Manual
Multilactor®
Premium

 subject to technical changes(11.12.2013)

Congratulations, upon selecting Multilactor® you have decided in favour of a substantially automated and remarkably innovative milking system.

Multilactor® is a novel user and animal friendly milking system. It is based on a milking unit without any collecting piece, which simulates the behaviour of a sucking calf by means of the specifically developed novel and patented pre-stimulation device having a certain movement during the main milking time. By additionally using the Bio-Milker milking cup including the Bio-Milker valve a substantially natural gentle milking process is guaranteed, thereby obtaining a final milk extraction efficiency that has previously not been feasible. Due to the ergonomic construction any work for the operator is significantly improved by protecting as much as possible the operator's joints and spine (expertise Dr. Falk Liebers, Federal Institute for protection of labour and medical care, Berlin, as well as Dr Martina Jakob, Leibniz-Institute for agricultural technique, Potsdam-Bornim).

Multilactor® provides the following features:

- simple intuitive operation
- milking unit without any collecting piece that operates on each quarter of the udder independently
- sequential pulsation in order to ensure a milk transport as gentle and rapid as possible
- optimised stimulation for achieving a high oxytocin concentration in the blood of the dairy animal and as a consequence thereof a complete extraction of milk even from the alveols into the udder cistern
- a gentle main milking process with continuous movement of an actuator for relaxing the udder muscles in combination with an effective low vacuum concept
- due to the usage of the Bio-Milker system a defined air inlet leads to a substantially semi-natural milking process (similar to the suction of a calf at the teat
- a remarkably precise measurement of the milk amount (reading) is guaranteed by using Pulsameter 2®
- control of the milking status (amount of milk, milking time, characteristic) is illustrated by the chronological presentation of the milk flow curve on the display during the milking process
- enhancing activity of the actuator at the end of the main milk flow (milk-out-phase or final milking phase) in order to guarantee an optimum degree of final milk extraction
- automatic detaching the milking cups at the physiologically correct point in time
- intermediate cleansing and disinfection of the milking cups after each individual milking process (outwardly and inwardly) in order to eliminate the transfer of udder-pathogenic gems between individual cows
- fully automatic positioning of the milking cups in the cleaning box for the circular cleaning and disinfection during the main cleaning process

We are certain to meet your expectations with respect to successive milking and wish you "luck in your stable".

Multilactor®, Bio-Milker and Pulsameter are registered trademarks.

Contents

1. Safety instructions

Please observe the following instructions for your personal safety and for maintaining warranty claims!

- The electricity installation is to be provided by an expert only. Similarly, any repairs extending beyond the maintenance instructions provided in this manual as well as any measures for eliminating disturbances are to be performed by dedicated experts only. To this end, please contact your responsible service partner.
- Operation of the milking equipment is allowed only if all electrical modules are tightly closed.
- During maintenance, repair and cleaning activities any electrical voltage whatsoever has to be disconnected from the device.
- Do not position your hands between any moving parts of the Multilactor® during operation! Risk of injury.
- Cleaning by using a high-pressure cleaning device is to be performed very carefully in order to avoid penetration of water into the controller!
- Only those cleaning and disinfection agents as well as acids must be used, which are tested by Siliconform and which have been approved as appropriate agents for the Multilactor® cleaning. Usage of any non-approved chemicals results in loss of liability of Siliconform for any damage of parts that have been come into contact with these chemicals.

- Any cleaning and disinfection agents are to be handled with care. Contact with skin causes pronounced irritation and chemical burn. Therefore protect your hands and eyes with protective gloves and safety glasses, respectively, when handling chemicals. Please always observe safety data sheets, product information and identification of the manufacturer prior to usage!
- Any contact with chemicals by children must be avoided! A lockable storage with collecting well and corresponding identification has to be provided!
- The dosing station for peracetic acid and the acid for cleaning the valves must not be accessible by children and must be located in a separate lockable room.

- ❖ Siliconform ltd. is not liable for any damage caused by inappropriate usage or unauthorised handling.

Hint:

During start up (milking-in) there should not be too many further persons-except for the milker-in the milking parlour. A change of the milking environment and the milking procedure, respectively, is already a significant challenge for the animals and this situation should not be exaggerated by unknown persons and precipitance in the milking parlour. A quiet and positive atmosphere during the milking process considerably contributes to a success of the milking system.

2. Multilactor® system

The control concept of Multilactor® offers the possibility, - given the corresponding equipment in the milking parlour (light sensors, switches, PC) and the software version, - to realise the following levels of automation:

1/2 automation: is already implemented in the basic apparatus.
In this operating mode the entry and exit gates of the milking boxes can be operated by pushbuttons on the touch panel. The centre gates are monitored by light sensors and are closed automatically. The cleaning agent is selected at the R&D unit as required. This variant is appropriate for Tandem, Fishbone and Carousel milking parlours.

