INSTALLATION AND MAINTENANCE MANUAL
FOR CLOSE TYPE MILK COOLING TANKS MPP1000 – MPP14000
AND MPP010000 – MPP020000
WITH SIMPLE AUTOMATIC WASHING PANEL

WARNING! READ THE INSTRUCTIONS MANUAL BEFORE OPERATE

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1. INTRODUCTION

Choosing the milk cooling tank of Milkplan, you chose a perfect product, made by people who perfectly know the secrets of milk conservation. The milk cooling tank is constructed using the most modern equipment and technology, all in accordance to the European accepted standards.

Milk refrigeration is performed by a stainless steel, straight direct expansion evaporator plate, developed by Milkplan’s R&D department. The appropriate design, and the efficient mounting of the evaporator on the milk cooling tank’s body, create the best conditions for a rapid cooling of the contained milk, providing, combined with agitation, the proper cooling and conservation of the product.

The materials used for the construction of the milk cooling tank are the most trustworthy in the European Trade Market and guarantee the long life and the faultless operation of your milk cooling tank.

The electronic milk controller is manufactured by the Italian firm Dixell and has a malfunction factor of less than 1%.

The agitation motor is made in France by Sirem, in different models whose characteristics depend on the tank they serve.

The final user of the tank may choose the condensing unit that is suitable to his/her needs, among various alternative models offered by Milkplan. Therefore, there is an option for a reciprocating hermetic compressor Maneurop, or a reciprocating hermetic compressor L’Unite Hermetique (Tecumseh) or even a Copeland scroll compressor. All types of compressors used are hermetic and their horsepower is always chosen according to the needs of each customer.

All Milkplan closed, horizontal-type milk-cooling tanks, are manufactured with two independent refrigeration circuits, allowing, thus, the user to install two independent cooling units, even after the final installation.

The proper installation of the tank is achieved by stainless steel (AISI 304), special manufactured form legs, fully adjustable, for an effective leveling.

2. SAFETY RULES AND GENERAL INSTRUCTIONS

During the designing and the construction of this machine, we have spared no effort to make your job more efficient and secure. However, caution is always important. Prevention is better than cure.

This machine is designed and constructed according to the Annex V directive 98/37 EU and the EN 292-1, EN 292-2, EN 294, EN 349, EN 418, EN 1672-1, EN 1672-2, EN 60204-1 standards.

This exclamation point in the yellow, equilateral triangle alerts the user about danger and measures to be taken to avoid risks, injuries and damages. Upon seeing it, you are highly advised to pay attention to the warning and be careful about risks.

An instruction follows this symbol.

3. PRESENTATION OF PRODUCT

ATTENTION! This manual is an integral part of the milk cooling tank and must be kept at a safe place, close to the milk cooling tank; all users must know its presence and content. Do not expose this manual to rain or moisture.

Do not neglect to read this manual, despite your previous experience. A few moments of careful reading will save you time and prevent many problems. Read carefully the instructions, before the start-up of the machine, its normal use, maintenance or other functions and follow exactly the instructions and warnings as mentioned below.

Place the stickers on the machine and replace any lost or damaged sticker or label immediately!
Only adequately trained staff, responsible for the use of the machine should handle it. A trained person is adequately informed or can supervise by another trained person in order to prevent or eliminate any risk of accident.

4. LABELING

4.1 MANUFACTURER & TECHNICAL SPECIFICATION LABEL

The manufacturer’s label of technical specifications must be visible at all times, for it contains essential information about the manufacturer (address, phone number, fax) and the proper installation of the machine (the model, serial number, year of manufacture, the technical characteristics of the condensing unit, power and voltage, electrical current and weight) and the CE mark.
4.2 WARNING LABELS

The warning labels inform the operator about the machine or the equipment or about persisting risks, despite all measures adopted.

Due to the nature of the product the tank contains, hygiene rules should be applied. The following labels must be installed at a place seen by all employees.

The signs (warning labels) should be fixed at a visible and not removable part of the machine or on a data plate attached to the machine in such a way that it cannot be removed or become illegible during the function of the machine in the working environment.

Keep them clean and replace them immediately detached or damaged.

5. INSTALLATION INSTRUCTIONS

5.1 INSTALLATION PLACEMENT

The milk cooling tank can be installed indoors or outdoors. It is very important, to install the cooling tank at a well ventilated place, with hot and cold water supply.

If the milk cooling tank is installed indoors, make sure the place of installation has sufficient ventilation openings. It is recommended that the milk cooling tank were placed in such a way that the condenser lies near an opening for the produced heat to be discarded. (Picture no2)

If the milk cooling tank is to be installed outdoors, despite it is made of waterproof products, it must be placed under a roof to avoid the impact of the weather conditions (rain, snow, etc). In this manner, you extend its life-time.

It is also crucial to place both the milk cooling tank and the condensing units, on a flat surface made of concrete. The installation of the milk cooling tank on a surface that may be deformed can result in inaccurate measurements and cause important damages to the equipment of the tank.

5.2 MILK COOLING TANK LEVELLING

The leveling of the milk cooling tank is achieved using a hand spirit level and the special black marks on the side of the tank. Please follow the procedure as described below.
Place the tank at a stable and leveled surface.

1st METHOD

1. Place the spirit level parallel to the special black marks on the side of tank’s body, as shown in the picture below (Position 2). Adjust the legs of the tank until absolute leveling. Consequently, open the manhole lid and place the spirit level on its edge as shown in the picture below (Position 1). If necessary, adjust once more the legs of the tank. Confirm that the leveling of position 2 remains unchanged.

