



# ARGOS

## Instruction Manual

English | Version 2.0.1 | 2022

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# 1. Product description

Wedholms' innovative tank control unit Argos monitors, controls and registers everything that happens in the tank and with the Milk Tank Manager software, every process can be monitored remotely. Argos has been designed to allow convenient control of all milk cooling tank functions, offering increased safety and cost-efficiency. The menu is user-friendly and structured in several levels, starting from basic functions that are used every day to more advanced functions that are rarely used.

Argos connects the milk cooling tank directly to the server and with Argos Navigator both the dairy farmer and the technician have quick access to the information. Either via USB cable, the local WLAN network of the farm or via the Internet.

Argos has a range of intelligent features for trouble-free operation, compatibility with automatic milking systems, total temperature control, agitation and cleaning, and a wide range of options.

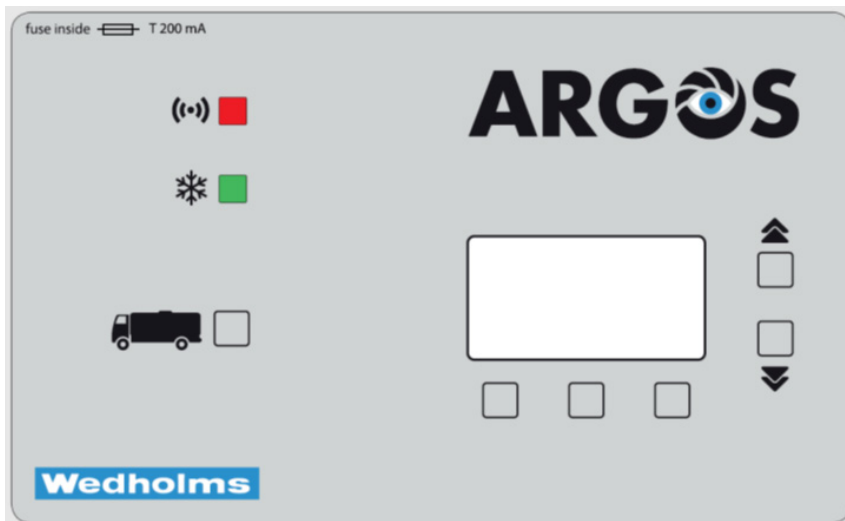


Fig. 1.1

On the front of the Argos unit, there are two LED lights:

- The red LED flashes to signal when there is an alarm.
- The green LED remains lit to signal when the tank is in the cooling function.

Argos is equipped with 6 buttons.

To the left on the unit, with a truck as a symbol, there is a button whose function is to start emptying. This button is only used during emptying, and never otherwise. Below the display, there are three buttons, and to the right, there are two more. The buttons below the display have different meanings depending on which menu you are in. At the bottom of the display, above the different buttons, the system tells you what function the button has in the current menu. The buttons to the right are for scrolling up and down in the menus. When you change the value of a setting, the buttons are used to increase or decrease the value of the setting.

## 2. Menus

The menu system is composed of several levels. The top level contains those functions most often used by the user. The functions that are used less frequently are located further down in the menu system, for example test functions and settings for the service technician.

### 2.1. Basic Mode

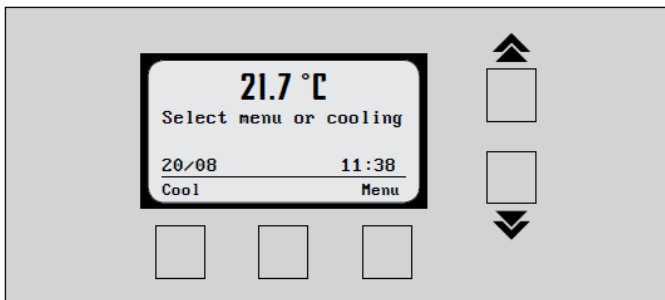


Fig. 2.1

If no function is active, Argos operates in basic mode. In the basic mode, the temperature in the tank is displayed. Cooling mode is activated by pressing **Cool**. **Menu** calls up the menu system. Within the menu system, Argos will automatically return to its basic mode after 5 minutes of inactivity.

### 2.2. Main Menu

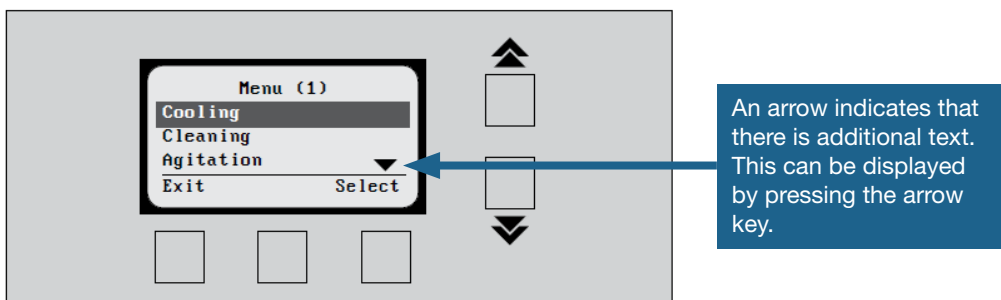


Fig. 2.2

The tank functions such as cooling, cleaning and agitation can be activated in the main menu. The data about recent tank operation can be displayed under **Performance**. To start a function or open a menu, use the arrow keys to highlight the desired option and press **Select**. To return to the basic mode, select the **Exit**. At the top of the display there is information about what menu you are in and a number indicates its position in the menu system.

#### Cooling

Starts the cooling function, see more in the chapter "Cooling".

#### Cleaning

Starts the cleaning function, see more in the chapter "Cleaning".

## Agitation

Starts the agitation function, see more in the chapter "Agitation".

## Performance

Data on the most recent cooling times, cleaning results and the most recent alarms, see more in the chapter "Performance".

## 2.3. Advanced features

With **Advanced** you get to the next level of the menu system to the less frequently used functions **Settings**, **Test**, **Program**, **Options** and **Information**.

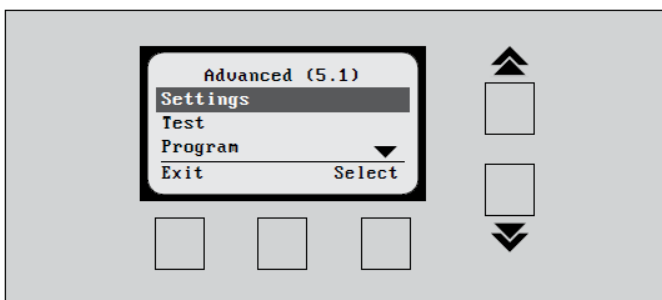


Fig. 2.3

## Settings

**Settings** is where you can program the unit according to how you want the tank to work. The settings are divided into different areas; cooling, cleaning, agitation, etc. See more in the chapter "Settings" and also the various chapters related to the settings.

## Test

**Test** is where the system can be test-run and checked. See more in the chapter "Test".

## Program

**Software** is where you can check both which software version is installed and the unit's IP address. It is also where you can reboot the unit. See more in the chapter "Program".

## Options

Argos is available in several different versions. Two features that can be purchased as options are **Milk Tank Manager** and an additional monitoring function called **Tank Guard**. See more in the chapter "Options".

## Information

**Information** contains contact information to Wedholms. See more in the chapter "Information".

### 3. Cooling

The cooling can be started in different ways.

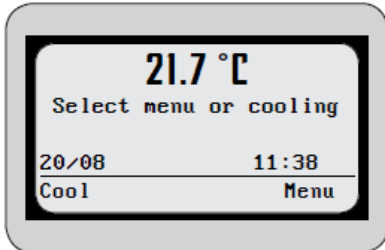


Fig. 3.1

Start of cooling from the basic mode, see fig. 3.1.

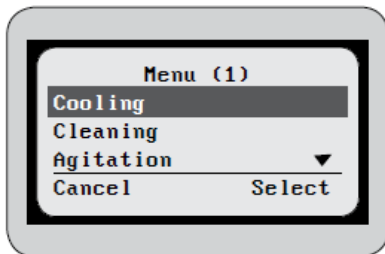


Fig. 3.2

Start of cooling from the main menu, see fig. 3.2.

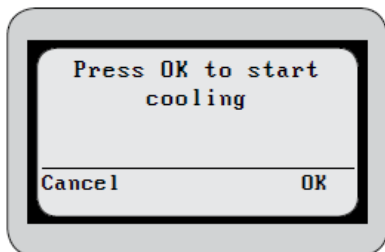


Fig. 3.3

Start of cooling after cleaning, see fig. 3.3.

If **Robot** is selected in setting **E1**, cooling starts automatically after cleaning, given that **Auto cool** is activated in setting **B12**.



Fig. 3.4

When the cooling function is activated, the cooling LED remains lit. It is also possible to connect an external light to the unit, which lights when cooling is activated.



### 3.1. The cooling process

A more detailed explanation of how the settings work can be found later in this chapter and also in the chapter "Settings".

The cooling process consists of 4 steps:

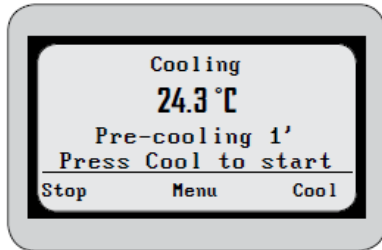


Fig. 3.5

#### Pre-cooling

After the start of the cooling, the so-called pre-cooling takes place first. This is used to cool the tank down again after cleaning, as it can still be hot immediately after cleaning has been completed. After the programmed pre-cooling time has elapsed, the tank switches to the next step.

> To skip pre-cooling and delay, press **Cool**.

If the pre-cooling time is set too long, ice can form in the tank.

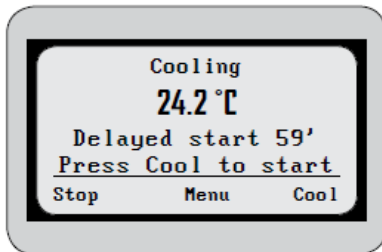


Fig. 3.6

#### Delay

Before the milk covers the agitator blades, the cooling of the milk is not effective. A delay can therefore be set so that the compressor does not start too early. After the programmed delay time has elapsed, the tank will automatically switch to the next step.

> To skip the delay, press **Cool**.

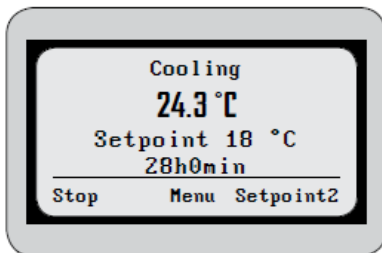


Fig. 3.7

#### Cooling to setpoint 1

After the delay, the tank cools to the first of two setpoints. When the programmed time for **Setpoint 1** has elapsed, the tank cools to **Setpoint 2**.

> To skip to the first setpoint, press **Setpoint2**.

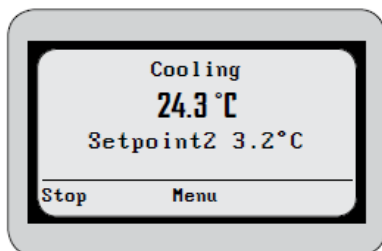


Fig. 3.8

#### Cooling to setpoint 2

After **Setpoint 1**, the tank cools to **Setpoint 2**. To abort cooling, press **Stop**, and when you are asked if you wish to abort cooling, press **Yes**.

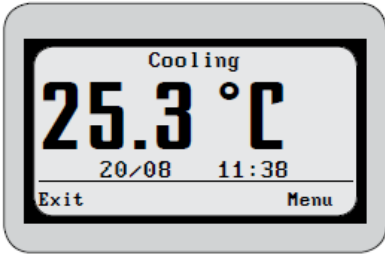


Fig. 3.9

### Switch to other functions

During cooling, it is possible to move around in the menu system while cooling continues. However, you cannot start cleaning or restart cooling without aborting the cooling first. You also cannot activate functions in the menu **Test**.

Press **Menu** to go to the main menu.

If you do not press any buttons for 5 minutes, the text size of the temperature in the display changes, see fig. 3.9. Press **Exit** to go back to the previous mode, or **Menu** to go to the main menu.

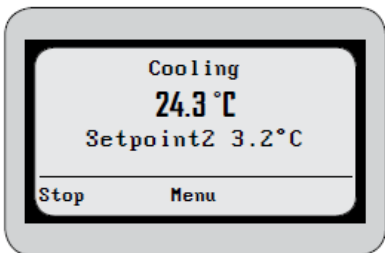


Fig. 3.10

### Exertnal cooling start

Cooling can also be started using an external signal. Cooling starts with the first signa. If there is a second signal, pre-cooling and the delay are skipped. To install the external cooling start function on the system, see chapter "Connection Diagram".

### Abort cooling

Press **Stop** to stop cooling, see fig. 3.10.

## 3.2. Programming the cooling

Cooling in Argos can be programmed according to individual preferences. This is done in **Settings**, see chapter "Settings" to learn how. The settings for cooling can be found in **Menu B Cooling** in **Settings**.

The figure below describes the cooling process. The codes B1-B4 are the settings that control the various phases of the cooling process.

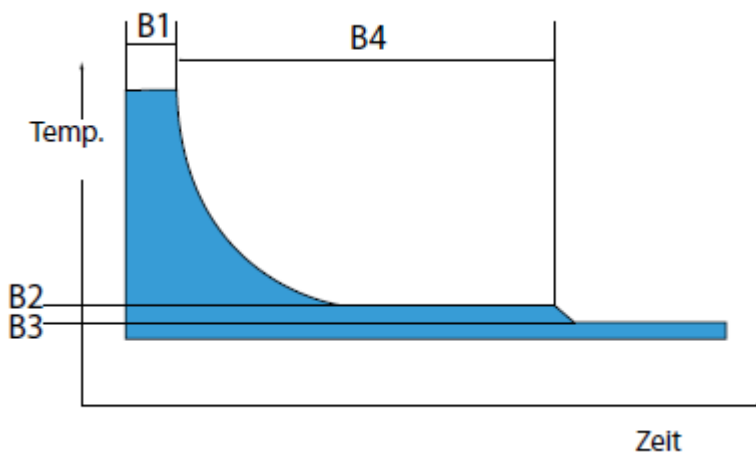


Fig. 3.11

### 3.3. Settings

#### B1 Delay cooling

This setting specifies the delay time in minutes before the compressors start. The delay must be at least long enough for the milk to reach the top of the agitator blades.