Full-networking* (for additional components see the enclosure)
In this operating mode cow traffic is fully automatically controlled by software running on a connected PC. By evaluating the milk flow curve Multilactor® recognises, at which point in time a cow is ready and therefore controls cow traffic in an optimum manner. At any time, however, it is possible to exit the automatic behaviour for a specified milking box in order to observe a certain animal after the milking process again prior to dismissing the animal.
In the so-called control/dip mode animals are not dismissed automatically (3/4 automatic).
The milking data is recorded in the PC and may be accessed at any time. The dosing of the cleaning agent is performed automatically.

*Hint: the components for the gate control (magnetic valves, cylinders) as well as the PC are not included in shipment. An industrial PC is provided on the basis of a surcharge.

Any hints with respect to mode of operation are identified in this manual with the corresponding symbol.

3. Device structure

Multilactor® consists of the main components:

housing
tilt trestle
pivot arm
purge unit
milk amount gauge Pulsameter
collecting piece-free milking gadget (not shown in figure 1)

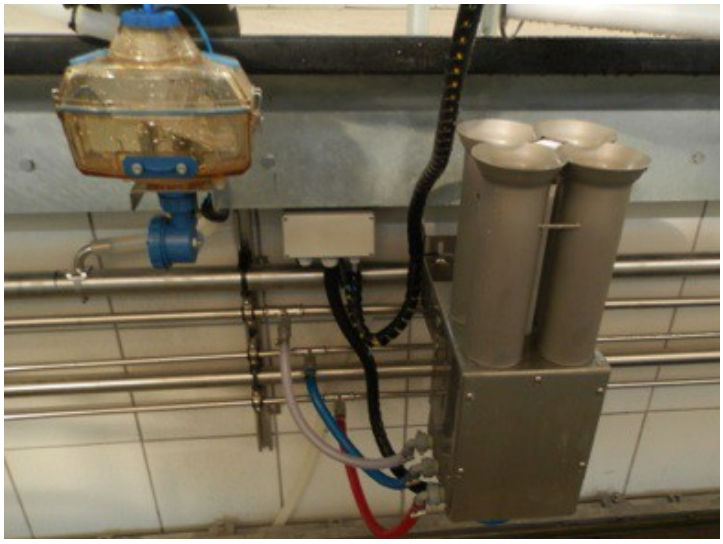
The components of the controller and the pulsator are disposed post on the lateral part of the housing (see figure 1). The tilt trestle is the support of the pivot arm and includes the shut-off valves for the milking cup vacuum. The pivot arm receives the milking cups and transfers the stimulating motion to the udder via the milk hoses. The control unit is disposed on the front of the housing.

In the upper part of Multilactor there are disposed:
-clamp junction
-pneumatic cylinder
-valve block and valves for vacuum shut-off and flooding the PSM
-pulsator
-double cylinders and the roles for hose management
Controller/user terminal

tilt trestle
-shut-off valves for vacuum
-hose brake (e.g., for 3-teat cows)

pivot arm
-magazine for receiving milking cups
-water nozzle for hose cleaning
-actuator for stimulation

Pulsameter 2



Purge unit connections:

PES	red
Base/acid	blue
Water	white

Controller and user interface

Electric connection

Valve terminal

Pulsator valves

Pulsator

4. Operation and mode of operation

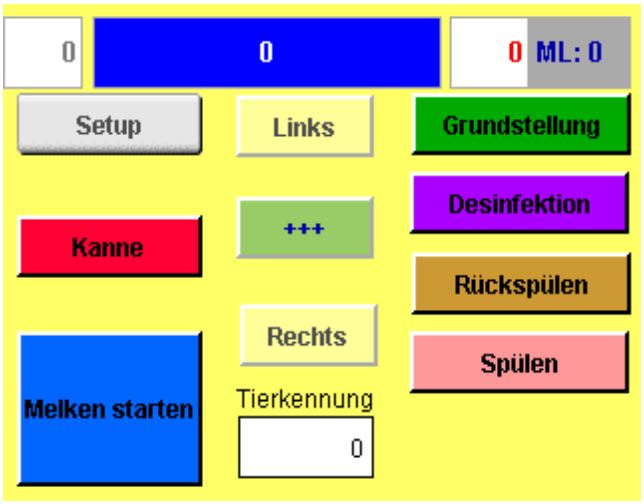
4.1. Start of system

We recommend switching on the Multilactors a few minutes prior to starting the milking in order to warm up the electronics of the light sensors and animal recognition. The Multilactors are switched on by the purge apparatus (switch position: milking). Thereafter, the PC should be started and the software **Tandem** for gate control is to be activated.
After initialising the controller the teat rubbers are disinfected so that a healthy milking is insured when starting with the very first cow. To this end Multilactor® pivots into the purge position (parallel to the milking parlour) and moves the milking cups into the purge box. After the disinfection the device pivots into the base position and is ready for milking.
In order to start the milking the automated option in the gate control software has to be activated by the clicking the button "start".

4.2. Base position

Multilactor® faces the direction of the stand of the animal, the pivot axis is blocked. The pivot arm in the magazine faces downwards.
The hoses are retrieved, the milking cups are positioned in the magazine. The display shows the main menu.