2. The second step is to fill the tank with water until the bottom of the tank is covered as shown on the drawing below (blue line).
3. Insert the dipstick into the tank at positions A and B. The end of the dipstick should touch the bottom of the tank. It’s also allowed to use a simple measure instead of the dipstick but the measuring positions A and B shouldn’t change.
4. The difference between the H2 – H1 at positions A, B should be as stated in TABLE 1.
5. To adjust the angle and therefore the difference H2 – H1 one should adjust the rear feet of the tank until the desirable value is achieved.
6. Repeat step 3 to insure the proper leveling.
2nd METHOD

It’s also possible to use pre-measured water volume and the calibration chart to level the tank.

1. Place the spirit level parallel to the special black marks on the side of tank’s body, as shown in the picture (Position 2). Adjust the legs of the tank until proper level is achieved. Consequently, open the manhole lid and place the spirit level on its edge as shown in the picture (Position 1). If necessary, adjust once more the legs of the tank. Confirm that the leveling of position 2 remains unchanged.

2. Use a weight scale or an accurate flow meter to measure the water volume to be poured into the tank.

3. Pour the water into the tank.

4. Install the dipstick of the tank in the measuring position.

5. Check if the dipstick and the calibration chart show the same volume of water as the volume that was poured into the tank.

6. In case the readings don’t match adjust the back legs of the tank so as both the volume measured by the dipstick and the actual volume of water poured into the tank are exactly the same.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>ANGLE</th>
<th>(A,B)</th>
<th>ΔH (H2 – H1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPP 1000</td>
<td>2.35°</td>
<td>1200 mm</td>
<td>49.2 mm</td>
</tr>
<tr>
<td>MPP 2000</td>
<td>1.81°</td>
<td>1430 mm</td>
<td>45.1 mm</td>
</tr>
<tr>
<td>MPP 3000</td>
<td>1.27°</td>
<td>2310 mm</td>
<td>51.2 mm</td>
</tr>
<tr>
<td>MPP 4000</td>
<td>1.73°</td>
<td>1830 mm</td>
<td>55.2 mm</td>
</tr>
<tr>
<td>MPP 5000</td>
<td>1.29°</td>
<td>2350 mm</td>
<td>52.9 mm</td>
</tr>
<tr>
<td>MPP 6000</td>
<td>0.85°</td>
<td>2960 mm</td>
<td>43.9 mm</td>
</tr>
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<td>MPP 8000</td>
<td>0.76°</td>
<td>2800 mm</td>
<td>37.1 mm</td>
</tr>
<tr>
<td>MPP 10000</td>
<td>1.24°</td>
<td>3620 mm</td>
<td>78.3 mm</td>
</tr>
<tr>
<td>MPP 12000</td>
<td>0.8°</td>
<td>3290 mm</td>
<td>45.9 mm</td>
</tr>
<tr>
<td>MPP 14000</td>
<td>1.17°</td>
<td>3860 mm</td>
<td>78.8 mm</td>
</tr>
</tbody>
</table>
5.3 ELECTRICAL CONNECTIONS

An authorized electrician must work on the electrical installation that will power the milk cooling tank.

A single-phase tank must be connected to an electrical installation of 220V, 50Hz with a separate ground conductor, whereas a three-phase tank must be connected to an electrical installation of 380V, 50Hz with a five-polar cable (3 phases + neutral + ground conductor).

**ATTENTION!** For your protection, the milk cooling tank must be provided with a grounded protective conductor, of suitable capacity, to ensure the proper grounding of the machine.

The diameter of the cables must be chosen according to the electrical power of the milk cooling tank. Consult table 1 of the appendix to choose the type of the cable.

The cable must be straight, without coils (twisted extensions of electrical cable, e.t.c).

The milk cooling tank must be connected to a separate, fused electrical line, with a K type fuse or a micro-automatic for electric motors in the electrical panel.

Supplying two milk cooling tanks through the same fuse is absolutely forbidden.

The electrical connections of the milk cooling tanks, from 500 liters of capacity and beyond, must be inside the electrical panel, and the electrical line must be connected to an industrial type socket or to the power board of the building.

**ATTENTION!** The power line of the tank should be made of a unique cable of sufficient dimensions, without any connections or terminal connectors. The manner of wiring the tank must ensure that only authorized stuff or trained persons can approach the power lines and the electrical cables. **DANGER OF ELECTRIC SHOCK!**

Once performed the electrical connection, measure the voltage fluctuation by using a voltmeter. While the milk cooling tank is operating, the voltage drop must not be greater than 3% of the nominal one. (At a circuit of 220V, the voltmeter should measure at least 214V).

**High voltage drop at the power supply line may cause serious damage to the refrigerating mechanism, which is not covered by the guarantee.**

**NOTE:** Wrong connections at the terminal blocks or the socket plugging can also cause voltage loss.

6. **PRINCIPLES OF OPERATION-DESCRIPTION OF THE MACHINE**

The milk cooling tank is especially designed and constructed for the refrigeration and the conservation of milk and ensures the perfect quality of the product. The refrigeration of the milk must be done immediately after its collection in order to minimize its possible vitiation during its transportation.