#### B2, B3 and B4 Temperature setpoints and time

In settings **B2** and **B3**, temperature setpoints are set. These are the temperatures to which the tank will cool. Setting **B4** sets the time the tank will cool down to **Temperature setpoint 1** before the tank begins to cool down to **Temperature setpoint 2**. The cooling works in such a way that the compressors work until the correct temperature is reached. If the temperature in the tank rises, the compressors start again. To prevent the compressors from switching on and off too often, a temperature difference between switching on and off is programmed. This difference is defined in setting **G1**. The compressors switch off at the temperature setpoint and switch on again when the temperature setpoint plus the temperature difference is reached.

#### B5 Compressor 2 delay

Here, the time difference between switching on the compressors is set. For the setting to work, the compressors of the tank must be connected as compressor 1 and compressor 2. On a tank with four compressors, two compressors are connected as compressor 1 and the other two compressors as compressor 2. Even if no delay has been programmed, there is a time difference of 10 seconds between switching on the two groups of compressors. This reduces the power load, as the compressors consume a lot of power when switched on.

#### B6 Time capacity regulator

This setting programs how long the capacity regulator should be active. Read more about the settings of the capacity regulator in the installation manual of the tank.

#### B7 Time for pre-cooling

This setting programs how long pre-cooling should last. Read more on pre-cooling earlier in this chapter.

#### B8 and B9 Temperature alarms

The values for alarm **A13 Warm milk** are programmed in these two settings. A temperature is to be specified in setting **B8**, and a time in **B9**. If the temperature in the tank is higher than the temperature value set in **B8** during the time specified in **B9**, the alarm is triggered. For more information, see chapter "Alarms".

#### B10 Runtime alarm

Often the first sign that there is a problem in the cooling system of the tank is that the compressors are running longer than normal. If the compressors run continuously longer than the time entered in **B10**, alarm **A12 Slow cooling** will be triggered. For more information, see chapter "Alarms".

#### B11 Compressor delay

With robotic milking and small amounts of milk in the tank, the compressors can switch on and off many times as each new load of milk causes the temperature in the tank to rise above the setpoint temperature. Every start of the compressors causes wear and therefore the number of starts should be reduced with setting **B11**. This is achieved by setting a minimum time from when the compressors turn off until they turn on again.

#### B12 Auto cool

With this setting, cooling starts automatically after cleaning is complete. This setting must be activated when milking is done by a milking robot.

## 4. Emptying



Fig. 4.1

### Easy for the milk truck driver

To make it as easy as possible for the driver of the milk truck, there is a dedicated button for emptying of the tank. Pressing this button will take you straight to the emptying function no matter where Argos is in the menu, except when the tank is being cleaned. To switch to the emptying function during cleaning, the cleaning process must first be stopped.

### Different types of emptying

On tanks that are connected to a milking robot, the inlet and outlet valves are controlled automatically. Therefore, the emptying procedure is slightly different depending on the milking system. In **Settings** under **E1** it is selected whether milking is performed conventionally or with a robotic milking system. If it is indicated that no milking robot is used, the emptying process for conventional milking starts. If it is specified in the settings that milking is carried out with a milking robot, the emptying process for robotic milking starts. In both cases, emptying can be complete or partial.

### 4.1. Complete emptying – Conventional milking

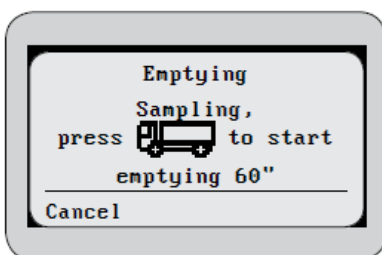


Fig. 4.2

After pressing the **Emptying button**, the agitator starts and **Sampling** is displayed. How long time the agitator should run is defined in setting **C3**. Continue by pressing the **Emptying button** again or press **Cancel** if you do not want to proceed.

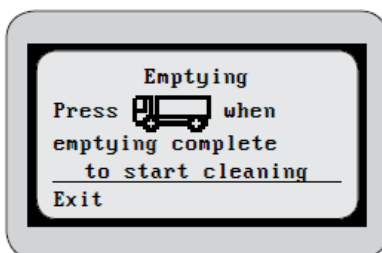


Fig. 4.3

Manually open the outlet valve and empty the tank. After emptying has been completed, fit the cleaning cap on the outlet and start cleaning by pressing the **Emptying button** again or cancel the process with **Exit**.

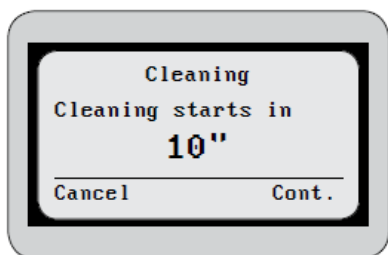


Fig. 4.4

When the **Emptying button** has been pressed, a delay time is counted down before the cleaning starts.

Cleaning after emptying always starts in the program "Complete cleaning".

## 4.2. Partial emptying – Conventional milking

If only part of the tank volume is to be emptied, **Partial emptying** can be performed by manually opening the outlet valve.

There is a risk of milk freezing when partial emptying is performed. Therefore, at least one batch of milk must remain in the tank after partial emptying. One batch of milk, in conventional milking, means one milking. Cooling restart may be required depending on the compressor start delay.

## 4.3. Complete emptying – Robotic milking

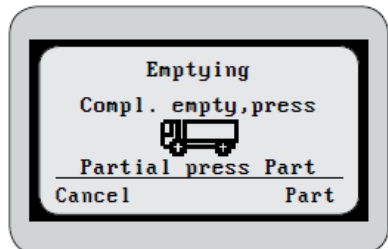


Fig. 4.5

After the first press of the **Emptying button**, indicate whether a **Complete emptying** or a **Partial emptying** should be carried out. Press the **Emptying button** again for complete emptying, alternatively on **Part** for partial emptying. To abort, press **Cancel**. If you always want to perform complete emptying, deactivate the partial emptying function in setting **E2**.

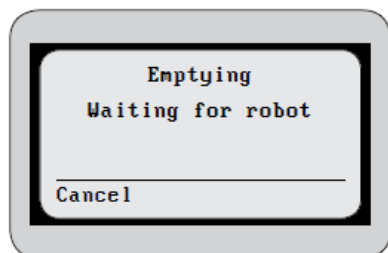


Fig. 4.6

When **Complete emptying** is selected, an emptying signal is sent to the robot and the agitator starts. Press **Cancel** to abort. How long time the agitator should be active is defined in setting **C3**.

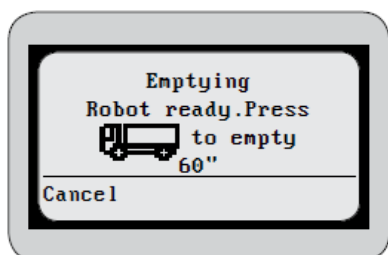


Fig. 4.7

To open the outlet valve and start emptying, press the **Emptying button**. Press **Cancel** to abort.

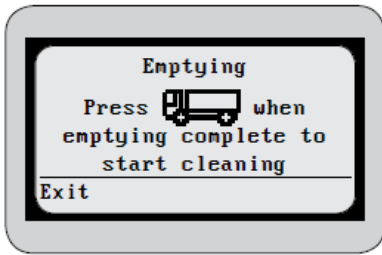


Fig. 4.8

After emptying has been completed, fit the cleaning cap on the outlet. Start cleaning by pressing the **Emptying button** again or cancel the process with **Cancel**.

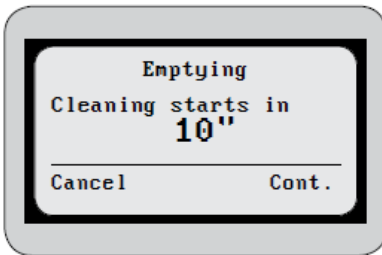


Fig. 4.9

When the **Emptying button** has been pressed, a delay time is counted down before the cleaning starts.

If a complete emptying is interrupted, the cooling function must be restarted in order for the milking robot to be allowed to lead milk into the tank again.

## 4.4. Partial emptying – Robotic milking

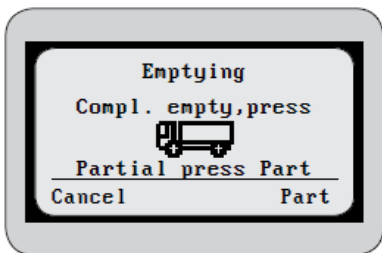


Fig. 4.10

If only part of the tank volume is to be emptied, **Partial emptying** can be performed. After the first press of the **Emptying button**, press **Part** to start a **Partial emptying**. To abort, press **Cancel**.

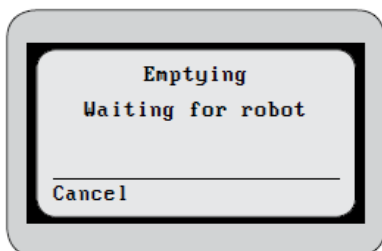


Fig. 4.11

When the driver selects **Partial emptying**, the Argos control system sends a signal telling the robot to stop sending milk to the tank.

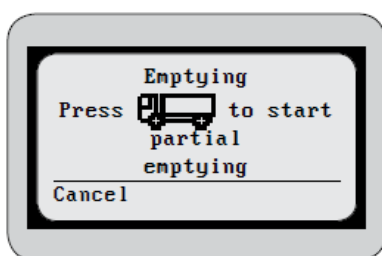


Fig. 4.12

If **Partial emptying** has been selected, the outlet valve is now opened by pressing the **Emptying button** again. Press **Cancel** to abort.

There is a risk of milk freezing when partial emptying is performed. Therefore, there must always be enough milk left in the tank to cover the agitator blades. Restarting the cooling is required unless at least one batch of milk remains in the tank after partial emptying. One batch of milk, in robotic milking, means one milking of all cows in the system.

#### 4.4.1. Partial emptying in robotic milking system with buffer tank

If a buffer tank is used and partial emptying is performed, the milk must be pumped from the buffer tank to the main tank with a pump-over system that has a higher pressure than the back pressure from the remaining milk in the main tank.

The overpumping of the milk into the main tank should be initiated immediately after the completion of the partial emptying, so that the cooling system of the buffer tank does not have to start.

The dairy can offer the farmer a partial purchase of milk. If the farmer accepts the offer, it is important that partial emptying in an installation with a buffer tank is handled hygienically. It is also important to take into account the specific conditions of the farm and the technical adjustments required to ensure the quality of the milk.

## 5. Cleaning

There are four different cleaning programs for the tank. These programs contain one or more of the eight available cleaning phases.

### 5.1. Cleaning programs

#### Complete cleaning

The phases included in Complete cleaning are selected in the settings. See more under "Programming cleaning" later in this chapter.

#### Short clean

Short cleaning includes phases 2, 4 and 6.

#### Cold rinse

Cold rinse includes phase 7.

#### Hot rinse

Hot rinse includes phase 3.

### 5.2. Cleaning phases

#### Phase 1. Pre-Rinse

During this phase, milk residues are rinsed out. If an extra drain valve is installed, this is used for draining.

#### Phase 2. Pre-Clean 1

Rinses with a mixture of hot and cold water. If an extra drain valve is installed, this is used for draining.

#### Phase 3. Pre-Clean 2

Rinses with hot water. If an extra drain valve is installed, this is used for draining.

#### Phase 4. Clean

Main cleaning with hot water and detergent. If both alkaline and acid detergents are used in the same cleaning cycle, the alkaline detergent should be added in phase 4 and the acid in phase 6. If only acid is used, this should be added in phase 4. In this phase, the additional heater is active if the tank is equipped with this option.

#### Phase 5. Rinse 1

Pre-rinse with a mixture of hot and cold water.

#### Phase 6. Rinse 2

Rinse with cold or warm water. If both alkaline and acid detergents are used in the same cleaning cycle, the acid should be added in this phase.

#### Phase 7. Rinse 3

Rinse with hot or cold water.

#### Phase 8. Drain

Additional drain time.

### 5.3. Start of cleaning

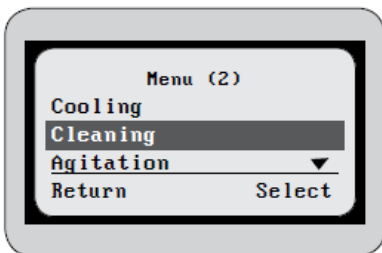


Fig. 5.1

Cleaning can either be started after emptying (see chapter 4 "Emptying") or from the main menu, see fig. 5.1.

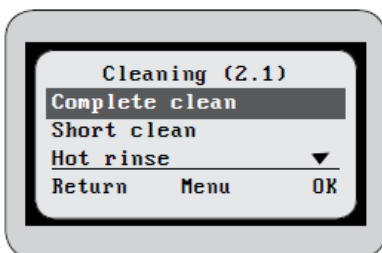


Fig. 5.2

The cleaning program is selected in the cleaning menu. See fig. 5.2.

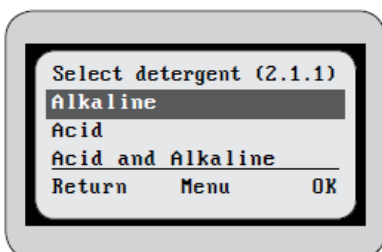


Fig. 5.3

After the cleaning program has been selected, you can choose which detergent to add. See fig. 5.3.

No detergent is selected for **Cold rinse** or **Hot rinse** because these two cleaning programs run without detergent. If **Short cleaning** is selected, it is not possible to choose both alkaline and acid detergent.

When cleaning in connection with emptying, **Complete cleaning** always starts and the detergents specified in the settings are added. See section 5.5 "Programming the cleaning" later in this chapter for more information.



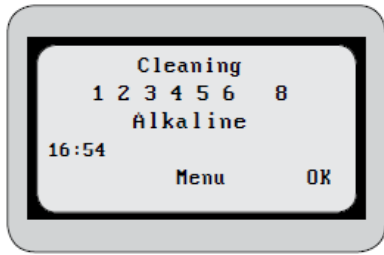


Fig. 5.4

When cleaning, the display alternates between two information windows every 5 seconds.

The cleaning phases of the selected cleaning program are displayed at the top of the first window. The current phase flashes. The detergent added during the cleaning process is indicated underneath. See fig. 5.4.