Main menu fully automated (description: refer to the Annex)
(Switch buttons for the gate menu are not available for the 1/2 automatic)



In this position Multilactor® is ready for milking.
An overview of the functions can be obtained in the annex. The process sequence and the functions will be described in the following.

4.3. Milking procedure

4.3.1. Entry of animals

The animals enter, depending on the operational mode as described in paragraph 4.5, the milking boxes.

Via the button "+++" the automatic for the corresponding box may be blocked.

4.3.2. Attaching milking cups

Prepare cow for milking:
- Test milk jet
- Clean teats

After attaching the cups to the cow the milk procedure is started.
To this end, either the blue button "Melken starten" or the "knee switch" is activated.
Multilactor® releases the pivot axis.
The pivot arm together with the magazine tilts towards the animal.
The hoses are released, the milk cups can be attached.

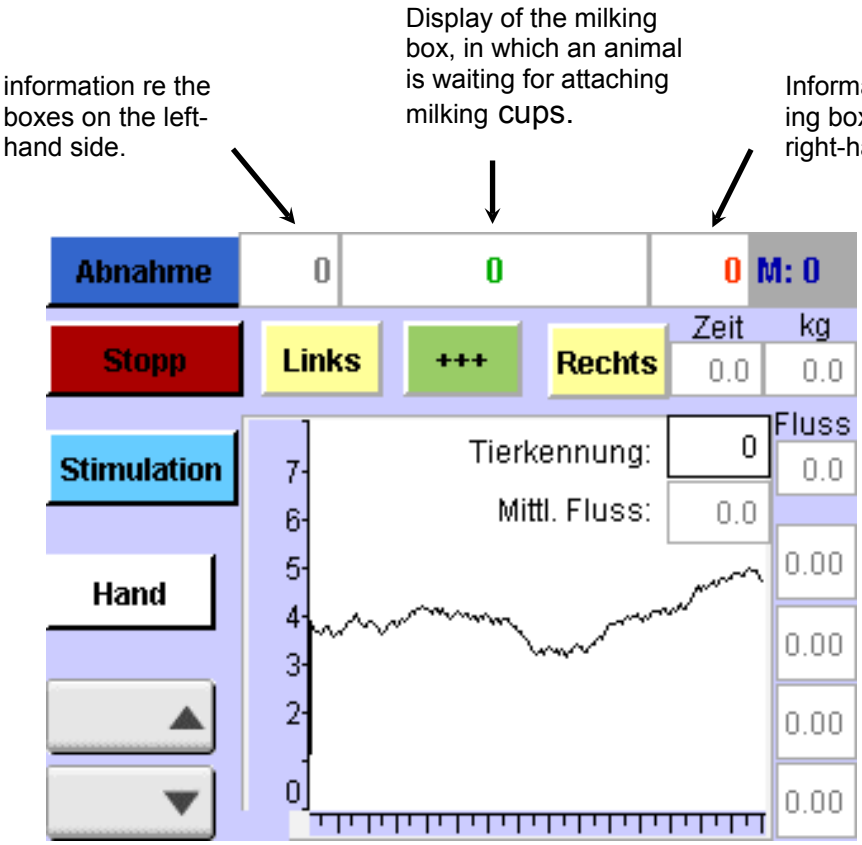
Note that the hoses hang freely downwards in a wide arc, however, without touching the ground. In this manner, any interfering pressure forces and tensions are avoided and optimum simulation and adaptation to the udder are achieved. In order to assist the attaching process the forced vacuum may additionally be switched on by operating the knee switch.
After the attachment time period the actual milking process starts with intensive pre-stimulation.

4.3.2.1. Hose brake for 3-teat cows

There is a possibility for locking a teat cup of. To this end, the lock screw positioned at the right-hand side below the touch panel is to be turned until it is locked. The teat cup does not need to be put on the floor of the milking parlour. Do not forget to reset the hose brake.

4.3.3. Milking procedure

During milking the following screen is displayed:



Ab- **nahme**: manual detachment of the milking cups together with start of the intermediates disinfection

Stopp: after the detachment the process can be stopped until the lowering of the hoses for disinfection.

Stimulation: turn off the stimulation (for example for cars with small teats)

Hand: deactivates the detachment automatic and skips the pre-stimulation

⬆: move hoses upwards when touching the floor

⬇: moves hoses downwards, when too short (to this end pull gently)

Links: manual gate control, left-hand side

Rechts: manual gate control, right-hand side

+++: milking box is blocked for automatic (button turns red when box is blocked)

Tierkennung: upon touching the animal number may be entered or corrected manually (until detachment)

-note: Multilactor® comprises an automatic vacuum switch-off as soon as air enters the milking cup (drop of a milking cup or 3-teat cow). Upon re-attaching the cup the vacuum is switched on again. Upon operating the knee switch a forced vacuum is switched on.