The milk cooling tank cools the milk by using one or two condensing units. The proper refrigeration is achieved by one or two agitation paddles, rotated by an electro reducer. The insulated walls of the milk cooling tank keep temperature stable for a sufficient period of time by reducing thermal loss. The entire construction and performance of the milk cooling tank are in accordance to the International Standards ISO 5708 and EN 13732

7. **DESCRIPTION**

The cylindrical milk vessel of the tank is made of 18/10 AISI 304 stainless steel. The tank vessel consists of two walls. A fine insulation, of a precisely controlled infusion, made of high density, environment friendly polyurethane foam exists between them. A complete agitation system, on the upper side of the tank, is directly connected to the stirring motor. Both the agitation paddle and the shaft are made of stainless steel and their special shape achieves agitation even with small quantities of product. A dipstick and a calibration chart of 1mm accuracy are installed inside the tank.

A user friendly control panel is located on the front side of each tank, in a stainless steel (AISI 304) frame, secured from humidity, dirt and dust. An LCD waterproof (IP 65) display allows a complete parameterization to the user, offering simultaneously full functionality of the equipment, in accordance to the real needs at workplace.

On the lower part of the tank, one can see the milk outlet and the butterfly valve (dimensions DN50 or DN80). A connection tool of the washing system of the tank is also located in the front side, ready to be connected to the butterfly valve.

A stainless steel ladder (available for some models) allows easy access to the upper side of the tank, where the manhole is located.

The watertight manhole is made of stainless steel (AISI 304) and must remain closed during the collection and the cooling of the milk and during washing.

**After an operation of the tank is completed (refrigeration/drainage/washing), you should make a visual inspection of the tank to verify the results of the operation.**

**Do not forget to verify that rinsing water, from the washing process, has been completely emptied before the first pouring of the milked milk.**
8. TECHNICAL SPECIFICATIONS

8.1 GENERAL INFORMATION

CONSTRUCTION: Stainless steel 18/10, DIN 1.4301 (AISI 304) for inner and outer tank vessel. Inner shell: 2mm (for IC 1000LT-10000LT) / 2.5mm (for IC 12000-14000LT). Outer shell: 1.5mm SATINE

TANK TYPE: Horizontal type cylindrical tank, free standing, smooth inner sides, rounded angles, perfectly polished welding, adjustable legs for uneven floors. Direct expansion bottom designed to ensure total drain of tank. The design of evaporator plates prevents milk freezing even at low milk volumes. Crash test 65BAR. Function pressure: 30 BAR. Fine insulation with precisely controlled infusion of high – density environment friendly polyurethane foam.

Complete agitation system (agitation motor Sirem 120W 30rpm one phase, one-piece agitation paddle without joints) for IC 1000lt, (agitation motor Sirem 131W 25rpm three phase, one-piece agitation paddle without joints) for IC 2000lt - 3000lt, (agitation motor Sirem 145W 21-25rpm three phase, one-piece agitation paddle without joints) for IC 4000lt - 6000lt, two complete agitation systems (2 agitation motors Sirem 145W 21-25rpm three phase, one-piece agitation paddles without joints) for IC 8000lt-14000lt.

Elevated stirring motors for easy cleaning. Milk outlet and milk cooling tank evaporator plate inclination according to the international standards (ISO 5708). Stainless steel dipstick and standard calibration chart. Stainless Steel Butterfly valve DN50 (for IC 1000LT – 6000LT), Ø52mm and steel butterfly valve DN80 (for IC 8000LT – 14000LT), Ø85mm with one end nut, other threaded (male part), PVC cap and stainless steel chain for all models up to IC 6000LT. Manhole Ø400mm for IC 1000LT-3000lt, manhole Ø500mm for IC 4000lt-14000lt. Stainless steel ladder for all models from IC 2000LT and above. Washing system tube Ø25mm with stainless steel rotated washing spray dish for a perfect washing at all internal points of the tank. No spray ball which is blocked from the water salts after some period of use. External stainless steel pressure equalizer (ventilation cap).

CONDENSING UNIT: Close type condensing unit compressor (L’unite Hermetique, Maneurop, Copeland Scroll) coolant type R404A (full ecological). Solenoid valve, voltage and power phase alternation( L1-L2-L3 ) controller for the protection of tank electrical circuits against voltage fluctuations, high pressure switch, low pressure switch, high pressure switch for the second fun regulation on the refrigerating circuit, coolant receiver, sight glass are included for the protection and high performance of condensing unit.


MILK CONTROLLER - THERMOSTAT: OPERATING TEMPERATURE:+0 °+60°C. STORAGE TEMPERATURE: -30 °+85°C. POWER SUPPLY: 230V – 50Hz ± 10%. POWER ABSORPTION: 3VA max. MAKE : DIXELL SRL, ITALY. FUNCTION: When the compressor reaches the set point, it stops its function and the auto agitation of milk begins for 15minutes pause, 3 minutes agitation and so on until the milk temperature be SET+ Hy when the compressor starts again. In case of probe failure , the output is according to parameter “COn” - Compressor ON time with faulty probe (range: 0 ≥ 255min , val.15min) and “COF” - Compressor OFF time with faulty probe (range: 0 ≥ 255min, val. 30min). Note : All of the milk controller parameters are adjustable.

DIPSTICK: High precision stainless steel dipstick (AISI 304) for easy and direct volume reading in mm. Standard calibration chart (Lt).

8.2 SIMPLE AUTOMATIC (PLC) CONTROL PANEL

The washing procedure consists of five washing stages (pre-washing with cold water, pre-washing with hot water, washing with hot water, rinsing with hot water, rinsing with cold water), manual choice for cooling or washing, easy to use control panel, control panel frame is made of stainless steel protects all the components from humidity and dirt, selection switch for detergent /acid, water circulator pump 875 Watt, drainage valve diam.50mm, electronic thermometer – thermostat (agitation program is included), solenoid valve ¾”.