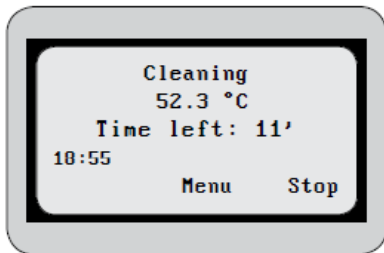


Fig. 5.5

In the second information window, the tank temperature and the remaining cleaning time are displayed. See fig. 5.5.

The cleaning time is calculated as the average time of the last five cleaning cycles.

## 5.4. Cancel and skip within the cleaning cycle

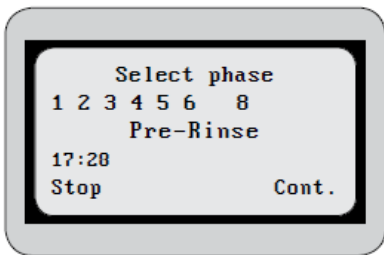


Fig. 5.6

To stop cleaning, press **Stop**.

To abort cleaning completely, press **Stop** again.

To continue the cleaning, press **Cont.** The current phase flashes. The phase within the cleaning cycle can be changed with the arrow keys to the right of the display. When the selected phase is highlighted, use **Cont.** to start cleaning again.

The cleaning phases following the selected phase will also be run. The phases skipped will not be run.

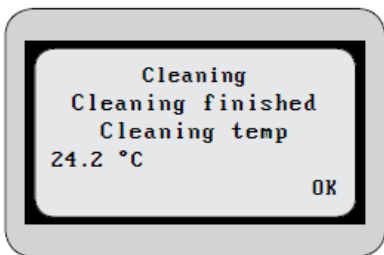


Fig. 5.7

When the cleaning program is finished, the temperature that was reached at the end of cleaning phase 4 is displayed.

After the end of the cleaning program, you can either switch directly to cooling mode or back to basic mode.

When **B12 Auto cool** is set, cooling starts automatically after cleaning.

## 5.5. Programming the cleaning

The cleaning function can be individually adapted in Argos by programming accordingly. This programming is done in the menu **Settings**. See chapter "Settings" for details. The settings for cleaning can be found in **Settings** in **Menu D Cleaning**.

### D1 Filling alarm

When the tank is filled with water during cleaning, the filling process is controlled with a level sensor. If the level sensor does not deliver a signal within the time programmed in **D1**, alarm **A17 Level sensor err** is triggered. The cleaning will continue.

### D2 and D3 Circulation time

These settings control how long time the cleaning pump will circulate the water during the different cleaning phases. **D2** controls phases 2, 3, 5 and 7, **D3** controls phase 4. The running time of the pump in phase 1 is not programmable. In phase 8 the pump does not run at all.

### D4 and D5 Drain time

These settings control how long the drain valve is open, with setting **D4** for phases 2 - 7 and **D5** for phase 8.

### D6 and D7 Hot water mixture in phases 2 and 5

These settings determine the mixing ratio after which hot water is added in phases 2 and 5. 0% corresponds to cold water only, 100% corresponds to hot water only. The percentages are not exact, but indicate how long the hot and cold water valves are open. If the pressure values in the cold and hot water systems are very different, this must be taken into account when setting the mixing ratio.

To prevent the formation of milk deposits, the water temperature in phase 2 must not exceed 36 °C.

If the cleaning temperature is high in phase 4, cold water must be added in phase 5 to avoid the pressure in the tank to drop so much that the cleaning pump works poorly.

### D8 Extra drain valve (optional)

An additional drain valve can be used to direct the water to different drains. If this setting is activated, the drained water in phases 1-3 is drained through the additional drain valve. In the remaining phases, the water is drained through the regular drain valve.

### D9 Pause after phase 2

If a lot of hot water is used elsewhere on the farm while cleaning the tank, cleaning can be paused until enough hot water is available again. If a pause is programmed in **D9**, the milk residues are rinsed out during the first two cleaning phases, then the set time is awaited before the cleaning program continues with the remaining phases.

## D10 and D11 Choice of detergent

The tank can be cleaned with alkaline or acid detergent (referred to in Argos as detergent and acid respectively). Alkaline and acid detergent can be used in the same cleaning cycle or in different cleaning cycles. If the cleaning is started from the main menu, the detergent can be selected. When cleaning after emptying of the tank, the choice of detergent follows the logic below.

Regarding the programming of parameters **D10** and **D11**, see the example below. Which option to choose depends on what types of alkaline and acid detergents are used.

### Example: (D10, D11 => Event)

0,0 => Both alkali and acid are used in the same cleaning cycle every time.

1,1 => First cleaning cycle with alkali, second cleaning cycle with acid.

2,1 => First two cleaning cycles with alkali, third cleaning cycle with acid.

1,2 => First cleaning cycle with alkali, second and third cleaning cycles with acid.

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

The settings cannot be programmed to only set either **D10** or **D11** equal to zero. If **D10** or **D11** is set to a higher value than zero, the other setting must be at least 1.

## D12 and D13 Dosing of detergent

These settings determine how long time the dosing pumps should run. The pumps deliver approx. 100 ml in 15 seconds. The required dosage depends on the detergent used.

Too high concentration of detergent will shorten the life time of the valve diaphragms and hoses in the cleaning system.

## D14 Conductivity sensor (optional)

This setting activates the use of the conductivity sensor. The conductivity sensor provides extra safety in case the level sensors in the detergent containers should be out of order. See the sections for setting **D14** and **D15** and alarm **A25** and **A26** for more information.

The level of conductivity of the cleaning water depends on several factors, such as the type of detergent, the water temperature and the water purity.

## D15 and D16 Alarm for low dosage of detergent (optional)

The more detergent the cleaning water contains, the higher the conductivity of the water. The conductivity sensor measures the conductivity and gives an alarm if the conductivity is too low (alarm **A19** and **A20**). Settings **D15** and **D16** determine below which conductivity value the alarm is generated. To find out which value to enter, it is recommended to run through a couple of cleaning cycles and then check the conductivity value in the menu **Performance**.

## D17 Heater temperature (optional)

To ensure that the water temperature in phase 4 of the cleaning cycle is sufficiently high, an additional heater can be used. The heater is installed in the circulation system and heats the water as it flows through the heater. Setting **D17** determines the temperature to which the heater should heat the water. When the desired temperature is reached, the cleaning phase ends. If the temperature is reached before the entered pump circulation time set in **D3** has elapsed, the heating is switched off and the phase continued for the time set.

The optional heater is only intended for raising the water temperature by 5-10°, not for heating cold water up to the desired cleaning temperature.

For a successful cleaning result, the temperature at the end of phase 4 must not be below 43°C. The setting for **D17** should therefore be at least 43 °C.

## D18 and D19 Alarm for inlet temperature hot water over time

In these two settings, the values for the alarm **A21 Cleaning temperature time** are programmed. A temperature is set in **D18** and a time in **D19**. The alarm is triggered when the temperature in the tank is below the temperature value set in **D18** during the time set in **D19**. See chapter "Alarms" for more information.

## D20 Alarm temperature

In this setting, the temperature for alarm **A22 Cleaning temperature** is programmed. The alarm will be triggered if the cleaning temperature at the end of phase 4 is below the temperature set in **D20**.

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

## D21, D22, D23, D24 and D25 Phase selection

In the cleaning program **Complete cleaning**, desired phases can be selected. Phase 2, 4 and 5 must always be selected. The other phases can be selected or deselected as desired.

## D26 Rinse with hot water

If this setting is activated, the rinsing in phases 6 and 7 takes place with hot water instead of cold water. If an additional heater is installed (optional) and setting **D26** is active, the heater is switched on in phase 7.

## D27, D28, D29 and D30 - Settings for phase 1

In cleaning phase 1, residual milk is rinsed out of the tank and the cleaning spray head is also rinsed. This function is repeated twice. Set the inlet time for the cold water in **D27**. The time for pumping over is defined in **D28**. The opening time for the drain valve in the first rinse is defined in **D29**. In **D30**, the opening time for the drain valve in the second rinse is set.

### D31 and D32 Additional heating (optional)

The time that the temperature **D17** should hold before the cleaning program is continued is set in **D32**. The maximum runtime for the additional heating is set in setting **D31**. If this time is reached although the temperature set in **D17** has not yet been reached for the time set in **D32**, the cleaning program will continue anyway. In this case, alarm **A23** is triggered.

### D33 Circulation pause

When the cleaning pump has circulated for 20 seconds, it will pause to drain any potential air in the system before it restarts. The stop time can be set in setting **D33**.

## 6. Agitation

The agitator is active in the following situations:

- When the compressor is running during cooling.
- When the cleaning pump is running during cleaning.
- At the beginning of the emptying process.
- At programmable intervals during cooling (see section "Programming the agitator" later in this chapter for more information).

The agitator can also be switched on manually. The agitator runs for the time specified in the settings. This manual agitation is also possible when the cooling is active.

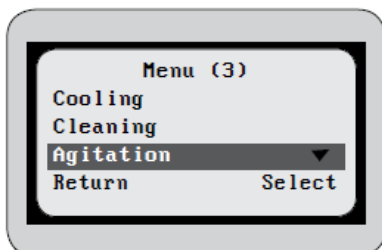


Fig. 6.1

The agitator is switched on from the main menu, see fig. 6.1.

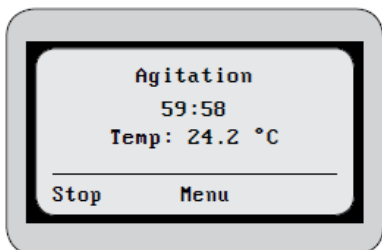


Fig. 6.2

During agitation, the temperature in the tank and the remaining runtime of the agitator are displayed, see fig. 6.2.

To stop agitation, press **Stop** and then answer **Yes** to the subsequent question asking if you want to stop agitation.

During agitation, it is possible to switch to other functions in the menu system while continuing to agitate. However, it is not possible to start the cleaning or restart the cooling process from the beginning without first stopping agitation. The functions in the test menu cannot be activated either.

Return to the main menu by pressing **Menu**.

## 6.1. Programming agitation

The agitation function can be adapted to your own needs in Argos by programming accordingly. This programming is done in the menu **Settings**. See the chapter "Settings" for details. The settings for the agitator can be found in **Menu C Agitation** in **Settings**.

### C1 and C2 Cyclic agitation

In the periods during cooling, when the compressors are not operating, the agitator runs at a programmable interval. Setting **C1** determines for how long the agitator is active, setting **C2** determines the duration of the pause before the agitator is switched on again. For example, if you enter 2 minutes for **C1** and 13 minutes for **C2**, the agitator will run for 2 minutes, then pause for 13 minutes, then run again for 2 minutes, and so on.

### C3 Agitation during emptying

This setting determines for how long agitation should take place during emptying of the tank.

### C4 Agitation before starting the compressors

If this setting is activated, the agitator is always switched on 30 seconds before the compressors start.

### C5 Delay of the agitator

Agitation can be delayed at the start of cooling. This setting defines the duration of the delay. (Only applies to special tanks where agitation is also done elsewhere.)

### C6 and C7 Slow agitation

The agitator can be programmed to start agitation slowly when there is only little milk in the tank. Setting **C6** defines the time from the start of cooling during which the agitator runs slowly. The desired speed is set in setting **C7**. 100% corresponds to normal speed. **Note: For silos with 3-phase agitator motor, the speed must always be set to 100%.**

### C8 and C9 Manual agitation

Setting **C8** programs for how long the agitator should run when agitation is started from the main menu. The desired speed is set in setting **C9**. 100% corresponds to normal speed.

## 7. Settings

In the menu **Settings**, the settings of the tank are programmed to match the current tank. Settings are divided into groups based on what they control.

A	Alarm
B	Cooling
C	Agitation
D	Cleaning
E	Robot
F	Time / Log
G	Temp / Level
H	Language

All settings are described later in this chapter. The menu **Settings** contains three additional functions:

### Calibration

The temperature sensor and the conductivity sensor (optional) are calibrated in the menu **Calibration**. Two values must be specified for both sensors. One for high temperature/conductivity, one for low temperature/conductivity. Specifying two values improves accuracy.

### Save as default

With the function **Save as default**, the current settings are saved. The function **Factory reset** allows you to return to these settings later.

### Factory reset

The function **Factory reset** resets all settings to the values that were last saved as **Save as Default**. The log is also reset. For more information on the log, see the chapter "Navigator".

## 7.1. Change of settings

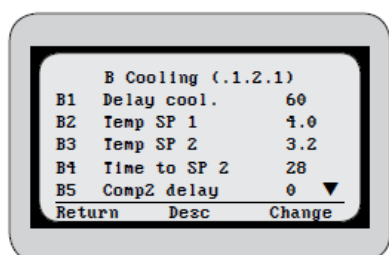


Fig. 7.1

To change a setting, highlight the desired setting and press **Change**. The marking jumps to the value to be changed. This can now be increased or decreased using the arrow keys.

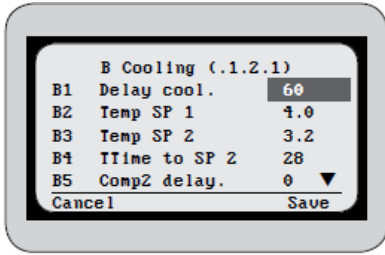


Fig. 7.2

When the desired value is set, press **Save**. To exit without saving, press **Cancel**.

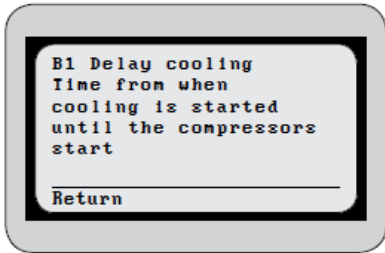


Fig. 7.3

When a setting is highlighted, pressing **Desc** (see fig. 7.1) gives a description of how that setting works. You can leave the description by pressing **Return**.

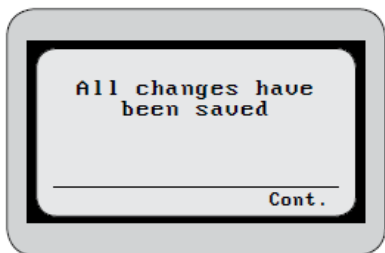


Fig. 7.4

When you exit the menu, you will be asked whether you want to save the changes made.

With **Cont.** the changes are saved.

A confirmation will appear.

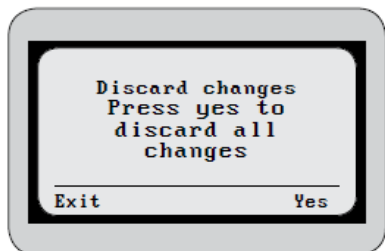


Fig. 7.5

If you press **Exit** instead, the program will ask if you want to delete the changes.