The milking procedure is divided into the following sub-steps:

4.3.3.1. Full pre-stimulation

- by means of the actuator the milking cups are forced to swing through the milk hoses in order to relax of the udder muscles and to ensure a high concentration of the hormone oxytocin that is necessary for emptying the alveolae. This is similar to the natural behaviour of the cow at the beginning of the calf's sucking. At the same time the pulsation is automatically adjusted such that only a low amount of milk can leave the system in order to avoid penetration of damaging vacuum into the udder cistern during the stimulation process.

4.3.3.2. Main milking

- Ater a successful pre-stimulation the pulsation is adjusted to 60% suction phase and 40% relief phase with a pulsator frequency of 60 cycles per minute.
- At the same time the pulsation is running in sequential mode, i.e., neither change-mode pulsation nor common-mode pulsation. This ensures a remarkably gentle milk removal resulting in low FF-contents in the delivery milk. (FFA = free fatty acids)
- During this process concurrently a stimulation frequency is transferred to the teat during the opening phase of the teat rubber, similar to the calf acting with its tongue on the teat in a natural way.
- Additionally, the actuator frequency is reduced to a type of oscillation that is convenient and gentle for the animal in order to achieve a milking of the cow that is as convenient as possible.
- The vacuum value for milking should be adjusted to 32 to 36 kPa at most.
- The behaviour of the animals and the degree of emptying the udders during the milking process as well as attachment of the milking cups should be taken as parameters for adjusting the value of the vacuum. The entirety of these measures results in a particular relaxation of the dairy animal during the main milking process.

4.3.3.3. Final milking

- At the end of the main milking process when reaching a milk flow of 800 g/min the actuator movement is enhanced such that the muscles of the udder are again intensively relaxed by the actuator motion so that the remaining procedural milk may be extracted from the connecting channels positioned between the alveolae and the milk cistern and into the teat cavity.
- Upon reaching a milk flow of 200 g/min and after an adjustable delay time, preferably 10 seconds, the automatic detachment is activated.
- The reliable and gentle withdrawal of the milk hoses and the milking cups into the milking cup magazine is to be accomplished without touching the floor of the milking box. Concurrently the milk hoses are automatically cleaned by water nozzles and brushes.

4.3.3.4. Intermediate disinfection

- Multilactor® moves into the purge position:
  - **Do not touch the equipment during the movement!**
  - The milking cups move downwards into the purge unit and are firstly pre--cleaned inwardly and outwardly by using water.
  - Thereafter the milking cups are again withdrawn into the magazine and the residual water is shaken off.
  - Multilactor® again pivots into the purge position and moves the milking cups downwards into the purge unit. During the lowering of the milking cups into the purge unit a disinfection of the milking cups in the interior and on the outside is accomplished. After this spray process the milking cups move into an idle position (reaction time 30 seconds!).
  - Thereafter the milking cups are lowered into the purge unit and are purged with pure water so that residue-free teat rubbers are available for the next milking process.
  - **Caution: peracetic acid is a highly corrosive liquid. Therefore do not contact the purge unit during the intermediate disinfection!**

At the end Multilactor® again moves into the base position and is ready for the next process.

4.3.3.5. Milking into the bucket

- In the case of contaminated milk there is the possibility to milk into the bucket without measuring the milk amount. To this end, the milk hose may be split up upstream to the Pulsameter at the predefined disconnection point and connected to a bucket. An erroneous connection is excluded by means of the shape of milking connection of the bucket.
- Select the button „Kanne“ in the main menu
- Start the milking process

Caution: in mode "manual milking" there is no automatic detachment. For detaching the cups please press button "Abnahme"

- Subsequently the intermediate disinfection follows
- Empty the bucket and re-connect it
- In the main menu the button "Rückspülen" appears on the right-hand side. Use this button to remove any residual milk from the hoses.
- The back-purging can be repeated 2x.
- Multilactor® moves into base position.
- Remove bucket, re-connect hoses
    - Important: the milk hoses must not hang in the downward direction. Please take care that the hose extends to the milk gauge from above!
    - During the next milking process the button "Rückspülen" disappears.

4.4. Cleaning after milking:

After the milking process the entire milking line system is cleaned by means of the purge apparatus. The cleaning of the milking cups and the Bio-Milker valves is started by a signal provided by the purge apparatus. Multilactor® moves into the purge position and the milking cups are positioned in the purge receptacle.
At first the Bio-Milker valves are cleaned. The increased vacuum of 50 kPa is activated, the pulsation is adjusted to a common-mode pulsation. The tubes of the purge receptacle are filled with a mixture of water and cleaning agent having a temperature of at least 45°C; the cleaning agent is sucked through the air inlet valves of the milking cups, thereby intensively purging the same.
For control purposes of the purging process the entire liquid amount flowing through the line and the corresponding flow curve are shown in the display. If there is a deviation of the amount of liquid (less than usual or less than in the other Multilactors) the Bio-Milker valves have to be controlled!

After finishing the purging of the valves the milking cups are moved upwards and the remaining liquid is drained off. Thereafter the milking cups are again lowered into the purge unit for performing the main cleaning process.

The pre-heated cleaning agent flows through the purge line from the purge apparatus to

the Multilactors so as to clean the milking cups and the milk hoses. The magnitude of the throughput is shown in the display.