The main points of handling and operation of milk cooling tank are below:

- Reliable electronic control of the cooling and the agitation of the tank
- Adjustable and individual, for each condensing unit, start-up delay
- Cascade start-up of the compressors so that is avoided the overloading
- Ntc temperature sensor, waterproof IP68, (tolerance 1%, response time 10°K → 2m/s) ensures instant data transfer to the thermostat
- High and low pressure switches for each condensing unit to protect the compressor
- Activation of agitation automatic mode (3’ function – 15’ pause) after cooling cycle completion
- Option for manual agitation during agitation automatic mode
Permanent milk temperature indication on the display
Washing cycle in 5 stages
Water pump for 1ph or 3ph with suction capacity 8m³/h – 875W. Water pump positioning is in such way on the tank so as to be always full of water and also avoid all cases of frozen during winter
Voltage and power phase alternation (L1-L2-L3) controller for tank’s electrical circuit protection against voltage fluctuations. Automatic reset and start-up of the unit after voltage restoration and as refrigerant pressure is balanced into the circuit.
Sound alarm in case of compressor, agitation motor or water pump malfunction

8.3 TECHNICAL SPECIFICATIONS CLOSE TYPE 2 MILKING

<table>
<thead>
<tr>
<th>Milk cooling tank type</th>
<th>Maximum capacity</th>
<th>Fan cooled condensing unit type</th>
<th>Voltage</th>
<th>Refrigerant type</th>
<th>Refrigeration capacity Watt</th>
<th>Run current</th>
<th>Energy consumption</th>
<th>Number of milking</th>
</tr>
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<tbody>
<tr>
<td>MPP 1000</td>
<td>1080</td>
<td>FH4540Z</td>
<td>220V–240V 50Hz, 1~</td>
<td>R 404A</td>
<td>7276W 3Hp</td>
<td>19,8A</td>
<td>4274W</td>
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| MPP 3000 | 3580 | 2 x ZB38 | 380V–400V 50Hz, 3~ | R 404A | 2 X 11200W | 2 X 4760W | 2  
| MPP 3000 | 3580 | MTZ 125 | 380V–400V 50Hz, 3~ | R 404A | 24233W | 10,3Hp | 2  
| MPP 3000 | 3580 | 2 x TAG4553 | 380V–400V 50Hz, 3~ | R 404A | 2 X 8958W | 2 X 4,5Hp | 2  
| MPP 3000 | 3580 | 2 x MTZ 64 | 380V–400V 50Hz, 3~ | R 404A | 2 X 13520W | 2 X 5,3Hp | 2  
| MPP 3000 | 3580 | ZB75 | 380V–400V 50Hz, 3~ | R 404A | 22200W | 8,3Hp | 2  
| MPP 3000 | 3580 | 2 XZB45 | 380V–400V 50Hz, 3~ | R 404A | 2 X 13100W | 2 X 5,6Hp | 2  
| MPP 4000 | 4198 | MTZ 125 | 380V–400V 50Hz, 3~ | R 404A | 24233W | 10,3Hp | 2  
| MPP 4000 | 4198 | 2 x TAG 4561Z | 380V–400V 50Hz, 3~ | R 404A | 2 X 9403W | 2 X 5Hp | 2  
| MPP 4000 | 4198 | 2 x MTZ 64 | 380V–400V 50Hz, 3~ | R 404A | 2 X 13520W | 2 X 5,3Hp | 2  
| MPP 4000 | 4198 | ZB75 | 380V–400V 50Hz, 3~ | R 404A | 22200W | 8,3Hp | 2  
| MPP 4000 | 4198 | 2 x ZB45 | 380V–400V 50Hz, 3~ | R 404A | 2 X 13100W | 2 X 5,6Hp | 2  
| MPP 5000 | 5224 | 2 x TAG 4573Z | 380V–400V 50Hz, 3~ | R 404A | 2 X 12567W | 2 X 6,1/4Hp | 2  
| MPP 5000 | 5224 | 2XMTZ 80 | 380V–400V 50Hz, 3~ | R 404A | 2 X 16603W | 2 X 6,5Hp | 2  
| MPP 5000 | 5224 | MTZ 160 | 380V–400V 50Hz, 3~ | R 404A | 29912W | 13,3Hp | 2  
| MPP 5000 | 5224 | ZB92 | 380V–400V 50Hz, 3~ | R 404A | 30000W | 13,3Hp | 2  
| MPP 5000 | 5224 | 2 x ZB56 | 380V–400V 50Hz, 3~ | R 404A | 2 x 15200W | 2 x 6,5Hp | 2  
| MPP 6000 | 6385 | 2 x MTZ 100 | 380V–400V 50Hz, 3~ | R 404A | 2 X 19625W | 2 X 8,3Hp | 2  
| MPP 6000 | 6385 | 2 x ZB75 | 380V–400V 50Hz, 3~ | R 404A | 2 X 22200W | 2 X 8,3Hp | 2  
| MPP 8000 | 8711 | 2 x MTZ 125 | 380V–400V 50Hz, 3~ | R 404A | 2 X 24233W | 2 X 10,3Hp | 2  
| MPP 8000 | 8711 | 2 x ZB75 | 380V–400V 50Hz, 3~ | R 404A | 2 X 22200W | 2 X 8,3Hp | 2  
| MPP 10000 | 10987 | 2 x MTZ 160 | 380V–400V 50Hz, 3~ | R 404A | 2 X 29912W | 2 X 13,3Hp | 2  
| MPP 10000 | 10987 | 2 x ZB92 | 380V–400V 50Hz, 3~ | R 404A | 2 X 30000W | 2 X 13,5Hp | 2  