If you press **Yes**, the changes will not be saved.

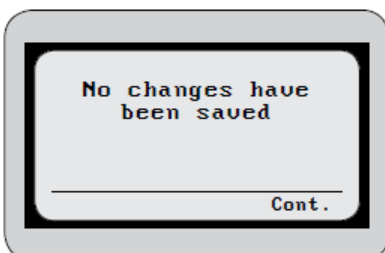


Fig. 7.6

A confirmation will appear.



## 7.2. Description of settings

### 7.2.1. Alarms

The alarms can be set in three different ways:

**Crit** = Critical alarm. In the event of a critical alarm, the red LED light on the device will flash. A signal is sent to the milking robot or to the external alarm system (if present).

**Instr** = Instructional alarm. In the case of an informational alarm, the alarm LED flashes, but no alarm signal is sent to an external unit.

**Off** = Alarm not active.

If Milk Tank Manager (optional) is used, alarms can be sent as SMS.

Settings Menu A Alarm	Unit/Option
<b>A1 Temperature sensor error</b> Temperature sensor not connected or defective.	<b>Crit/Instr/Off</b>
<b>A2 Agitation inactive</b> Agitator not active, no feedback.	<b>Crit/Instr/Off</b>
<b>A3 Agitation active</b> Agitator incorrectly active.	<b>Crit/Instr/Off</b>
<b>A4 Comp. 1 inactive</b> Compressor 1 not active.	<b>Crit/Instr/Off</b>
<b>A5 Comp. 1 active</b> Compressor 1 incorrectly active or incorrect feedback.	<b>Crit/Instr/Off</b>
<b>A6 Comp. 2 inactive</b> Compressor 2 not active.	<b>Crit/Instr/Off</b>
<b>A7 Comp. 2 active</b> Compressor 2 incorrectly active or incorrect feedback.	<b>Crit/Instr/Off</b>
<b>A8 Milk pump inactive</b> Milk pump not active.	<b>Crit/Instr/Off</b>
<b>A9 Milk pump active</b> Milk pump incorrectly active or incorrect feedback.	<b>Crit/Instr/Off</b>
<b>A10 Outlet closed</b> Outlet closed.	<b>Crit/Instr/Off</b>
<b>A11 Outlet open</b> Outlet open.	<b>Crit/Instr/Off</b>
<b>A12 Slow cooling</b> Cooling slow, compressor running time longer than time set in B10.	<b>Crit/Instr/Off</b>
<b>A13 Warm milk</b> The milk is warmer than the value set in B8 during the time set in B9.	<b>Crit/Instr/Off</b>
<b>A14 No cooling</b> Milk allowed to the tank but cooling not activated.	<b>Crit/Instr/Off</b>
<b>A15 Clean. pump inactive</b> Cleaning pump not active.	<b>Crit/Instr/Off</b>
<b>A16 Clean. pump active</b> Cleaning pump incorrectly active or incorrect feedback.	<b>Crit/Instr/Off</b>

Settings Menu A Alarm	Unit/Option
<b>A17 Level sensor error</b> Correct water level not reached within time set in D1 or level sensor defective.	<b>Crit/Instr/Off</b>
<b>A18 Container empty</b> Container for alkaline or acid detergent empty.	<b>Crit/Instr/Off</b>
<b>A19 Low dosage alkaline</b> Low dosage of alkaline detergent when cleaning.	<b>Crit/Instr/Off</b>
<b>A20 Low dosage acid</b> Low dosage of acid detergent when cleaning.	<b>Crit/Instr/Off</b>
<b>A21 Clean time</b> The cleaning temperature set in D19 was not reached in the time specified in D18.	<b>Crit/Instr/Off</b>
<b>A22 Cleaning temp.</b> The cleaning temperature set in D20 was not reached.	<b>Crit/Instr/Off</b>
<b>A23 Heater inactive</b> Additional heater not active.	<b>Crit/Instr/Off</b>
<b>A24 Heater active</b> Heater incorrectly active or incorrect feedback.	<b>Crit/Instr/Off</b>
<b>A25 Water left</b> After cleaning, there is still water in the tank.	<b>Crit/Instr/Off</b>
<b>A26 No water in clean</b> No water filled during cleaning.	<b>Crit/Instr/Off</b>
<b>A27 Power failure</b> A power failure has occurred.	<b>Crit/Instr/Off</b>
<b>A28 High box temp.</b> The temperature in the unit is so high that the system shuts down.	<b>Crit/Instr/Off</b>
<b>A29 Modem error</b> Modem error, check antenna connection and SIM card.	<b>Crit/Instr/Off</b>
<b>A30 Software error</b> Software reverted to earlier version because of instability.	<b>Crit/Instr/Off</b>
<b>A31 Connection error</b> No contact between display and main board.	<b>Crit/Instr/Off</b>
<b>A32 Program error</b> Invalid update, cannot be installed.	<b>Crit/Instr/Off</b>
<b>A33 Change battery</b> Battery replacement alarm, displayed every three years.	<b>Crit/Instr/Off</b>

## 7.2.2. Cooling

Settings Menu B Coolig	Unit/Option
<b>B1 Delay cooling</b> Time from when cooling is started until the compressors are switched on.	Minutes'
<b>B2 Temperature SP 1</b> Cooling down to this temperature during setpoint 1.	°C
<b>B3 Temperature SP 2</b> Cooling down to this temperature during setpoint 2.	°C
<b>B4 Time to SP 2</b> Time for cooling to setpoint 1, then time for cooling to setpoint 2.	Hours
<b>B5 Compressor 2 delay</b> Time delay before compressor 2 is started.	Hours
<b>B6 Capacity reg time</b> Time for which the capacity regulator is active.	Minutes'
<b>B7 Time for pre-cool</b> Time during which the compressors are active at cooling start.	Minutes' Seconds''
<b>B8 Warm milk temp</b> Temperature that must be reached within the time specified in B9 so that alarm 13 is not triggered.	°C
<b>B9 Warm milk time</b> Time within which the temperature specified in B8 must be reached so that alarm 13 is not triggered.	Minutes'
<b>B10 Time to alarm</b> Running time of the compressors until alarm A12 is triggered..	Minutes'
<b>B11 Compressor delay</b> Minimum time between switching off the compressors and switching them on again.	Hours
<b>B12 Auto cool</b> Enables automatic start of cooling after cleaning.	On/Off

## 7.2.3. Agitation

Settings Menu C Agitation	Unit/Option
<b>C1 Time cycl agit on</b> Time for which the agitator is active during cyclic agitation.	Minutes'
<b>C2 Time cycl agit off</b> Time for which the agitator is not active during cyclic agitation.	Minutes'
<b>C3 Emptying agit time</b> Time for which the agitator is active during emptying of the tank.	Minutes'
<b>C4 Agit before cool</b> Time for which the agitator is active before switching on the compressors. This agitation takes place every time the compressors are started.	On/Off
<b>C5 Agitation delay</b> Time after switching on the cooling until the agitator starts. (Only for tanks using other agitation methods.)	Minutes'
<b>C6 Slow agit time</b> Time for which the agitator runs at slow speed.	Minutes'

Settings Menu C Agitation	Unit/Option
<b>C7 Slow agitation %</b> Speed of the agitator during slow agitation. 100 % corresponds to normal speed. The percentage indicates the power delivered to the agitator.	%
<b>C8 Manual agit. time</b> Time for which the agitator is active after manual start.	Minutes'
<b>C9 Manual agitation %</b> Speed of the agitator during manual agitation. 100 % corresponds to normal speed. The percentage indicates the power delivered to the agitator.	%

## 7.2.4. Cleaning

Settings Menu D Cleaning	Unit/Option
<b>D1 Filling time</b> Maximum time to fill water before cleaning continues. At maximum time, alarm A17 is triggered.	Minutes' Seconds''
<b>D2 Rinse circ time</b> Time for which the water circulates in phases 2-3 and 5-7.	Minutes' Seconds''
<b>D3 Phase 4 circ time</b> Time for which the water circulates in phase 4.	Minutes' Seconds''
<b>D4 Drain time ph 2-7</b> Time for which the drain valve is open in phases 2-7.	Minutes' Seconds''
<b>D5 Drain time phase 8</b> Time for which the drain valve is open in phase 8.	Minutes' Seconds''
<b>D6 % H. water phase 2</b> Proportion of hot water in the total amount of water filled in phase 2.	%
<b>D7 % H. water phase 5</b> Proportion of hot water in the total amount of water filled in phase 5.	%
<b>D8 Extra drain</b> Activates the use of drain valve 2. With the additional drain valve, the drainage in phases 1-3 is done via the additional drain valve. Phase 4-8 are drained via the regular drain valve.	Minutes' Seconds''
<b>D9 Pause after ph 2</b> Time for which cleaning is paused after phase 2.	Minutes'
<b>D10 Dose alkali</b> Dosage of alkaline detergent. State 0 for alkaline and acid in the same cleaning process. Enter 1-5 to determine the number of cleanings with alkaline detergent before next cleaning with acid.	0-5
<b>D11 Dose acid</b> Dosage of acid detergent. State 0 for alkaline and acid in the same cleaning process. Enter 1-5 to determine the number of cleanings with acid detergent before next cleaning with alkaline.	0-5
<b>D12 Time alkali</b> Dosage time for alkaline detergent.	Minutes' Seconds''
<b>D13 Time acid</b> Dosage time for alkaline detergent.	Minutes' Seconds''

Settings Menu D Cleaning	Unit/Option
<b>D14 Conduct. sensor</b> Activates use of conductivity sensor.	On/Off
<b>D15 Low dose alkali</b> Conductivity value that must be achieved with alkaline detergent so that alarm A15 is not triggered.	mS
<b>D16 Low dose acid</b> Conductivity value that must be achieved with acid detergent so that alarm A16 is not triggered.	mS
<b>D17 Heater temp</b> Temperature that the heater must reach before the cleaning continues. If the set cleaning temperature is not reached within 30 minutes, the cleaning program continues.	°C
<b>D18 Clean. alarm time</b> Time in phase 4 within which the temperature specified in D19 must be reached so that alarm A 21 is not triggered.	Minutes'
<b>D19 Clean. alarm temp</b> Temperature that must be exceeded in phase 4 within the time set in D18 so that alarm A 21 is not triggered.	°C
<b>D20 Alarm temperature</b> Temperature that must be exceeded at the end of phase 4 so that alarm A 22 is not triggered.	°C
<b>D21 Select phase 1</b> Activates cleaning phase 1 in the programme Complete cleaning.	On/Off
<b>D22 Select phase 3</b> Activates cleaning phase 3 in the programme Complete cleaning.	On/Off
<b>D23 Select phase 6</b> Activates cleaning phase 6 in the programme Complete cleaning.	On/Off
<b>D24 Select phase 7</b> Activates cleaning phase 7 in the programme Complete cleaning.	On/Off
<b>D25 Select phase 8</b> Activates cleaning phase 8 in the programme Complete cleaning.	On/Off
<b>D26 Hot water ph 6-7</b> Activates the use of hot water in phases 6-7.	On/Off
<b>D27 Fill time phase 1</b> Time in which water is filled in phase 1.	Minutes' Seconds''
<b>D28 Circ. time phase 1</b> Time in which water circulates in phase 1.	Minutes' Seconds''
<b>D29 Drain time phase 1</b> Time for the 1st drain in phase 1.	Minutes' Seconds''
<b>D30 2nd dr. time ph 1</b> Time for the 2nd drain in phase 1.	Minutes' Seconds''
<b>D31 Heater max time</b> Maximum time the heater is active before cleaning continues.	Minutes'
<b>D32 Heater hold time</b> The time specified in D17 for the temperature must be reached before cleaning continues.	Minutes'
<b>D33 Circulation pause</b> Stop time of the cleaning pump.	Minutes' Seconds''

## 7.2.5. Robot

Settings Menu E Robot	Unit/Option
<b>E1 Robot type</b> Choice of robot brand if a milking robot is used.	<b>None/Lely/            Type 1 (BouMatic,            Fullwood, GEA/            Westfalia, SAC)/            Type 2 (DeLaval)</b>
<b>E2 Partial emptying</b> Activates the option for partial emptying.	<b>Minutes' Seconds''</b>
<b>E3 Nautilus address</b> LDN address of Nautilus (Robot brand Lely).	<b>236</b>
<b>E4 T4C address</b> LDN address of T4C (Robot brand Lely).	<b>1</b>
<b>E5 RAS address</b> LDN address of RAS (Robot brand Lely).	<b>201</b>

## 7.2.6. Time/Log

Settings Menu F Time/Log	Unit/Option
<b>F1 Year</b> Time setting year.	<b>Year</b>
<b>F2 Month</b> Time setting month.	<b>Month number</b>
<b>F3 Day</b> Time setting day.	<b>Day</b>
<b>F4 Hour</b> Time setting hours.	<b>Hours</b>
<b>F5 Minute</b> Time setting minutes.	<b>Minutes'</b>
<b>F6 Log period</b> Sets how often data from the tank is saved in the log.	<b>Minutes'</b>
<b>F7 ID number</b> Identification number of the tank.	<b>Number</b>
<b>F8 DHCP</b>	<b>On/Off</b>
<b>F9 IP</b>	
<b>F10 Time zone</b>	
<b>F11 DNS</b>	
<b>F12 Netmask</b>	
<b>F13 Gateway</b>	
<b>F14 Milk Tank Manager</b> Activates Wedholms Milk Tank Manager.	<b>On/Off</b>

## 7.2.7. Temperature/Level

Settings Menu G Temperature/Level	Unit/Option
<b>G1 Temp diff on-off</b> Temperature difference between switching on and off the compressor.	°C
<b>G2 Fahrenheit</b> Select Fahrenheit as temperature unit.	On/Off
<b>G3 Level activation</b> Show tank level settings.	On/Off
<b>G4 Level precision</b> Volume measurement accuracy.	20/50/100/200/400 Liters

## 7.2.8. Language

Settings Menu H Language	Unit/Option
<b>H1 Language</b> Language selection.	Current language

## 7.3. Settings per tank volume – Conventional milking

### 7.3.1. Alarms

The alarms can be set in three different ways:

**Crit** = Critical alarm. In the event of a critical alarm, the red LED light on the device will flash. A signal is sent to the milking robot or to the external alarm system (if present).