Note: If the flow curves are different in the individual Multilactors it is urgently recommended to control the correct position of the milking cups.

After the end of the purge program the milking cups are finally purged with pure water and the Multilactors are turned off automatically.

4.5 Tandem Gate control

Multilactor® includes a 1/2 automatic gate control.

As a further option a 3/4 automated and a fully automated gate control are available.

- In the fully automated operation the milking parlour is automatically filled with animals. In the status line of each controller any relevant event in the milking parlour is displayed. After the milking process upon reaching the reference milk amount the animal is automatically released. In case that an animal should not automatically be released, the respective box may be blocked upon pressing the button "+++" (highlighted in red). When the reference value is not reached the box is automatically blocked. The operator is prompted by the blinking of the display to control the animal and to release the animal by pressing the button "+++" (highlighted in green). It is possible to block individual animals by software on the PC so that an animal that requires treatment or control will not automatically be released. If an animal is milked into the bucket the controller automatically enters this animal into the list of blocked animals; deletion of such an animal is only possible on the PC. During the next milking process such an animal is identified as a blocked animal. A prospective blocked animal is only allowed to be milked into the bucket after being deleted from the block list. By entering "5151" in the display box "Tierkennung" such a blocked animal is allowed one time to be milked in a normal manner.

- During 3/4 automatic mode (button "Vollautomatik" is not pressed) the same sequence occurs as in the fully automatic procedure except for the fact that none of the animals is released automatically. Each animal has to be released by pressing the button "+++" on the controller so as to finally release the animal (for example, when taking samples during the milking process,…).

- Manual mode: on some occasions it may be necessary to operate individual gates manually. To this end, from any Multilactor® each side of the milking parlour may be switched into the manual mode.

This function should be used with caution since the gates remain in their current state, meaning that the central entry gates do not close automatically and therefore several animals may enter the milking parlour concurrently. Upon leaving the manual mode the automatic operates in the normal manner (gates are closed, if necessary, milked cows are released,…).

Importantly: as soon as a single Multilactor® is switched into the manual mode, the respective side of the milking parlour is in the manual mode!!!

4.6 Milk data

After the detachment of the milking cups the following milk data

- milking time
- milk flow curve
- amount
- averaged milk flow

are transferred to the PCs and stored together with the animal's identification number.
By pressing the button "Daten" the respective data may be revoked.

5. Maintenance specifications

Interval	Action	
Upon installation, replacement of PSM2 or controller; specification of LKV or milk union	Calibrating Pulsameter2®	section 7.3.
daily	Check valve purging: - amount of liquid sucked through (shown on the display) - amount of liquid in the tubes of the purge box - noise control (sucking noises present?)	section 4.6.
	Check vacuum	
	Check water drain in the purge unit	
	Check smell with respect to vinegar during the intermediate disinfection	
	Check for unusual noise (spitting, squeaking,…)	
	Check pulse hoses for: damage, water in hose	
weekly	Visually check Bio-Milker valves for contamination	
monthly	Check whether components are freely movable	
	Check spray nozzles, possibly need to be calcified	
	Clean the roles in the pivot arm	
quarterly	Detach tubes from the purge unit and clean plastic supports	
after 2000 h	Change teat rubbers	
	Maintenance	
after 4.000 Std.	Change switch-off membranes	
	Maintenance pulsation-replace silicone parts	
after 6.000 Std.	Replace bearing points in the pivot arm	
according to manufacturer's specifications	Device components: compressor, purge apparatus, vacuum pump, milk pump,...	

6. Error handling

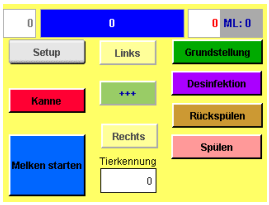
Error	Possible cause	Action
No image on display	Power supply failure	Check power supply, LED on transformer (fuses) Optionally: call service
Milking cups do not correctly enter the purge tubes	Throttle valve misaligned Contamination on the bearing points of the suspension Stop for the pivot arm is deformed or misaligned	Readjust throttle valve on cylinder Clean bearing points Readjust stop angle.
Hoses move too slowly	Double-cylinder possibly contaminated	Call service
Individual movements are not or not correctly performed	Controller Pneumatic valves defective (for example due to lack of air quality) Pneumatic cylinders move tightly, adjustments of the exhaust air throttles or damping adjustment not correct Pressurised air: Pressure too low, leakage in line system At low environmental temperatures movements are slower	Check LEDs of pneumatic valves Switch outputs manually Switch valve manually (see attachment 7.2) Check generation of pressurised air (is dryer sufficient,…) for specifications see datasheet pressurised air Check cylinder and/or adjustments. Check pressure, check hose system During winter time increase pressure by about 0.5 bar