MPP1000 - MPP20000
## 8.4 TECHNICAL SPECIFICATIONS CLOSE TYPE 4 MILKING

<table>
<thead>
<tr>
<th>Milk cooling tank type</th>
<th>Maximum capacity Liters</th>
<th>Fan cooled condensing unit type</th>
<th>Voltage</th>
<th>Refrigerant type</th>
<th>Refrigeration capacity Watt – Hp</th>
<th>Run current</th>
<th>Energy consumption</th>
<th>Number of milking</th>
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<tbody>
<tr>
<td>MPP 1000</td>
<td>1080</td>
<td>FH4531Z</td>
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<td>R 404A</td>
<td>2 x 7276W 2 x 3Hp</td>
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<td>12567W 6,1/4Hp</td>
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### TECHNICAL SPECIFICATIONS

#### CLOSE TYPE 2 MILKING

<table>
<thead>
<tr>
<th>Milk Cooling Tank type</th>
<th>Maximum Capacity Liters</th>
<th>Fan cooled Condensing Unit type</th>
<th>Voltage</th>
<th>Refrigerant Type</th>
<th>Refrigeration Capacity Watt – Hp</th>
<th>Run Current</th>
<th>Energy Consumption</th>
<th>Number of Milking</th>
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<tbody>
<tr>
<td>MPP010000</td>
<td>10.250</td>
<td>4 X MTZ100</td>
<td>380V<del>400V 50Hz, 3</del></td>
<td>R 404A</td>
<td>4 X 19.625W 4 X 8,3Hp</td>
<td>4 X 14,7A</td>
<td>4 X 7.550W</td>
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<tr>
<td>MPP010000</td>
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<td>4 X ZB58</td>
<td>380V<del>400V 50Hz, 3</del></td>
<td>R 404A</td>
<td>4 X 15.750W 4 X 8,3Hp</td>
<td>4 X 13,82A</td>
<td>4 X 7.850W</td>
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<tr>
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<td>4 X MTZ100</td>
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<td>R 404A</td>
<td>4 X 19.625W 4 X 8,3Hp</td>
<td>4 X 14,7A</td>
<td>4 X 7.550W</td>
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<tr>
<td>MPP12000</td>
<td>12.600</td>
<td>4 X ZB58</td>
<td>380V<del>400V 50Hz, 3</del></td>
<td>R 404A</td>
<td>4 X 15.750W 4 X 8,3Hp</td>
<td>4 X 14,7A</td>
<td>4 X 7.850W</td>
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<tr>
<td>MPP14000</td>
<td>14.500</td>
<td>4 X MTZ125</td>
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<td>4 X 17,6A</td>
<td>4 X 9.671W</td>
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<td>14.500</td>
<td>4 X ZB76</td>
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<td>4 X 10.200W</td>
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<td>4 X 17,6A</td>
<td>4 X 9671W</td>
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<td>16.600</td>
<td>4 X ZB58</td>
<td>380V<del>400V 50Hz, 3</del></td>
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<td>4 X 20.900W 4 X 10,4Hp</td>
<td>4 X 17,8A</td>
<td>4 X 10.200W</td>
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<tr>
<td>MPP18000</td>
<td>18.500</td>
<td>4 X MTZ160</td>
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<td>R 404A</td>
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<td>4 X 22,2A</td>
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<td>4 X 23,2A</td>
<td>4 X 13.200W</td>
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<td>4 X 29.912W 4 X 13,3Hp</td>
<td>4 X 22,2A</td>
<td>4 X 12.224W</td>
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<td>MPP20000</td>
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<td>4 X ZB95</td>
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<td>4 X 30.000W 4X13,3Hp</td>
<td>4 X 23,2A</td>
<td>4 X 13.200W</td>
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#### TECHNICAL SPECIFICATIONS

#### CLOSE TYPE 4 MILKING

<table>
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<tr>
<th>Milk Cooling Tank type</th>
<th>Maximum Capacity Liters</th>
<th>Fan cooled Condensing Unit type</th>
<th>Voltage</th>
<th>Refrigerant Type</th>
<th>Refrigeration Capacity Watt – Hp</th>
<th>Run Current</th>
<th>Energy Consumption</th>
<th>Number of Milking</th>
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<tr>
<td>MPP010000</td>
<td>10.250</td>
<td>2 X MTZ100</td>
<td>380V<del>400V 50Hz, 3</del></td>
<td>R 404A</td>
<td>2 X 19.625W 2X 8,3Hp</td>
<td>4 X 14,7A</td>
<td>4 X 7.550W</td>
<td>4</td>
</tr>
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</table>
### 8.5 Refrigeration Capacity Rating Conditions

- Ambient temperature: +32°C.
- Evaporator outlet and return gas superheated: 11°C.
- Condensing temperature: +55°C.
- Evaporating temperature: 0°C.
- Temperature of refrigerant at condenser outlet is sub cooled within the condensing limits of the unit.