**Instr** = Instructional alarm. In the case of an informational alarm, the alarm LED flashes, but no alarm signal is sent to an external unit.

**Off** = Alarm not active.

If Milk Tank Manager (optional) is used, alarms can be sent as SMS.

A Alarms	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>A1 Temperature sensor error</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A2 Agitation inactive</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A3 Agitation active</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A4 Comp. 1 inactive</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A5 Comp. 1 active</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A6 Comp. 2 inactive</b>	Instr	Instr	Instr	Instr	Crit	Crit
<b>A7 Comp. 2 active</b>	Instr	Instr	Instr	Instr	Crit	Crit
<b>A8 Milk pump inactive</b>	Off	Off	Off	Off	Off	Off
<b>A9 Milk pump active</b>	Off	Off	Off	Off	Off	Off

A Alarms	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>A10 Outlet closed</b>	Off	Off	Off	Off	Off	Off
<b>A11 Outlet open</b>	Off	Off	Off	Off	Off	Off
<b>A12 Slow cooling</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A13 Warm milk</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A14 No cooling</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A15 Clean. pump inactive</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A16 Clean. pump active</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A17 Level sensor error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A18 Container empty</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A19 Low dosage alkaline</b>	Off	Off	Off	Off	Off	Off
<b>A20 Low dosage acid</b>	Off	Off	Off	Off	Off	Off
<b>A21 Cleaning time</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A22 Cleaning temp.</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A23 Heater inactive</b>	Off	Off	Off	Off	Off	Off
<b>A24 Heater active</b>	Off	Off	Off	Off	Off	Off
<b>A25 Water left</b>	Off	Off	Off	Off	Off	Off
<b>A26 No water in clean</b>	Off	Off	Off	Off	Off	Off
<b>A27 Power failure</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A28 High box temp.</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A29 Modem error</b>	Off	Off	Off	Off	Off	Off
<b>A30 Software error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A31 Connection error</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A32 Program error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A33 Change battery</b>	Instr	Instr	Instr	Instr	Instr	Instr

### 7.3.2. Cooling

B Cooling	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>B1 Delay cooling</b>	35	35	35	35	35	35
<b>B2 Temperature SP 1</b>	3,5	3,5	3,5	3,5	3,5	3,5
<b>B3 Temperature SP 2</b>	3,2	3,2	3,2	3,2	3,2	3,2
<b>B4 Time to SP 2</b>	28	28	28	28	28	28
<b>B5 Compressor 2 delay</b>	0	0	0	0	0	0
<b>B6 Capacity reg time</b>	0	0	0	0	0	0
<b>B7 Time for pre-cool</b>	1'00	1'30	2'00	2'00	2'30	3'00
<b>B8 Warm milk temp</b>	9,0	9,0	9,0	9,0	9,0	9,0
<b>B9 Warm milk time</b>	180	180	180	180	180	180
<b>B10 Time to alarm</b>	210	210	210	210	210	210
<b>B11 Compressor delay</b>	0	0	0	0	0	0
<b>B12 Auto cool</b>	Off	Off	Off	Off	Off	Off



### 7.3.3. Agitation

C Agitation	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>C1 Time cycl agit on</b>	2	2	2	2	2	2
<b>C2 Time cycl agit off</b>	13	13	13	13	13	13
<b>C3 Emptying agit time</b>	2	2	2	2	2	2
<b>C4 Agit before cool</b>	Off	Off	Off	Off	Off	Off
<b>C5 Agitation delay</b>	0	0	0	0	0	0
<b>C6 Slow agit time</b>	0	0	0	0	0	0
<b>C7 Slow agitation %</b>	100	100	100	100	100	100
<b>C8 Manual agit. time</b>	60	60	60	60	60	60
<b>C9 Manual agitation %</b>	100	100	100	100	100	100

### 7.3.4. Cleaning

D Cleaning	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>D1 Filling time</b>	3'30"	5'00"	8'00"	11'00"	16'00"	18'00"
<b>D2 Rinse circ time</b>	3'00"	3'00"	3'00"	3'00"	3'00"	3'00"
<b>D3 Phase 4 circ time</b>	8'00"	8'00"	8'00"	8'00"	8'00"	8'00"
<b>D4 Drain time ph 2-7</b>	0'50"	1'10"	2'00"	2'20"	2'45"	3'10"
<b>D5 Drain time phase 8</b>	2'00"	2'00"	2'00"	2'00"	2'00"	2'00"
<b>D6 % H. water ph 2</b>	20 %	20 %	20 %	20 %	20 %	20 %
<b>D7 % H. water ph 5</b>	70 %	70 %	70 %	70 %	70 %	70 %
<b>D8 Extra drain</b>	Off	Off	Off	Off	Off	Off
<b>D9 Pause after ph 2</b>	Off	Off	Off	Off	Off	Off
<b>D10 Dose alkali</b>	1	1	1	1	1	1
<b>D11 Dose acid</b>	1	1	1	1	1	1
<b>D12 Time alkali</b>	0'30"	0'45"	1'00"	1'20"	1'45"	2'10"
<b>D13 Time acid</b>	0'30"	0'45"	1'00"	1'20"	1'45"	2'10"
<b>D14 Conduct. sensor</b>	Off	Off	Off	Off	Off	Off
<b>D15 Low dose alkali</b>	5,0	5,0	5,0	5,0	5,0	5,0
<b>D16 Low dose acid</b>	5,0	5,0	5,0	5,0	5,0	5,0
<b>D17 Heater temp</b>	50	50	50	50	50	50
<b>D18 Clean. alarm time</b>	4	4	4	4	4	4
<b>D19 Clean. alarm temp</b>	38	38	38	38	38	38
<b>D20 Alarm temperature</b>	43	43	43	43	43	43
<b>D21 Select phase 1</b>	On	On	On	On	On	On
<b>D22 Select phase 3</b>	On	On	On	On	On	On
<b>D23 Select phase 6</b>	On	On	On	On	On	On
<b>D24 Select phase 7</b>	Off	Off	Off	Off	Off	Off
<b>D25 Select phase 8</b>	Off	Off	Off	Off	Off	Off

D Cleaning	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>D26 Hot water ph 6-7</b>	Off	Off	Off	Off	Off	Off
<b>D27 Fill time phase 1</b>	0'50"	1'00"	1'00"	1'00"	1'10"	1'20"
<b>D28 Circ. time phase 1</b>	0'10"	0'10"	0'10"	0'10"	0'12"	0'15"
<b>D29 Drain time phase 1</b>	0'30"	0'30"	0'30"	0'30"	0'35"	0'35"
<b>D30 2nd dr. time ph 1</b>	0'40"	0'40"	0'40"	0'40"	0'45"	0'45"
<b>D31 Heater max. time</b>	45	45	45	45	45	45
<b>D32 Heater hold time</b>	3	3	3	3	3	3
<b>D33 Circulation pause</b>	0'05"	0'05"	0'05"	0'05"	0'05"	0'05"

### 7.3.5. Robot

E Robot	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>E1 Robot type</b>	No	No	No	No	No	No
<b>E2 Partial emptying</b>	Off	Off	Off	Off	Off	Off

### 7.3.6. Time/Log

F Time/Log	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>F1 Year</b>						
<b>F2 Month</b>						
<b>F3 Day</b>						
<b>F4 Hour</b>						
<b>F5 Minute</b>						
<b>F6 Log period</b>	7	7	7	7	7	7
<b>F7 ID number</b>						
<b>F8 DHCP</b>	On	On	On	On	On	On
<b>F9 IP</b>						
<b>F10 Time zone</b>						
<b>F11 DNS</b>						
<b>F12 Netmask</b>						
<b>F13 Gateway</b>						
<b>F14 Milk Tank Manager</b>	Off	Off	Off	Off	Off	Off

### 7.3.7. Temp/Level

G Temp/Level	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>G1 Temp diff on-off</b>	0,6	0,6	0,6	0,6	0,6	0,6
<b>G2 Fahrenheit</b>	Off	Off	Off	Off	Off	Off
<b>G3 Level activation</b>	Off	Off	Off	Off	Off	Off
<b>G4 Level precision</b>	20	20	50	100	200	400

### 7.3.8. Language

H Language	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>H1 Language</b>						

## 7.4. Settings per tank volume – Robotic milking

### 7.4.1. Alarms

The alarms can be set in three different ways:

**Crit** = Critical alarm. In the event of a critical alarm, the red LED light on the device will flash. A signal is sent to the milking robot or to the external alarm system (if present).

**Instr** = Instructional alarm. In the case of an informational alarm, the alarm LED flashes, but no alarm signal is sent to an external unit.

**Off** = Alarm not active.

If Milk Tank Manager (optional) is used, alarms can be sent as SMS.

A Alarms	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>A1 Temperature sensor error</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A2 Agitation inactive</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A3 Agitation active</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A4 Comp. 1 inactive</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A5 Comp. 1 active</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A6 Comp. 2 inactive</b>	Instr	Instr	Instr	Instr	Crit	Crit
<b>A7 Comp. 2 active</b>	Instr	Instr	Instr	Instr	Crit	Crit
<b>A8 Milk pump inactive</b>	Off	Off	Off	Off	Off	Off
<b>A9 Milk pump active</b>	Off	Off	Off	Off	Off	Off
<b>A10 Outlet closed</b>	Off	Off	Off	Off	Off	Off
<b>A11 Outlet open</b>	Off	Off	Off	Off	Off	Off

A Alarms	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>A12 Slow cooling</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A13 Warm milk</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A14 No cooling</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A15 Clean. pump inactive</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A16 Clean. pump active</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A17 Level sensor error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A18 Container empty</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A19 Low dosage alkaline</b>	Off	Off	Off	Off	Off	Off
<b>A20 Low dosage acid</b>	Off	Off	Off	Off	Off	Off
<b>A21 Cleaning time</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A22 Cleaning temp.</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A23 Heater inactive</b>	Off	Off	Off	Off	Off	Off
<b>A24 Heater active</b>	Off	Off	Off	Off	Off	Off
<b>A25 Water left</b>	Off	Off	Off	Off	Off	Off
<b>A26 No water in clean</b>	Off	Off	Off	Off	Off	Off
<b>A27 Power failure</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A28 High box temp.</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A29 Modem error</b>	Off	Off	Off	Off	Off	Off
<b>A30 Software error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A31 Connection error</b>	Crit	Crit	Crit	Crit	Crit	Crit
<b>A32 Program error</b>	Instr	Instr	Instr	Instr	Instr	Instr
<b>A33 Change battery</b>	Instr	Instr	Instr	Instr	Instr	Instr

## 7.4.2. Cooling

B Cooling	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>B1 Delay cooling</b>	45	45	45	45	45	45
<b>B2 Temperature SP 1</b>	4,0	4,0	4,0	4,0	4,0	4,0
<b>B3 Temperature SP 2</b>	3,2	3,2	3,2	3,2	3,2	3,2
<b>B4 Time to SP 2</b>	4	4	6	7	8	8
<b>B5 Compressor 2 delay</b>	0	0	0	0	0	0
<b>B6 Capacity reg time</b>	205	205	360	360	420	420
<b>B7 Time for pre-cool</b>	1'00	1'30	2'00	2'00	2'30	3'00
<b>B8 Warm milk temp</b>	9,0	9,0	9,0	9,0	9,0	9,0
<b>B9 Warm milk time</b>	180	180	180	180	180	180
<b>B10 Time to alarm</b>	360	360	600	600	700	700
<b>B11 Compressor delay</b>	0	0	0	0	0	0
<b>B12 Auto cool</b>	On	On	On	On	On	On

### 7.4.3. Agitation

C Agitation	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>C1 Time cycl agit on</b>	2	2	2	2	2	2
<b>C2 Time cycl agit off</b>	13	13	13	13	13	13
<b>C3 Emptying agit time</b>	2	2	2	2	2	2
<b>C4 Agit before cool</b>	On	On	On	On	On	On
<b>C5 Agitation delay</b>	0	0	0	0	0	0
<b>C6 Slow agit time</b>	0	0	0	0	0	0
<b>C7 Slow agitation %</b>	100	100	100	100	100	100
<b>C8 Manual agit. time</b>	60	60	60	60	60	60
<b>C9 Manual agitation %</b>	100	100	100	100	100	100

### 7.4.4. Cleaning

D Cleaning	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>D1 Filling time</b>	3'30"	5'00"	8'00"	11'00"	16'00"	18'00"
<b>D2 Rinse circ time</b>	3'00"	3'00"	3'00"	3'00"	3'00"	3'00"
<b>D3 Phase 4 circ time</b>	8'00"	8'00"	8'00"	8'00"	8'00"	8'00"
<b>D4 Drain time ph 2-7</b>	0'50"	1'10"	2'00"	2'20"	2'45"	3'10"
<b>D5 Drain time phase 8</b>	2'00"	2'00"	2'00"	2'00"	2'00"	2'00"
<b>D6 % H. water ph 2</b>	20 %	20 %	20 %	20 %	20 %	20 %
<b>D7 % H. water ph 5</b>	70 %	70 %	70 %	70 %	70 %	70 %
<b>D8 Extra drain</b>	Off	Off	Off	Off	Off	Off
<b>D9 Pause after ph 2</b>	Off	Off	Off	Off	Off	Off
<b>D10 Dose alkali</b>	1	1	1	1	1	1
<b>D11 Dose acid</b>	1	1	1	1	1	1
<b>D12 Time alkali</b>	0'30"	0'45"	1'00"	1'20"	1'35"	2'10"
<b>D13 Time acid</b>	0'30"	0'45"	1'00"	1'20"	1'35"	2'10"
<b>D14 Conduct. sensor</b>	Off	Off	Off	Off	Off	Off
<b>D15 Low dose alkali</b>	5,0	5,0	5,0	5,0	5,0	5,0
<b>D16 Low dose acid</b>	5,0	5,0	5,0	5,0	5,0	5,0
<b>D17 Heater temp</b>	50	50	50	50	50	50
<b>D18 Clean. alarm time</b>	4	4	4	4	4	4
<b>D19 Clean. alarm temp</b>	38	38	38	38	38	38
<b>D20 Alarm temperature</b>	43	43	43	43	43	43
<b>D21 Select phase 1</b>	On	On	On	On	On	On
<b>D22 Select phase 3</b>	On	On	On	On	On	On
<b>D23 Select phase 6</b>	On	On	On	On	On	On
<b>D24 Select phase 7</b>	Off	Off	Off	Off	Off	Off
<b>D25 Select phase 8</b>	On	On	On	On	On	On