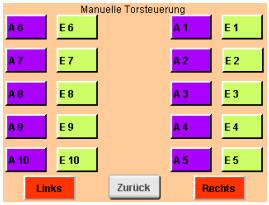
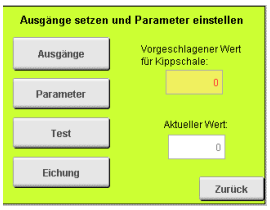
Error	Possible cause	Action
Unusually long idle time after detachment	Failure of end switch on cylinder (cable breakage, defective)	Milking as possible Call service
Hoses lower themselves between the milking times or withdraw during milking without user interaction	Leakage in line system, cylinder or valve	Check for leakage Optionally call service
Movements are carried out although the hoses have not been withdrawn	End switch on cylinder is always on	Call service
Multilactor® does not start on its own or not at all	Failure of knee switch	Disconnect knee switch and start with the start button. Replace knee switch
Pulsation does not work	- Main filter for fresh air is clocked - Controller is defective - Contamination in pulsator	Replace filter Check LEDs of pulsator valves HINT: in case of a failure of a pulsator valve it is nevertheless possible to milk by connecting the hose of the defective valve to a functioning valve by means of a T-connection piece. -->Call service
No or insufficient vacuum	- Upper valve on PSM is closed	Open valve, check for contamination, condensed water, check membrane for damage/wear, possibly replace Check LED on control valve Y20 (see figure 7 of attachment)

Error	Possible cause	Action
Milk does not drain off from PSM	- Lower valve on PSM is closed	Open valve, check for contamination, condensed water, check membrane for damage/wear possibly replace it see figure 8 of attachment)
PSM is not flooded during purging	- Lower valve on PSM does not switch	Check drive signal (LED on valve Y7) (see figure 7 of the attachment)
Milk flow is not measured	- Failure in sensor or wiring	Check LED on sensor --> Call service
Fizzling at the PSM	- Cover is open	Close cover
Spray nozzles insufficiently spray or not at all	- Nozzles are calcified	Calcify
There is too less or no water during purging	- Filter in the valve is clocked - Valve is defective	- Clean filter - Service
Water splashes all the time	- Contamination in water valve - Failure in wiring	Call service
Water in the purge unit does not drain off correctly	- Clogging caused by contamination or foreign body	Detach tubes of the purge box, remove foreign body and possibly back-purge with water (see figure 9 of attachment)
Purge unit draws air during purging	- Check-valve at outlet does not close correctly	Check for contamination and possibly clean check valve (see figure 9 of attachment)
Milking cup “jumps” up and down during milking	- Bio-Milker valve is defective	Clean and possibly replace Bio-Milker valve

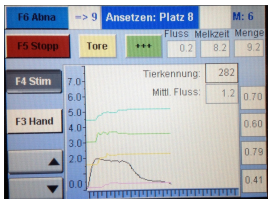
7. Attachment

7.1. Overview of the functions

<table>
<tr><td rowspan="3"> 

Main menu</td><td>Setup: Selects the service menu (setting of parameters, testing of functions)
Kanne: Activates the function „Melken in Kanne“
Melken Starten
Desinfektion: Starts peracetic acid disinfection
Spülen: Purges milking gadget with water
Rückspülen: Purges hoses with water after milking in bucket</td><td> 
  </td></tr>
<tr><td>links/rechts: Invokes gate control
+++: Blocks automatic in milking box
Base position
Tierkennung: Inputs or displays animal identification number</td><td>  </td></tr>
<tr><td></td><td>  </td></tr>
<tr><td> 
</td><td>Current position is highlighted in white.
Purple button (A): opens the exit of the respective milking box
Yellow button (E): opens the entry gate of the respective milking box
links/rechts: Central entry gates
a grey button indicates the open status of the respective gate. Upon pressing the button the gates are closed</td><td>  </td></tr>
<tr><td> 

Setup menu</td><td>Ausgänge: Displays and activates digital outputs
Parameter: Parameters for cycles, switching times, pulsation, disinfection, measurement of milk amount
Test: Activates the pulsation for measurement of the pulse curves
Eichung: Starts water testing of Pulsameter (see attachment 7.3)</td><td> 
  </td></tr>
</table>



Menu ‚milking' Including the display of milking parameters

F6 Abna: Manuel detachment of milking cups and start of intermediate disinfection
F8 Stopp: After detachment the process may be stopped until hoses are lowered for disinfection.
F4 Stim: Switches off stimulation (for example for cows having small teats)
F3 Hand: Deactivates automatic detachment and skips pre-stimulation
⬆: Hoses move upwards, for instance when touching the ground
⬇: Hoses are lowered, for instance if too short (to this end, pull gently)

Tierkennung: entry/display of identification
+++: Deactivates automatic for this milking box
Tore: Menu for manual gate control
Status information in upper line:
=> (left side) milking box being populated
Central blue display area
- Information about milking box containing a waiting cow
=> (right side) milking box being discharged