### 8.6 Main Dimensions

#### MAIN MILKPLAN POWER TANK DIMENSIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Number of feet</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>C(mm)</th>
<th>H(mm)</th>
<th>F(mm)</th>
<th>H1 (mm)</th>
<th>L (mm)</th>
<th>G (mm)</th>
<th>Hf (mm)*</th>
<th>Hm (mm)</th>
<th>HL (mm)</th>
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<tbody>
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<td>845</td>
<td>600</td>
<td>1989</td>
<td>1060</td>
<td>1024</td>
<td>1690</td>
<td>1299</td>
<td>235/285</td>
<td>310</td>
<td>730</td>
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<tr>
<td>MPP1200</td>
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<td>300</td>
<td>950</td>
<td>750</td>
<td>2256</td>
<td>1350</td>
<td>1291</td>
<td>1690</td>
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<td>2025</td>
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<td>MODEL</td>
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<td>H1 (mm)</td>
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<td>G (mm)</td>
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<td>1360</td>
<td>1445</td>
<td>2300</td>
<td>1765</td>
<td>1900</td>
<td>4450</td>
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<td>235/330</td>
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<td>5750</td>
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<td>7220</td>
<td>2000</td>
<td>235/385</td>
<td>330</td>
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</table>

*Front side of the tank/back side of the tank (with legs fully screwed into the support base).

W: 380mm for MPP Standard, 560mm for MPP Control.

D: 180mm with copper pipes / 500mm with expansions valves installed.
9. USING THE MILK COOLING TANK

Milkplan simple automatic control panel is equipped with all the necessary elements for effective cooling operation and washing of the milk cooling tank.

- Manual selection of cooling or washing
- User friendly
- Effective washing in 5 cycles
- Electronic thermometer – thermostat (agitation program is included)
- Sound alarm in case of compressor, agitation motor or water pump malfunction

9.1 COOLING

Milkplan simple automatic control panel is equipped with Dixell XR80CX controller specialized for controlling milk cooling and preservation processes.
Main characteristics:
- User friendly
- Accurate control
- Manual start of agitation
- Each instrument is fully configurable
- Current temperature always displayed on the screen
- Electronic thermometer – thermostat (agitation program is included)

CONTROLLER

Exclusively the DIXELL controller XR80CX with which your milk tank is equipped performs the control of the refrigerating milk tank.

This controller is very flexible, and allows for the automatic operation of the tank with an ON/OFF switch. The stirring operation is industrially regulated and the user should take no steps in order to operate it. The stirrer operates throughout the operation of the refrigerating process. When the refrigeration is completed, the refrigerating unit stops and the stirrer operates at mode of 3 minutes rotation and 15 minutes pause (the time periods are adjustable).

Always remember that you should:
- Set the refrigerating milk tank in operation mode as soon as the agitation paddle is covered with milk. Do not turn the tank off as long as it contains milk.
- Turn the milk cooling tank off when it does not contain milk.
- Avoid opening the lid of the tank, as long as it is in operation because the stirrer stops and there is a risk of ice formation.
- If you want to take a sample of the milk while the stirring system is in the 15 minutes non-operating stage, push and hold the button-key to make it operate. With this procedure you can take a homogeneous sample.
- During winter and if the temperature falls under 4oC, the milk cooling tank won’t start. It is necessary to put hot milk in the tank and wait a few minutes until the refrigerating unit starts to operate.

9.2 ADJUSTING THE BASIC PARAMETER VALUES OF THE XR80CX

After the milk cooling tank is switched on, a dashed line is displayed on the controller’s screen. Next, the temperature of the room where the milk cooling tank is installed is displayed.

1. First press the SET key-button together with the (▼) key for at least 7seconds
2. Led Hy is displayed.
3. Repeat step 2 pressing both keys for 7 sec. Led Pr 2 will be displayed. Release the keys and Hy is displayed.
4. Press the SET key until the Hy temperature (2.0oC) is displayed.
5. By pressing the SET key again the LS is displayed.
6. Press the SET key, and then by pressing the (▲▼) keys you can set the minimum temperature.
7. The temperature is already set to 1.0°C
8. By pressing the SET key, the display blinks three times meaning that the temperature you set has been stored.
9. After this, the led US is displayed. Press the SET key, and then by pressing the (▲▼) keys you can set the maximum temperature. The maximum temperature is already set to 5.00°C.
10. By pressing the SET key, the display blinks three times meaning that the temperature you set has been stored.
11. Immediately after, the led Ot is displayed which calibrate the thermostat probe. Push the SET key once, and by pressing (▲▼) set the desirable temperature. Press the SET key again and the display blinks three times meaning that the temperature set has been stored. The value of parameter is set to –0.5°C
Soft start function
If at start up, or during the regulation process, the input signal value is higher than the “SrS+Hy”, the controller starts the regulation considering as target temperature the parameter SrS. When the temperature reaches the SrS value the compressor stops. Then after the time set in parameter Srt, the controller starts the regulation based on the standard SET POINT.

How to reset the soft start parameters
In order to reset the values of the soft start parameters you have to follow the 5 first steps of the chapter “checking the basic parameters values “. Afterwards you have to press and release the SET key until you reach the parameter Srt. The value of this parameter is 0min. and if you wish to change it you have to press the arrows. After the calibrating of the parameter press the SET key, the display blinks 3 times which means that the value has been stored. After this the controller pass automatically to the parameter SrS which adjusts the temporary stop of the compressor, the value of this parameter is 15°C and if wish to change it you have to press the arrows, after the calibrating you should press the SET key so as to store the new value.
To exit press the SET + ▲ or wait 15s without pressing a key.

How to see the Set Point
1. Push and immediately release the SET key: The display will show the Set point value.
2. Push and immediately release the SET key or wait for 3 seconds to display the probe value again.

How to change the Set Point
1. Push the SET key for more than 3 seconds to change the point Set value;
2. The value of the set point will be the displayed and the * LED starts blinking.
3. To change the set value push ▲ or ▼ arrows.
4. To memorise the new set point value push the SET key again or wait for 15seconds.

How to start a manual agitation cycle
Push the Up (▲) key for more than 3 seconds and the manual agitation cycle will start.