D Cleaning	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
D26 Hot water ph 6-7	Off	Off	Off	Off	Off	Off
D27 Fill time phase 1	0'50"	1'00"	1'00"	1'00"	1'10"	1'20"
D28 Circ. time phase 1	0'10"	0'10"	0'10"	0'10"	0'12"	0'15"
D29 Drain time phase 1	0'30"	0'30"	0'30"	0'30"	0'35"	0'35"
D30 2nd dr. time ph 1	0'40"	0'40"	0'40"	0'40"	0'45"	0'45"
D31 Heater max. time	45	45	45	45	45	45
D32 Heater hold time	3	3	3	3	3	3
D33 Circulation pause	0'05"	0'05"	0'05"	0'05"	0'05"	0'05"

### 7.4.5. Robot

E Robot	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>E1 Robot type (Lely/Type 1/Type 2)</b>						
E2 Partial emptying	Off	Off	Off	Off	Off	Off
E3 Nautilus address (Lely)	236	236	236	236	236	236
E4 T4C address (Lely)	1	1	1	1	1	1
E5 RAS address (Lely)	201	201	201	201	201	201

### 7.4.6. Time/Log

F Time/Log	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
<b>F1 Year</b>						
<b>F2 Month</b>						
<b>F3 Day</b>						
<b>F4 Hour</b>						
<b>F5 Minute</b>						
F6 Log period	7	7	7	7	7	7
<b>F7 ID number</b>						
F8 DHCP	On	On	On	On	On	On
<b>F9 IP</b>						
<b>F10 Time zone</b>						
<b>F11 DNS</b>						
<b>F12 Netmask</b>						
<b>F13 Gateway</b>						
F14 Milk Tank Manager	Off	Off	Off	Off	Off	Off

## 7.4.7. Temp/Level

G Temp/Level	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
G1 Temp diff on-off	0,6	0,6	0,6	0,6	0,6	0,6
G2 Fahrenheit	Off	Off	Off	Off	Off	Off
G3 Level activation	Off	Off	Off	Off	Off	Off
G4 Level precision	20	20	50	100	200	400

## 7.4.8. Language

H Language	1.600- 2.500	3.200- 5.000	6.000- 8.000	9.000- 12.000	14.000- 18.000	20.000- 30.000
H1 Language						

# 8. Test

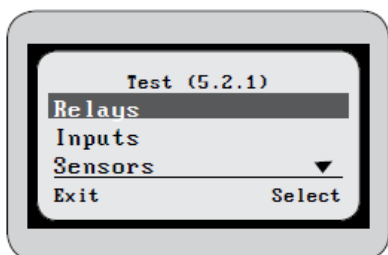


Fig. 8.1

In the menu **Test**, the various components of the tank can be checked.

## 8.1. Relays

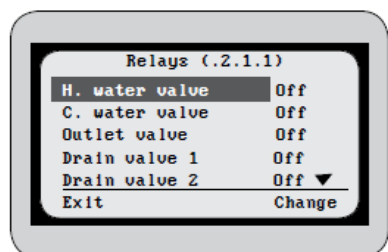


Fig. 8.2

A list of all components is contained in the menu **Relays**.

To test a component, highlight it and then press **Change**. To turn off the component, press **Change** again or switch to another component.

It is not possible to test the components while the tank is in cooling, cleaning or agitation mode.

If the tank contains milk, be aware to not accidentally activate a function that can affect the milk. Also be careful about how long time it takes to check components. For example, if the cleaning pump is tested without water for a long time, it will be damaged.

### Components:

- Hot water valve
- Cold water valve
- Outlet valve
- Drain valve 1
- Drain valve 2 (optional)
- Capacity regulator (optional)
- Cleaning pump
- Compressor 1
- Compressor 2
- Alarm signal
- Heater (optional)
- Emptying/cleaning signal
- Cleaning signal
- Dosing pump acid
- Dosing pump detergent
- Milk pump
- Signal for cooling
- Tank Guard red alarm light (optional)
- Tank Guard green alarm light (optional)

## 8.2. Inputs

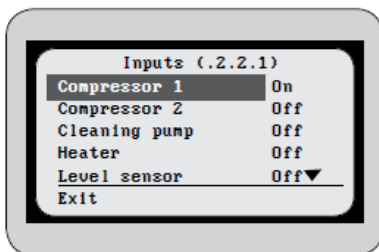


Fig. 8.3

In the menu **Inputs**, the signals that the unit is receiving can be checked. If a signal is active, it is marked as **On**, otherwise as **Off**.

### Incoming signals:

- Compressor 1
- Compressor 2
- Cleaning pump
- Heater (optional)
- Level sensor
- Outlet valve (optional)
- Agitator
- Detergent container
- Milk valve (optional)
- Milk pump (optional)
- Start cooling
- Cleaning pump alarm (if the cleaning pump draws too much current)

Note: With separate cooling units, never test the compressors without first filling the refrigeration system!

## 8.3. Sensors

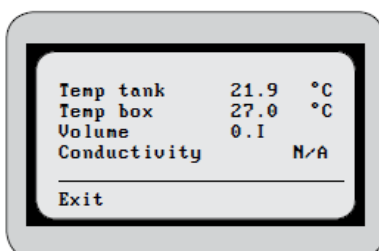


Fig. 8.4

The current values of the various sensors in the tank are displayed under **Sensors**:

- Temperature in the tank
- Temperature in the control unit
- Current milk volume in the tank (optional)
- Conductivity of the cleaning water (optional)



## 8.4. Agitator

Under **Agitator**, the agitator can be tested and the feedback can be checked.

## 9. Alarms



Fig. 9.1

The device creates 33 different alarm messages. When an alarm is activated, the red alarm lamp lights up. See fig. 9.1.

Under **Settings**, the alarms can be programmed as critical or informational. In the event of a critical alarm, the external alarm signal is activated, while an informational alarm is only given on the device itself.

See chapter "Settings" for more information on programming alarms.

### List of alarm messages:

- A1 Temperature sensor error
- A2 Agitator inactive
- A3 Agitator incorrectly active
- A4 Compressor 1 inactive
- A5 Compressor 1 incorrectly active
- A6 Compressor 2 inactive
- A7 Compressor 2 incorrectly active
- A8 Milk pump inactive
- A9 Milk pump incorrectly active
- A10 Outlet closed
- A11 Outlet open
- A12 Slow cooling
- A13 Milk above x °C in y minutes
- A14 Cooling not activated
- A15 Cleaning pump inactive
- A16 Cleaning pump incorrectly active
- A17 Slow filling or sensor error
- A18 Detergent container empty
- A19 Low dosage alkaline detergent
- A20 Low dosage acid detergent
- A21 Cleaning temp. below x °C in y minutes
- A22 Cleaning temp x °C not reached
- A23 Heater inactive
- A24 Heater incorrectly active
- A25 Water still in tank
- A26 No water after filling
- A27 Power failure
- A28 Temperature in the unit too high
- A29 Modem error
- A30 Software error
- A31 PCB lost connection
- A32 Error in loaded program update
- A33 Replace battery

## 9.1. Acknowledging alarm messages

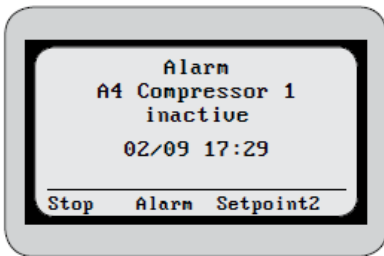


Fig. 9.2

When an alarm is activated, the display alternates between the alarm message and the current activity.

To get to alarm acknowledgment, press **Alarm**.

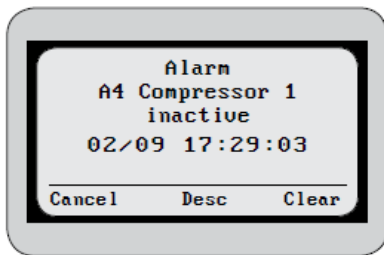


Fig. 9.3

Press **Clear** to acknowledge the alarm. To view a more detailed description of the alarm, press **Desc**.

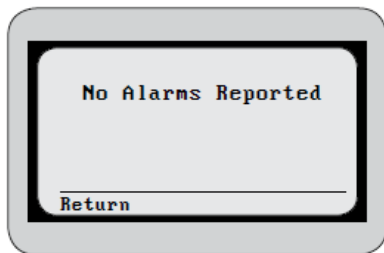


Fig. 9.4

If there are further alarm messages, the next alarm is displayed. Otherwise the unit displays that there are no more alarms remaining.

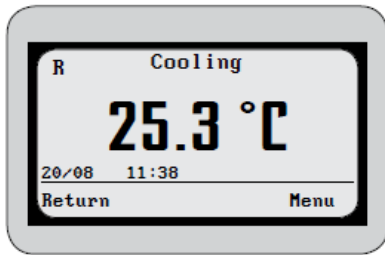
## 10. Milking robot

The device offers several functions specially designed for tanks connected to milking robots. The functions differ slightly depending on the robot brand.

In the unit, the brands are divided into three groups that can be programmed in setting **E1**:

- Lely
- Type 1: BouMatic, Fullwood, GEA (Westfalia) or SAC.
- Type 2: DeLaval

See separate wiring diagrams for tank and milking robot wiring.



When there is a signal from the robot to allow milk to flow to the tank, the letter **R** is shown in the top left corner of the display.

Fig. 10.1

## 10.1. Special settings for robotic tanks

Certain settings are specifically designed for robotic tanks. Many of these settings have already been described in the previous chapters, but they are all gathered here:

### A14 Cooling not activated

This setting generates an alarm if the robot is allowed to send milk to the tank but cooling is not activated. The alarm is activated one minute after the signal from the robot has been received.

### B6 Capacity regulator (optional)

In tanks for robotic milking, cooling begins when large parts of the evaporators are not yet covered by milk. To avoid ice formation in the tank, the capacity regulator regulates the cooling. When the tank has a sufficient quantity of milk, the capacity regulator can be disconnected. Setting **B6** is used to program for how long time the capacity regulator should be switched on, calculated from the start of the compressors.

### B12 Auto cool

Setting **B12** activates the automatic cooling start after cleaning.

### C4 Agitation before compressor start

If this setting is activated, the agitator will be switched on 30 seconds before the compressors. With small quantities of milk and when the milk is already cold, an inflow of warm milk from the robot can cause the temperature sensor, located near the inlet, to react so that cooling starts. This leads to many starts and stops and thus increased wear on the compressors. Agitation before the compressors start ensures that the milk is mixed so that the compressors only start if the temperature of the mixed milk is higher than the compressors' starting temperature.

### C6 and C7 Slow agitation

The agitator can be programmed to start at lower speed in the beginning of the cooling, when there is little milk in the tank. Setting **C6** sets the time from the start of cooling while the agitator runs slowly. The desired speed is set in setting **C7**. 100% corresponds to normal speed.

### D5 Drain time

**D5** controls the drain time in cleaning phase 8, which only includes this drain time. The purpose of the extra drain time is to allow rinse water running down the sides of the tank sufficient time to drain out before milk enters the tank.

### E2 Partial emptying

With setting **E2**, emptying can be carried out without the robot going to sleep mode and without starting the cleaning after emptying. For more information, see chapter "Emptying".

## 11. Optional features

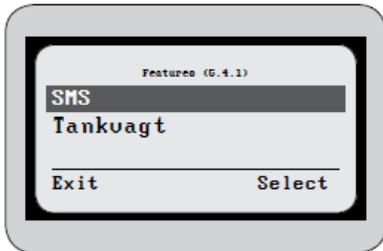


Fig. 11.1

Functions that are not standard are available in the menu **Features**. These options are activated in the Navigator program. For more information see chapter "Navigator".

### 11.1. SMS

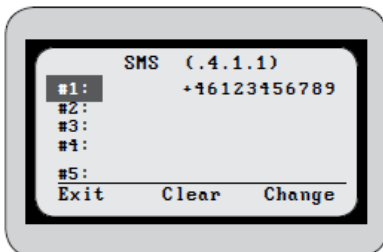


Fig. 11.2

The telephone numbers that should receive an SMS in the event of an alarm in the tank are entered under **SMS**. The telephone numbers must be entered in international form.

To enter a phone number, press **Change**. Change the phone number using the arrow keys. **Next** or **Prev** changes the selection.

When the phone number is complete, press **Save**.

To delete a phone number, press **Clear**.

### 11.2. Tank guard



Fig. 11.3

The Tank guard monitors the function of the tank and in the event of an alarm, a large red lamp lights up. Note that a tank guard is required by some dairies.

The product includes unlocking the software, as well as a module with two lamps mounted on the Argos control unit. The tank guard can easily be retrofitted on an existing control unit by the service technician.

For more information about Tank guard functions, see the Tank guard user manual.

### 11.3. Milk Tank Manager

Milk Tank Manager is a web-based software and the perfect complement to Argos. The data from the tank is continuously uploaded to the Milk Tank Manager website, where the entire activity history of the tank is available for analysis. The user can also customize all tank settings through the website. Alarms are sent directly to the computer or mobile phone. External actors, e.g. the dairy or the service technician, can also access the information after approval by the dairy farmer.



Fig. 11.4

## 12. Performance

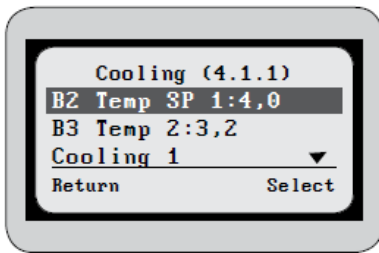


Fig. 12.1

### Cooling

The current setpoints are displayed under **Cooling** (For more information, see chapter "Cooling".)