Right grey display area: Number of milking box

7.2. Setup Service menu

7.2.1. Table: Parameter settings

No	Parameter	Description parameter	Default	As is	min	max
1	Z13	Actuator down 1/10s	4		0	
2	Z14	Actuator up 1/10s	7		0	
3	Z33	Attachment 1/10s	100		0	
4	Z8	Shaking off 1/10s	3		0	
5	Z28	End of shaking off 1/10s	80		0	
6	Z7	Shaking-off up 1/10s	5		0	
7		Number of steps for shaking off	3		0	
8	Z11	Pivot time 1/10 s	2		0	
9	Z19	Container fill time 1/10s	100		0	

No	Para-meter	Description parameter	Default	As is	min	max
10	Z36	Waiting time for container filling 1/10s	200		0	
11		Number of container fillings	3		0	
12	Z20	Waiting time during container filling 1/10s	400		0	
13	C2	Number of re-fill steps	3		0	
14	Z6	Pivot inwardly 2 1/10s (counter impulse)	2		0	
15	Z5	Pivot inwardly 3 1/10s	60		0	
16	Z23	Discharge time 1/10s	400		0	
17	Z34	Main purge flood time	450		0	
18	Z24	Main flood time 1/10s	400		0	
19	C1	Main purging: number of steps	18		0	
20	Z4	Tilt time down 1/10s	10		0	
21	Z3	Tilt time up 1/10	20		0	
22	Z15	Cup detachment: waiting time 1/10s (switch-off delay)	8		0	
23		Min milk flow for main milking kg/min	0,800		0	
24		Min milk flow for final milking kg/min	0,250		0	
25		Milk amount in gauge in g	100		0	
26		Minimum milking time 1/10s	1800		0	
27	Z32	Final milking time 1/10s	60		0	
28	Z31	Final milking stimulation 1/10s	100		0	
29	Z12	Dosing time peracetic acid 1/10s	30		0	
30	Z29	Reaction time peracetic acid 1/10s	300		0	
31	Z18	Post-valve purging 1/10s	450		0	

No	Para-meter	Description parameter	Default	As is	min	max
32	Z2	Waiting time hose down during purging 1/10s	25		0	
33	Z0	Wating time hose up 1/10s	40		0	
34	Z26	Hose up/down impulse 1/10s	2		0	
35	Z27	Waiting time hose up/down 1/10s	1		0	
36	Z10	Waiting time pivot inwardly 1/10s	15		0	
37	Z9	Waiting time pivot 1/10s	25		0	
38	Z25	Waiting time actuator detach-ment 1/10s	2		0	
39	C4	Number of stimulation steps	5		0	
40	Z21	Pre-purge time 1/10s	100		0	
41	Z30	Pre-stimulation time 1/10s	500		0	
42	Z22	Vacuum removal 1/10s	100		0	
43		Number of water fillings	1			
44	Z16	Water spray time 1/10s	15			
45	Z17	Post-spray time 1/10s	8			
46		Change of milk amount in gauge	0,0			
47	Z1	Hose down, milking position	30			
48		Filling time for water purging 1/10s	300			
49		Threshold for forced vacuum Kg/min	5,0			
50		Hysteresis for forced vacuum 1/10s	40			
	Pulsation		Sequential			
		Number of pulses	60			
		Sucking phase	60 %			
		Delay PV2	250			

No	Para-meter	Description parameter	Default	As is	min	max
		Delay PV3	500			
		Delay PV4	750			
	Pulsameter		ON			
		Calibration value	100			

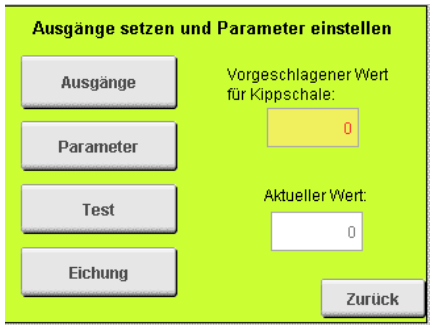
7.2.2. Table: Description of outputs

Y1	Hose up
Y2	Hose down
Y3	Pivot inwardly
Y4	Pivot autwardly
Y5	Tilt magazine
Y6	Stimulation
Y7	Flood Pulsameter2
Y8	
Y9	Dose PES
Y10	Spray nozzles for water
Y11	Flood container
Y12	Spray hoses
Y13	Switch-off valves on
Y14	
Y15	Output Pulsameter2
Y20	Vacuum ON
	Pulsator 1
	Pulsator 2
	Pulsator 3

	Pulsator 4

Outputs: any movements or functions may be activated manually. Each digital input/output is made visible!