How to see the min temperature
1. Press and release the ▼ key.
2. The Lo message will be displayed followed by the minimum temperature recorded.
3. By pressing the ▼ key again or by waiting for 5seconds the normal display will be restored.

How to see the max temperature
1. Press and release the ▲ key.
2. The Hi message will be displayed followed by the maximum temperature recorded.
3. By pressing the ▲ key again or by waiting 5seconds the normal display will be restored.

How to change a parameter value
1. Enter the programming mode by pressing the SET and ▼ key for 7s (▲ and * start blinking)
2. Select the required parameter.
3. Press the SET key to display its value (* LED starts blinking)
4. Use (▲▼) to change its value
5. Press SET to store the new value and move to the following parameter.
To exit press the SET + ▲ or wait 15s without pressing a key.

How to lock the keyboard
1. Press and hold for more than 3seconds the (▲▼) keys
2. The POF message will be displayed and the keyboard will be locked. At this point it will be possible to see only the set point or the MAX or MIN temperature stored.
If a key is pressed more than 3seconds the POF message will be displayed.

To unlock the keyboard
Keep pressed together for more than 3s the ▲▼ keys.

Meaning of Leds
*ON: Compressor enabled.
*Flashing: Programming phase (flashing with )-Anti-short cycle delay enabled
ON : Agitator enabled
**ALARM SIGNALS**

**EE:** The instrument is provided with an internal check verifying memory integrity. The ALARM “EE” flashes when a failure in the internal memory is detected. Please call the service.

**P1:** Probe alarm - P1 - starts several seconds after the fault in the related probe. It automatically stops several seconds after the probe restarts normal operation. Check connections before replacing the probe. In case of fault in the thermostat probe, the starting and the stopping of the compressor are regulated through parameters **Con** & **COF**.

**HA:** Maximum temperature alarm automatically stops as soon as the thermostat temperature returns to normal and when defrosting stops.

**LA:** Minimum temperature alarm automatically stops as soon as the thermostat temperature returns to normal and when defrosting stops.

### DEFAULT SETTINGS

<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set</td>
<td>set point</td>
<td>LS-US</td>
<td>4,0</td>
</tr>
<tr>
<td>Hy</td>
<td>Differential</td>
<td>0,1-25,5°C / 1-255°F</td>
<td>2,0</td>
</tr>
<tr>
<td>LS</td>
<td>Minimum set point</td>
<td>-50°C – SET 58°F - SET</td>
<td>1.0°C</td>
</tr>
<tr>
<td>US</td>
<td>Maximum set point</td>
<td>SET – 150°C SET – 302°C</td>
<td>5.0°C</td>
</tr>
<tr>
<td>Ot</td>
<td>Thermostat probe calibration</td>
<td>-12°C – +12°C -120 - +120°C</td>
<td>-0.5°C</td>
</tr>
<tr>
<td>OdS</td>
<td>Outputs delay at start up</td>
<td>0 – 255 min</td>
<td>0</td>
</tr>
<tr>
<td>AC</td>
<td>Anti-short cycle delay</td>
<td>0 – 50 min</td>
<td>1</td>
</tr>
<tr>
<td>Con</td>
<td>Compressor On time with faulty probe</td>
<td>0 – 255 min</td>
<td>15</td>
</tr>
<tr>
<td>COF</td>
<td>Compressor OFF time with faulty probe</td>
<td>0 – 255 min</td>
<td>30</td>
</tr>
<tr>
<td>CF</td>
<td>Temperature measurement units</td>
<td>°C - °F</td>
<td></td>
</tr>
<tr>
<td>rES</td>
<td>Διαχωρισμός / Resolution</td>
<td>In : dE</td>
<td></td>
</tr>
<tr>
<td>AgC</td>
<td>Agitator configuration</td>
<td>EL = with compressor In = independent</td>
<td></td>
</tr>
<tr>
<td>tIC</td>
<td>Resolution for the Agt parameter</td>
<td>nP = minutes Pb = seconds</td>
<td></td>
</tr>
<tr>
<td>IAg</td>
<td>Interval between agitation cycle</td>
<td>1 – 120 min</td>
<td>15</td>
</tr>
<tr>
<td>Agt</td>
<td>Length for agitation cycle</td>
<td>0 – 255 min</td>
<td>3</td>
</tr>
<tr>
<td>APO</td>
<td>First agitation cycle after start up</td>
<td>n= immediately y= after IAg</td>
<td></td>
</tr>
<tr>
<td>ALc</td>
<td>Temperature alarms configuration</td>
<td>rE – Ab</td>
<td>Ab</td>
</tr>
<tr>
<td>ALU</td>
<td>Maximum temperature alarm</td>
<td>ALL-150°C ALL-302°F</td>
<td>100</td>
</tr>
<tr>
<td>ALL</td>
<td>Minimum temperature alarm</td>
<td>-50,0°C-ALU -58°F-ALU</td>
<td>-50</td>
</tr>
<tr>
<td>ALd</td>
<td>Temperature alarm delay</td>
<td>0 – 255 min</td>
<td>15</td>
</tr>
<tr>
<td>dAo</td>
<td>Delay of temperature alarm at start up</td>
<td>0 – 23 h &amp; 50 min</td>
<td>1,3</td>
</tr>
<tr>
<td>Ptb</td>
<td>Probe selection</td>
<td>Ptc-ntc</td>
<td>ntc</td>
</tr>
<tr>
<td>Srt</td>
<td>Initial regulation time</td>
<td>0 – 59min</td>
<td>0</td>
</tr>
<tr>
<td>SrS</td>
<td>Initial regulation Set point</td>
<td>-55,0°C – 150,0°C</td>
<td>15</td>
</tr>
<tr>
<td>rEL</td>
<td>Software release</td>
<td></td>
<td>3,0</td>
</tr>
<tr>
<td>Ptb</td>
<td>Map code</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