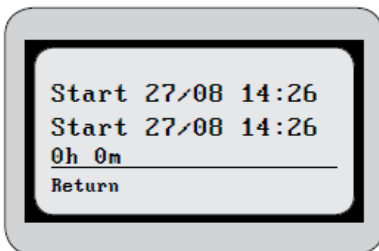


Fig. 12.2

The following data is available for each cooling period:

- Starting time of the compressor
- Stopping time of the compressor
- Duration for which the compressor was active

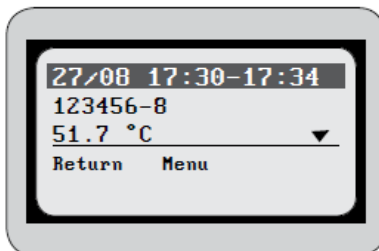


Fig. 12.3

### Most recent cleaning

The following information is available under **Cleaning**:

- Date and time of cleaning
- Completed cleaning phases
- Temperature at the end of phase 4
- Conductivity value at the end of phase 4 (optional)
- Type of detergent used
- Duration of the cleaning cycle

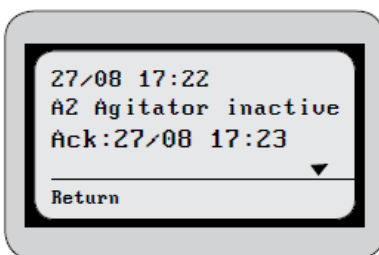


Fig. 12.4

### Most recent alarm

The following information is available under **Recent alarm**:

- Time of alarm
- Name of alarm
- Time of alarm acknowledgment

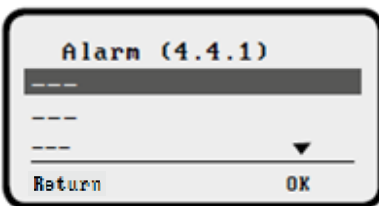


Fig. 12.5

### Tank guard alarms

- Alarm 1. Milk temperature above x °C for y minutes.
- Alarm 2. Agitation failure for more than x minutes.
- Alarm 3. Power failure for more than x minutes.
- Alarm 4. Milk temperature higher than x °C for y minutes.
- Alarm 5. Agitation failure for more than x minutes.
- Alarm 6. Cleaning temperature x °C has not been reached.
- Alarm 7. Cleaning temperature not higher than x °C for y minutes.
- Alarm 8. Conductivity x mS/cm has not been reached.

## 13. Program

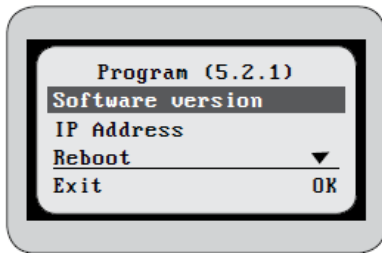


Fig. 13.1

The menu **Program** contains information on the software version of the control unit and communication.

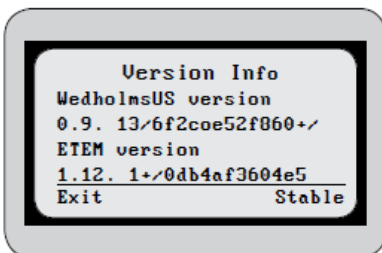


Fig. 13.2

### Software version

The version of the software installed in the device is shown under **Software version**. When installing a new version of the software, indicate that the version in question is stable by pressing **Stable**. For more information, see chapter "Navigator".

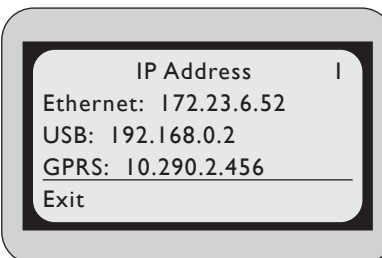


Fig. 13.3

### IP-Address

The IP address of the device is displayed under **IP address**. If the optional function **F14 MTM** (Milk Tank Manager) is activated, SMS can be sent. See chapter "Milk Tank Manager".

The letter **I** in the top right corner of the display indicates that Argos is connected to the network.

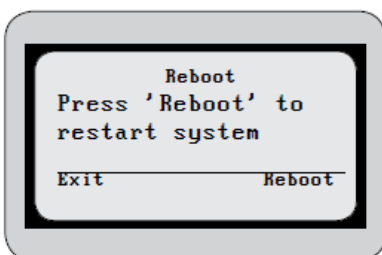


Fig. 13.4

### Reboot

Under **Reboot** you can trigger a restart of the device. This is required when installing new software. For more information, see chapter "Navigator".

## 14. Troubleshooting

Alarm	Cause	Action
A1 Temperature sensor error	Incorrect sensor value.	- Check the sensor value in the menu <b>Test</b> . - Check the sensor cable.
A2 Agitation inactive	1. Agitator motor defective. 2. Incorrect connection. 3. Motor overheated.	Check the agitator in the menu <b>Test</b> . 1. Check whether MA:1 (Klixon) in the agitator motor is broken. 2. No circuit between terminals 71-73. 3. -
A3 Agitation active	1. Wrong connection. 2. Compressor and agitator controlled by rotary switch on electrical box.	1. Check connection. 2. -
A4 Comp. 1 inactive	1. Contactor off. 2. Pressostat tripped. 3. Motor protection tripped.	Check the compressor in the menu <b>Test</b> . 1. Check the contactor. 2. Check the pressostat setting, ambient temperature, fan operation, refrigerant leakage and that the condenser is not blocked. 3. Motor protection.
A5 Comp. 1 active	1. Contactor on. 2. Compressor and agitator controlled by rotary switch on electrical box.	Check the compressor in the menu <b>Test</b> . 1. Check the contactor. 2. -
A6 Comp. 2 inactive	1. Contactor off. 2. Pressostat tripped. 3. Motor protection tripped.	Check the compressor in the menu <b>Test</b> . 1. Check the contactor. 2. Check the pressostat setting, ambient temperature, fan operation, refrigerant leakage and that the condenser is not blocked. 3. Motor protection.
A7 Comp. 2 active	1. Contactor on. 2. Compressor and agitator controlled by rotary switch on electrical box.	Check the compressor in the menu <b>Test</b> . 1. Check the contactor. 2. -
A8 Milk pump inactive	1. Contactor off. 2. Motor protection tripped.	Check the milk pump in the menu <b>Test</b> . 1. Check the contactor. 2. Check the motor protection.
A9 Milk pump active	Contactor on.	Check the milk pump in the menu <b>Test</b> . Check the contactor and feedback in the menu <b>Test</b> .
A10 Outlet closed	1. Air motor defective or no pressure in the system. 2. Incorrect feedback.	Check the outlet valve in the menu <b>Test</b> . 1. Check the air motor and hoses. 2. Check the feedback.
A11 Outlet open	1. Incorrect feedback. 2. Valve opened manually.	Check the outlet valve in the menu <b>Test</b> . 1. Check the feedback in the menu <b>Test</b> . 2. Check the outlet valve.



Alarm	Cause	Action
A12 Slow cooling	Compressor running time longer than time set for the alarm.	Check: - Time in setting <b>B10</b> . - Ambient temperature. - Condenser/Fans. - Heat recovery. - Refrigerant leakage.
A13 Warm milk	Milk temperature above the set value.	Check: - Settings <b>B8</b> and <b>B9</b> . - Ambient temperature. - Condenser/Fans. - Heat recovery. - Refrigerant leakage.
A14 No cooling	The milking robots have had permission to send milk to the tank for 5 minutes, but the cooling is not activated.	- Restart cooling. - Check that robot type is selected in setting <b>E1</b> . - Check that setting <b>B12</b> is on.
A15 Clean. pump inactive	1. Contactor off. 2. Thermal protection has tripped.	Check the cleaning pump in the menu <b>Test</b> . 1. Check the contactor. 2. Reset the thermal protection.
A16 Clean. pump active	Contacteur on.	- Check the cleaning pump in the menu <b>Test</b> . - Check the contactor.
A17 Level sensor error	Correct water level not reached within the set time.	Check: - Setting <b>D1</b> . - Water supply to the tank. - Feedback from the sensor in the menu <b>Test</b> .
A18 Container empty	Sensors in one or both detergent cans do not provide any feedback.	- Fill up detergent. - Clean sensor rods. - Check the sensor feedback in the menu <b>Test</b> .
A19 Low dosage alkaline	Concentration of alkaline detergent below the set alarm value.	Check: - Alarm value in setting <b>D15</b> . - Dosing in setting <b>D12</b> . - Dosing pump in the menu <b>Test</b> .
A20 Low dosage acid	Concentration of the acid detergent below the set alarm value.	Check: - Alarm value in setting <b>D16</b> . - Dosing in setting <b>D13</b> . - Dosing pump in the menu <b>Test</b> .
A21 Cleaning time	Cleaning temperature in phase 3 below the set value.	Check: - Settings <b>B18</b> and <b>B19</b> . - Setting <b>D3</b> . - Water flow and temperature.
A22 Cleaning temp.	Cleaning temperature at the end of phase 4 below the set value.	- Check setting <b>D20</b> . - Check water flow and temperature.

Alarm	Cause	Action
A23 Heater inactive	1. Contactor off. 2. Overheat protection tripped. 3. Temperature on heater thermostat has been reached.	Check the heater in the menu <b>Test</b> . 1. Check the contactor. 2. Check the overheat protection. 3. Check the heater thermostat.
A24 Heater active	Contactor on.	- Check the heater in the menu <b>Test</b> . - Check the contactor.
A25 Water left	According to the conductivity sensor, there is still water in the tank after cleaning.	Check: - Drain times in settings <b>D4</b> and <b>D5</b> . - Drain valves in the menu <b>Test</b> . - Conductivity sensor in the menu <b>Test</b> .
A26 No water in clean	The conductivity sensor indicates that there is no water in the tank after filling with water during cleaning.	Check: - Level sensor in the menu <b>Test</b> . - Maximum time for the level sensor in setting <b>D1</b> . - Conductivity sensor in the menu <b>Test</b> .
A27 Power failure	Panel card with no power or voltage below 170 volts.	Check: - Power to the tank. - Power cable between I/O card and panel card.
A28 High box temp.	Temperature inside the unit higher than safety temperature.	Check ambient temperature.
A29 Modem error	Modem cannot connect.	Check: - SIM card. - Antenna. - Telephone network.
A30 Software error	Error in the installed program.	Install software version again.
A31 Connection error	No connection between main card and display card.	Check the ribbon cable and power cable between the I/O card and panel card.
A32 Program error	Error in installed software version.	Install software version again
A33 Change battery	Three years since the last battery change in the device.	Replace batteries.

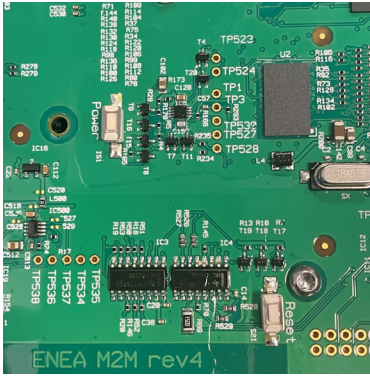


Fig. 14.1

## Reset

If the unit freezes, it can be reset by pressing the reset button on the display card. For the location of the button on the card, see fig. 15.1 and chapter "Connection Diagram".

## Power

To turn off the power to the device, press the power button on the display card. See fig. 14.1 and also overview in chapter 15 "Connection Diagram" for the location of the switch on the card.

## Changing the contrast

To change the display contrast, hold the center button, then use the arrow buttons to increase or decrease the contrast. See fig. 14.2.

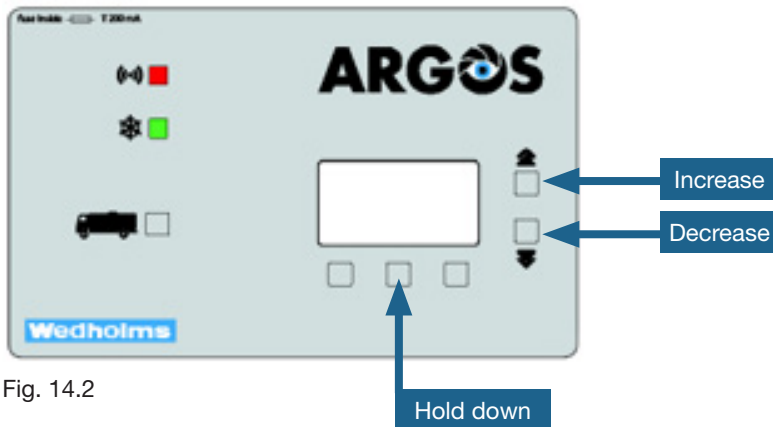


Fig. 14.2

# 15. Connection diagram

## 15.1. Main card

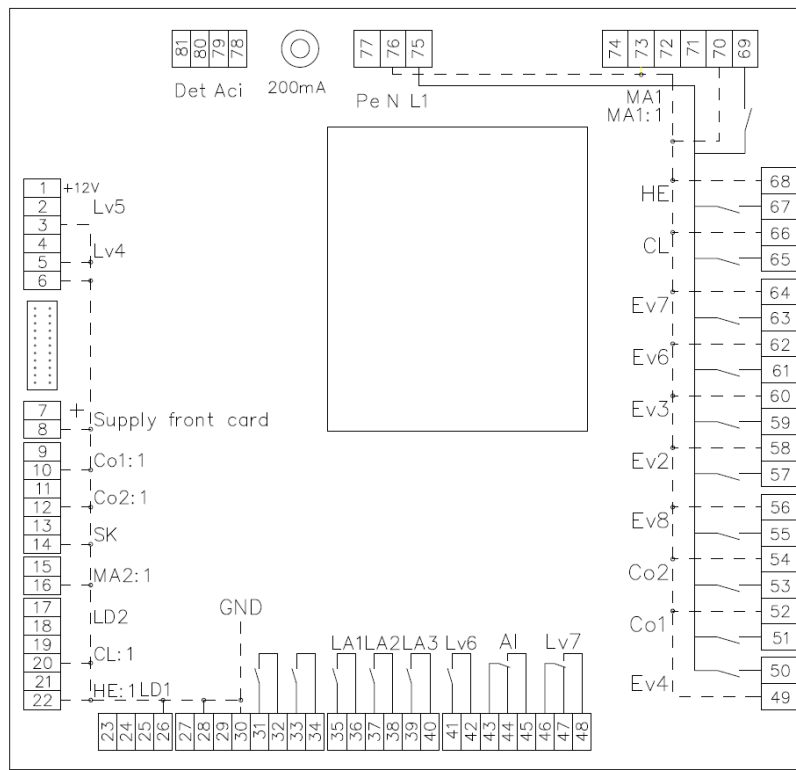


Fig. 15.1

Output	Description	Input	Description
MA1	Agitator	MA:1	Feedback agitator
MA2	Milk pump	MA:2	Feedback milk pump
EV2	Hot water valve	CL1:1	Feedback cleaning pump
EV3	Cold water valve	CO1:1	Feedback compressor group 1
EV4	Outlet valve	CO2:1	Feedback compressor group 2
EV6	Drain valve 1	HE:1	Feedback heater
EV7	Drain valve 2	SK	Signal to start cooling
EV8	Capacity regulator	LD1	Level sensor, water quantity
CL1	Cleaning pump	LD2	Level sensor in detergent can
CO1	Compressor group 1	LV4	Feedback outlet valve
CO2	Compressor group 2	LV5	Signal from robot
HE	Heater		
DET	Dosing pump alkaline		
ACI	Dosing pump acid		
LV6	Emptying/cleaning signal		
LV7	Cleaning signal		
AL1	Alarm signal		
LA1	Light for cooling on		
LA2	Tank guard red alarm light		
LA3	Tank guard green alarm light		