7.3. Adjusting the calibration value for PSM2*



1. Press set up in order to select the service menu.
2. Select "Eichung".
3. Water test* according to adjustment and test procedure for Pulsameter 2.(10 l water)
4. At the end of the procedure the program suggests the calibration value.
5. Repeat measurement for verification
6. Changing calibration value:
   a. Select parameter 46 (parameter 25 cannot be modified directly)
   b. Hint: this value may only be changed by entering a two digit customer specific safety code followed by the mean value of the two suggested calibration values (for example: code 99, mean value 104: 99104)
   c. Select parameter 25 and check modified value
7. Perform a control measurement

7.5. Purge apparatus

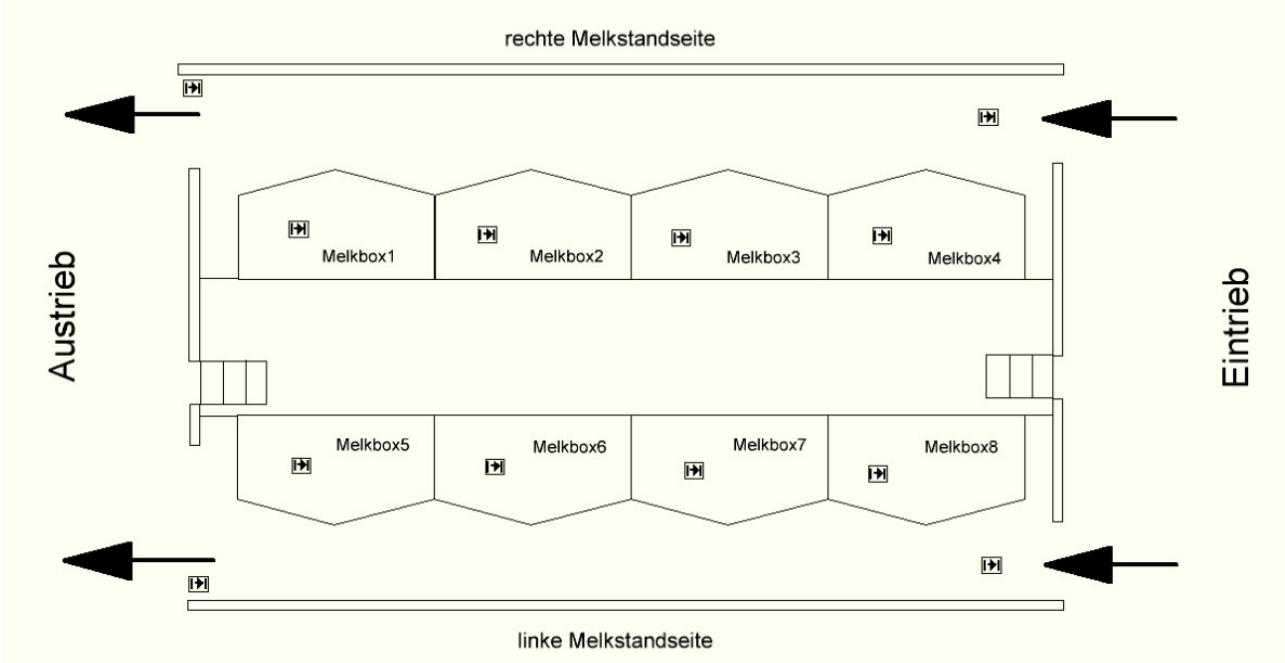
Milking parlours equipped with Multilactors may use different purge apparatus. The purge apparatus has to provide a floating contact for switching a 24V signal sent by Multilactor® in order to start the valve purging and the main cleaning procedure.

Note: the following purge apparatus in standard configuration supports Multilactor®:
Flaco cleaning apparatus FRA-2 (including an additional relay)
The connection of Multilactor® to a purge apparatus of a different manufacturer is accomplished by a technician. (See connection plans)

It is thoroughly to be taken care of the fact that the valve purging is to be performed prior to the actual purge process. Therefore, the actual cleaning process has to start with an adjustable delay of time.

After finishing the cleaning process the entire equipment is switched off. The switching off has to be done such that to the Multilactors are disconnected from the grid with a certain delay (2 to 5 minutes). In this time period water purging of the milking cups is performed.

7.6. Numbering of milking boxes in a Tandem parlour



Milking parlour right-hand side

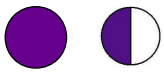
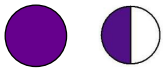
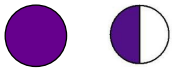
Milking parlour left-hand side

Exit Entry

Milking box1 Milking box2 Milking box3 Milking box4
Milking box5 Milking box6 Milking box7 Milking box8

Numbering in a hearing bone parlour is analogous.

7.7. Shipment

Name	Number	Mode of operation
Multilactor® (including purge box)		
Milk amount gauge		
Knee switch		
R+D-unit (cleaning and disinfection) including armature group	1	
Power supply (depending on the number of Mls, see technical data)	1	
Light sensors	2 per central gate	
	Number of milking boxes + 6	
Ethernet Switch	ATD 2x3: 1 ATD 2x4: 3 ATD 2x5: 4 ATD 2x6: 5	
USB-Dongle for PVI-Manager	1	
Not included:		
PC (Operating system: Windows7; Optionally, an industrial PC is available with surcharge)	1	

7.7. Attachments

Technical data Multilactor®
List of replacement parts, drawings in exploded view
Manual for cleaning and disinfection unit
Connection plans:
Electric diagram, pressurised air, dosing unit
Safety data sheets and instructions for operation: Cleaning and disinfection agents
Specification for operating the Pulsameter®
Adjustment and verification specifications based on water for PULSAMETER