WMMC, not using the dial on the heater. The dial on the heater should be set between 60 and 70 degrees.

Two parameters should be adjusted in WMMC. **Parameter 6.4L** sets the temperature that is to be reached by the end of phase 4. **Parameter 6.9C** should be set to **Y**

Technical data

Voltage:	**400V, 3 phase 50 Hz**	**230V, 3 phase 50 Hz**
Power:	**10kW**	**10kW**
Current:	**14.5 A**	**25 A**

See "Installation and servicingmanual" for more information.

Conductivity sensor

General

Wedholms' conductivity sensor checks that a sufficient quantity of detergent has been dosed during the cleaning process. The conductivity sensor is installed in the water tank located next to the pump.

Function

When detergent is mixed with water, the water's electrical conductivity is changed. The more detergent in the water, the greater the conductivity. This makes it possible to check whether detergent has been added to the water in sufficient quantity by measuring the conductivity.

The **parameters 6.4P** and **6.4Q** in WMMC set the level of conductivity that must be exceeded in order for the alarms **A15 Dos Pump Deterg** and **A16 Dos Pump Disinf** not to be activated. **Parameters 6.1P** and **6.1Q** determine whether the alarms are active or informative.
See also the section Menu "6 SETTINGS".

See in particular the "Installation and servicingmanual for which values of conductivity apply for various detergents.

Tube Cooler

General

Wedholms' patented Tube Cooler is a heat exchanger that cools the milk on its way to the tank. Cooling the milk in a milk-cooling tank does not become cost-effective until the tank is 10% full. What is special about Wedholms' Tube Cooler is its design. The Tube Cooler is fully welded on the refrigerant side and joined onto the dairy fittings on the product side.

Function

The Tube Cooler is run by the tank's compressor. When the milk pump starts, a solenoid valve opens so that the refrigerant goes to the Tube Cooler. Three parameters in WMMC control the Tube Cooler:

6.2H: Turns the Tube Cooler on or off.

6.2I: Sets how long the Tube Cooler should run once the milk pump has stopped.

When turned on for a long time, there is a risk of freezing

6.2J: Selects the compressor that is connected to the Tube Cooler.

Capacity regulator

General

When the quantity of milk is low, there is a risk that ice will build up in the tank due to much of the cooling surface being exposed. The capacity regulator is used to adjust the cooling capacity for the current evaporation load.

Function

The regulator senses the evaporation pressure via a pressure transducer. When the evaporation pressure is lower than the value that is set with the regulator, the valve is opened and hot gas is fed (from the high pressure side) into the evaporator. The hot gas is injected via a liquid-gas mixer that is soldered in between the thermostatic expansion valve and the evaporator (or any distributor). This results in the evaporator working with an “artificial” load with a higher evaporation pressure.

A solenoid valve can be connected to the capacity regulator. This is controlled by WMMC so that the capacity regulator only functions for a certain period.
The period of time for which the solenoid valve should be open is set in **parameter 6.2G**.

WinLink

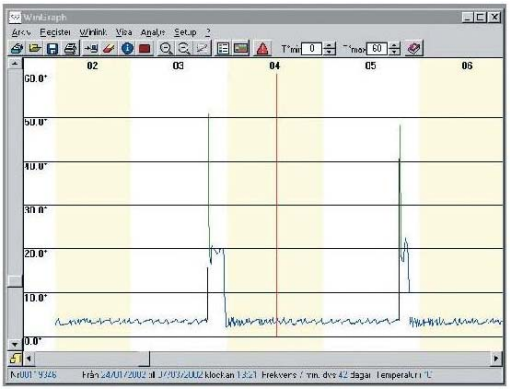
General

WinLink is a portable memory that can be connected to WMMC. WMMC transfers data to WinLink via an infrared signal.
Winlink can then be read by a computer and the information examined.

Function

WMMC stores information about the tank's various functions, such as cooling, cleaning, alarms, etc. The frequency with which operating data is logged in the memory is set in WMMC in **parameter 6.6F**. The more often data is logged, the fewer the number of days that are saved and vice versa. If WMMC logs data every seven minutes, the most recent 42 days are saved.

When WinLink is purchased, it comes with the program WinGraph, which presents data from the tank in a way that is clear and easy to read. The information is presented both in graph and table form listing, and lists cooling times, cleaning temperature, alarms, etc.



GSM

General

WMMC can be equipped with an accessory consisting of a modem for transmitting information via GSM. If originally ordered with the tank, this can be installed at the factory, otherwise it can be installed a later time. The module requires that a mobile phone subscription and SIM card from a local mobile phone operator be purchased for the tank.

Function

The GSM module has 2 functions:

- When an alarm occurs, it sends a text message to up to 4 pre-programmed mobile phone numbers with information about which alarm has been activated, together with the date and time of the alarm. The farmer, the dairy and/or cooling technician can thus receive information about the tank's functions at a distance. This allows for round-the-clock monitoring of the tank's functions, and alarms are never missed. The alarms are stored in WMMC memory as usual and the red LED lights up so checking can also be carried out in the milk room.

- The module also makes it possible to request, via a simple text message, that the history (i.e. the WinGraph file) be sent to a pre-programmed email address. This enables the tank's recent functions to be examined remotely, thus saving a trip to the farm to check them.

The accessory consists of:

- A GSM module
- An antenna
- A CD-ROM containing the WinGraph program and a conversion program to enable the emailed file to be read in the WinGraph program.

Note that a SIM card is not included. It is up to the customer to obtain one.

Instructions for Farmer & Driver

It is recommended that the following instructions be printed out and put up in a prominent place near the tank. Select the instructions that apply to your tank. Please use waterproof paper or replace the instructions as necessary.

The following instructions are available to choose from:

Instructions for Driver
Tank, robot milking

INSTRUCTIONS FOR DRIVER

Robot milking

STARTING EMPTYING

Connect emptying hose

Press **[Driver/-]** to Menu “1 EMPTYING”

Press **[On]**

Wait!

Press **[On]** – outlet valve is opened and over pumping can occur.

Press **[Off]** once emptying is comple

Remove emptying hose
Put on cleaning return cap

Press **[On]** – Start complete cleaning

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