## 15.2. Display card

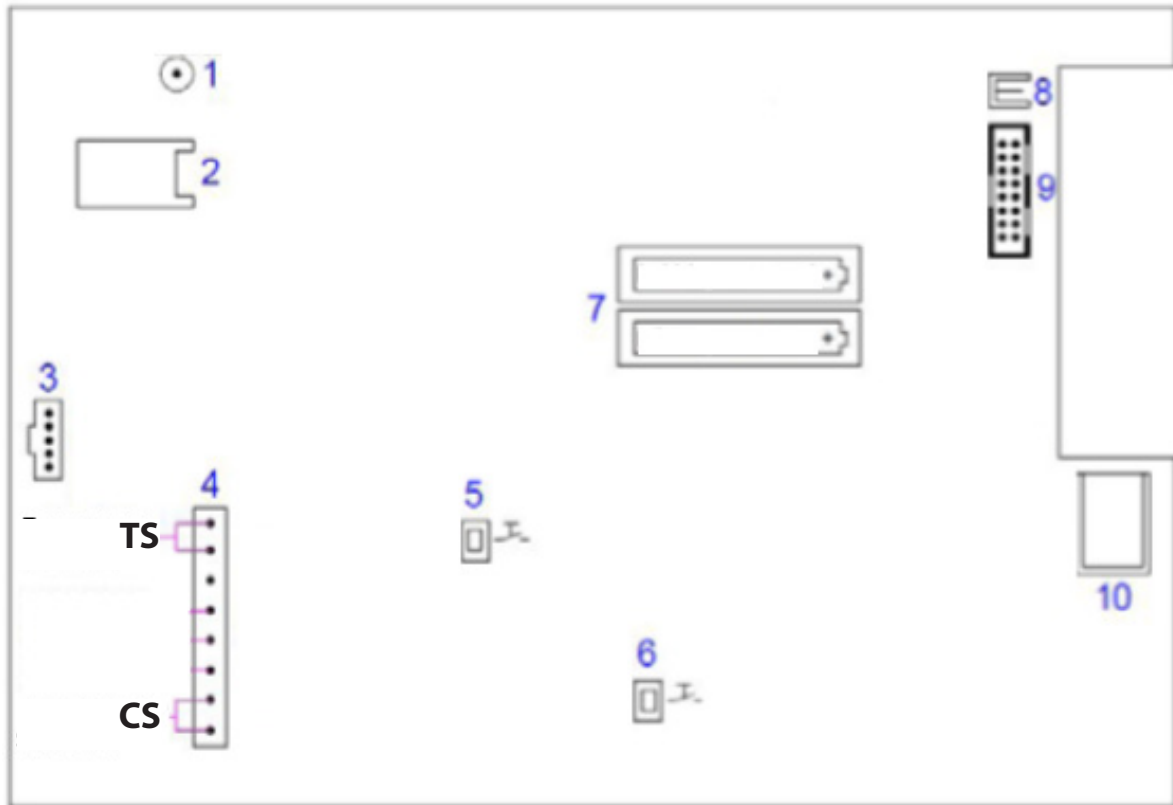


Fig. 15.2

Component	Description	Sensor	Description
1	GSM antenna	TS	Temperature sensor
2	SIM card holder	CS	Conductivity sensor
3	Cabel for USB		
4	Connection terminal sensors		
5	On/Off button		
6	Reset button		
7	Battery holder		
8	Power cable		
9	Flat cable		
10	Ethernet socket RJ-45		

## 16. Argos Navigator

There is an associated software for the device called Argos Navigator. The Navigator can be used to transfer information between the device and the computer. The program is also used to analyze the tank performance of the last few months.

### 16.1. Connection to the unit

There are two options for connecting to the device:

- USB cable
- MTM (option Milk Tank Manager)



Fig. 16.1

#### USB cable

Connect a USB cable between the computer and the right side of the device where the socket is located. Use cable type B (often used for printers). If the Navigator program is used and Windows 10 is installed on the computer, an update must first be performed using [Guide to install rndis on Windows 10](#).

This guide together with two related files is available for technicians and dealers in the dealer area of our homepage. See Wedholms dealer area at [www.wedholms.com](http://www.wedholms.com) (login required).

Note that the update requires administrator rights on the computer where the Navigator software is installed.

#### MTM (optional)

The connection to the device is done via Ethernet. The connection for Ethernet can be found on the back of the panel card, see figure 15.2.

For more information on MTM, see chapter "Milk Tank Manager".

If TCP/IP is selected, use the feature ID as the password. In Argos, you can find the **Feature ID** in the menu **Software**.

To connect to the tank, select **Link/Connect**.

Then select the connection method and press **Connect**. If the connection is successful, the status at the bottom right changes from **Not connected** to **Connected**.

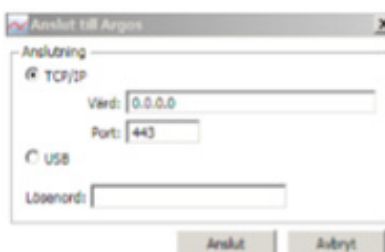


Fig. 16.2

## 16.2. Downloading the tank log

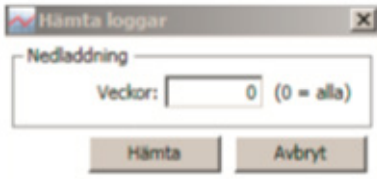


Fig. 16.3

To download the log, select **Link/Tank log**.

Specify how many weeks to download. Enter **0 weeks** to download the entire log. The navigator then asks where on the computer the file should be saved. The suggested filename consists of the serial number of the tank-date-time, but the file can be named anything.

## 16.3. Analysis of the tank log

The tank log is displayed in three sections. A graph is displayed in the upper part, and a table with various data is shown in the lower part. The left column shows the current log.

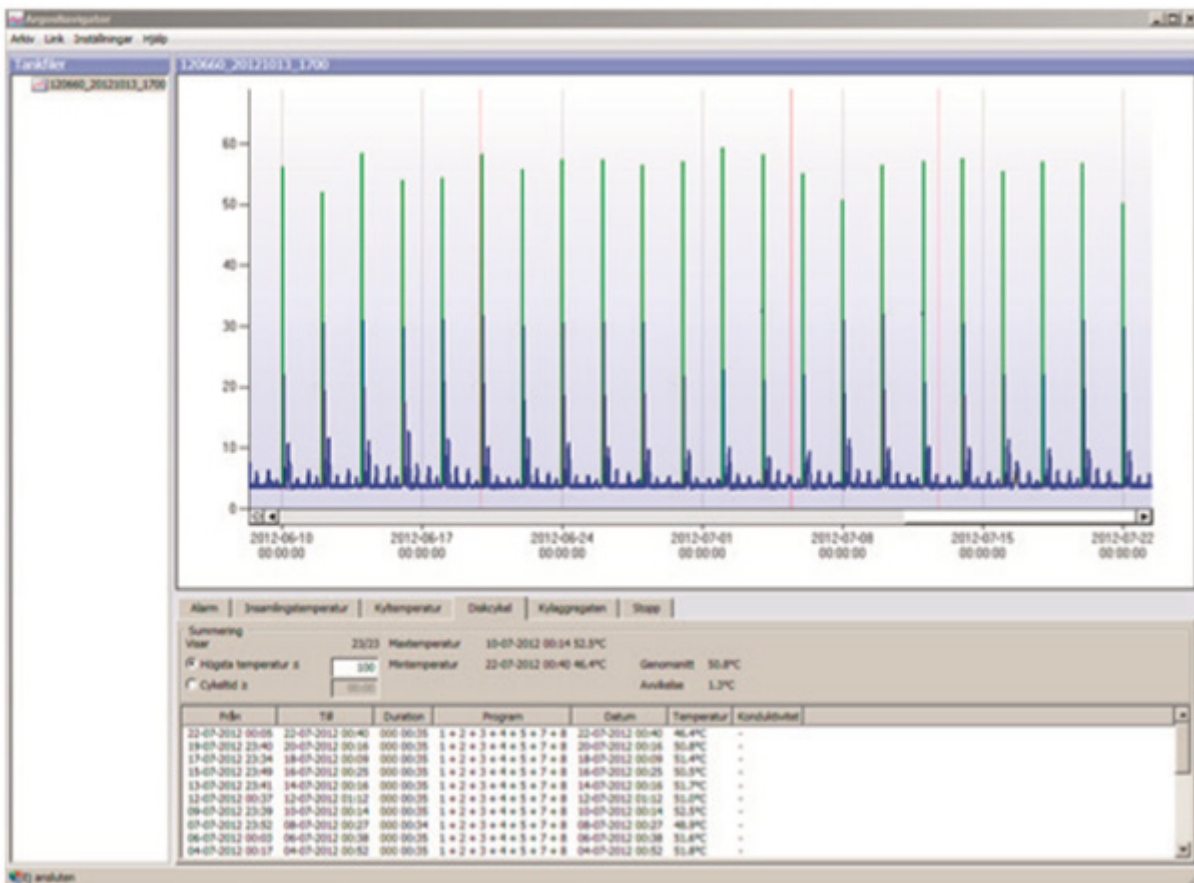


Fig. 16.4

### 16.3.1. Graph

Under **Settings/Display**, you can select what is shown in the graph, including temperature, alarms or volume (optional).

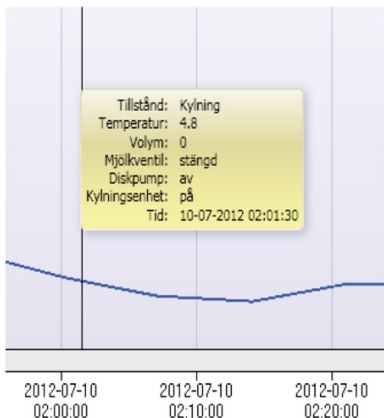
The x-axis shows time. The left y-axis shows temperature, the right y-axis shows volume. Alarms are displayed as red fields.

When the temperature is displayed, the graph also uses different colors to show which mode the device is in:

- Standby: Black
- Cooling: Blue
- Cleaning: Green
- Emptying: Purple

Zoom in: Hold down the left mouse button and drag a box over the area you want to zoom in on.

Zoom out: Click on the minus sign on the x-axis or y-axis.



Clicking on any point of the graph opens a window with data about the tank.

Fig. 16.5

### 16.3.2. Tables

The lower area shows the data in table form. The following tables can be selected:

#### Alarms

This shows registered alarms during the log period.

#### Emptying temperature

This shows the temperature in the tank at the emptying occasions.

#### Cooling temperature

This shows the highest and lowest temperatures in the tank.



## Cleaning cycle

This shows the different cleaning cycles in the log period with information regarding the cleaning phases used, the cleaning duration, the cleaning temperature and the conductivity (optional).

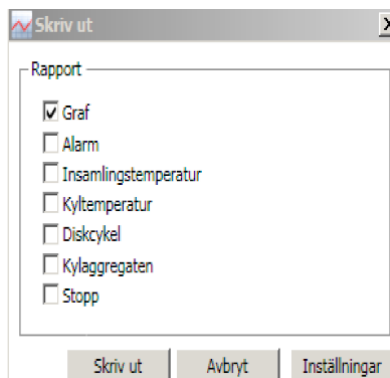
## Cooling unit

This shows how long the cooling unit has been working in the selected period.

## Stop

This shows when and for how long the tank was stopped.

### 16.3.3. Print



The graph and/or the tables can be printed via **File/Print**.

Fig. 16.6

### 16.3.4. Settings

The settings can be changed in the Navigator through **Link/Unit settings**. The unit settings are divided into four tabs.

#### Unit information

This shows information about the software version installed in the unit.

#### Phone number (optional)

Here, the telephone numbers to which an SMS should be sent in the event of an alarm can be entered.

#### Internet settings (optional)

The settings for the SIM card can be programmed here.

#### Settings

Here, the settings for the tank functions can be found. These are the same settings that are displayed in the menu **Settings** on the control unit.

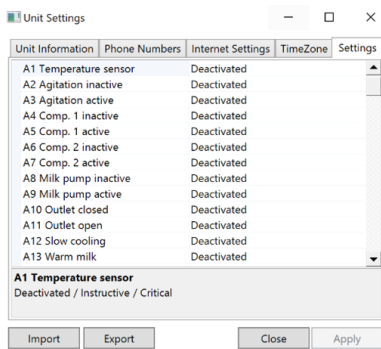


Fig. 16.7

If the computer is connected to the tank, the settings of the unit can be changed directly in Navigator.

Once you have made the desired changes, you can transfer the new settings to the device with **Apply**. The settings can also be saved with **Export**. Saved settings can later be imported to be transferred to the tank.

This menu is available even if there is no connection to the tank. The settings made can then be saved and transferred later.

### 16.3.5. Unlock optional features

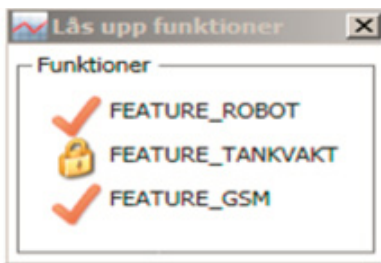


Fig. 16.8

Purchased options can be activated under **Link/Unlock features**. Click on the lock and enter the unlock code.

## 16.4. Installation of new software in the unit

To install a new software version in the control unit, go to **Link/Upgrade firmware**. Select the version you want and click **Open**.

Once the new version has been transferred to the unit, the unit must be restarted so that the new software version can be used. Therefore restart the device under **Advanced/Software/Reboot**.

Note: When you restart the unit, the settings are changed. If the current settings are to be retained, they must therefore first be saved before the new version is transferred so that they can be imported after the new version has been put into operation. After importing the settings, go to **Advanced/Settings/Save as default** to save the settings.

After installing a new software version, the previous version is still available for some time in case problems should arise with the new version. If you do not wish to be able to switch back to the older version, you can click on **Stable** under **Advanced/Software/Software version**.

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