*Hidden parameters
9.3 THE MAIN PARTS OF THE ECO WASHING SYSTEM AND THE WASHING PROCESS

The main parts of the washing system are:
- Electric panel with the PLC
- Water circulation pump
- Hot and cold water intake pumps
- Peristaltic pumps
- Drainage valve
- 3-position rotary switch for detergent/acid selection

DESCRIPTION OF THE WASHING PROCESS

The washing process of the tank is controlled by the PLC located in the control/washing panel and consists of 5 washing cycles.

The main parts of the control/washing panel are the electric panel with the PLC, water pump, electromagnetic valves for hot/cold water, drainage valve, 2 peristaltic pumps, switch for choosing acid/detergent cycle and a 3 way switch for selecting Cooling, Washing process or to turn off the tank.

Using the selector (rotary switch) the user can choose Cooling operation (position 1), Washing operation (position 2) or to turn off the tank (position 2).

The washing process consists of 5 independent cycles.

1\textsuperscript{st} Cycle prewashing with cold water
In the first phase of the washing cycle the washing controller activates the COLD water pump and starts pumping water into the tank for the preset time duration. After the completion of the preset time the washing controller goes into the second phase which is the activation of the water circulation pump and the agitator which are responsible for the proper cleaning of the inner walls of the tank. As is in the first phase washing is also controlled by the preset time. In the third and final phase the drainage valve is activated for preset time duration to empty the tank of the water.

2\textsuperscript{nd} Cycle prewashing with hot water
In the first phase of the washing cycle the washing controller activates the HOT water pump and starts pumping water into the tank for the preset time duration. After the completion of the preset time the washing controller goes into the second phase which is the activation of the water circulation pump and the agitator which are responsible for the proper cleaning of the inner walls of the tank. As is in the first phase washing is also controlled by the preset time. In the third and final phase the drainage valve is activated for preset time duration to empty the tank of the water.

3\textsuperscript{rd} Cycle main washing
The user must choose if detergent or acid will be used during the main washing. The selection is done using the 3-position selection switch which is located on the left side of the panel. The recommended detergent/acid ratio for the washing is 3/1. During the first phase not only the hot water pump is activated but also the peristaltic pump of either detergent or acid accordingly to the selection switch. Both water and detergent/acid are pumped into the tank for a predetermined time set in the washing controller. The rest 2 phases are exactly identical to the previous cycles.

4\textsuperscript{th} Cycle rinse with hot water
Same as 2\textsuperscript{nd} Cycle

5\textsuperscript{th} Cycle rinse with cold water
Same as 1\textsuperscript{st} Cycle
SIMPLE AUTOMATIC PLC WASHING SYSTEM PARAMETERIZATION

By changing the parameters T2, T3, T4, T7, TD, TE is possible to change the time duration of the washing phases for each cycle.

PLC MENU NAVIGATION

PARAMETERS OF THE WASHING PROCESS

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T7</th>
<th>TD</th>
<th>TE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ST CYCLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLD WATER</td>
<td>T2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATER CIRCULATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TE</td>
</tr>
<tr>
<td>DRAINAGE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TD</td>
<td></td>
</tr>
<tr>
<td>2ND CYCLE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOT WATER</td>
<td>T3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATER CIRCULATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TE</td>
</tr>
</tbody>
</table>
### 3rd Cycle
- **DRAINAGE**
- **DETERGENT/ACID**
- **HOT WATER**
- **WATER CIRCULATION**
- **DRAINAGE**

### 4th Cycle
- **HOT WATER**
- **WATER CIRCULATION**
- **DRAINAGE**

### 5th Cycle
- **COLD WATER**
- **WATER CIRCULATION**
- **DRAINAGE**

## 10. MALFUNCTION AND TROUBLESHOOTING

<table>
<thead>
<tr>
<th>MALFUNCTION</th>
<th>POSSIBLE CAUSE</th>
<th>TROUBLESHOOTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>The device does not operate at all. There is no voltage at the control panel.</td>
<td>No voltage.</td>
<td>Check if the operation button is at ON position (light indication). Check if there is voltage at the electric line that feeds the milk cooling tank. Check the fuse of the electric line that feeds the milk cooling tank. Check the electric connections at the electric panel and the socket of the tank. Check the connection terminal blocks. Check the voltage for hypertension or hypotension. Check the phase sequence on three-phase machines and if necessary change between the two phases of the socket. If the problem is not solved, contact our company’s technical department.</td>
</tr>
<tr>
<td>The electronic thermostat is on but the cooling units do not start.</td>
<td>Absence of voltage in the coil of power relay of the compressor.</td>
<td>Check the thermo magnetic switch in the electrical panel and the transformer of the electrical panel of the cooling unit. If the problem is not solved, contact our company’s technical department.</td>
</tr>
<tr>
<td>The electronic thermostat is on, cooling units do not start.</td>
<td>The agitation has not started.</td>
<td>Check if the agitation rotates. If the agitation rotates, it is a false alarm, you must contact the company. If it does not rotate check the agitation relay and the agitation motor for possible damage.</td>
</tr>
<tr>
<td>Washing process does not start.</td>
<td>Lack of tension in the washing panel.</td>
<td>Open the front part of the control panel and check the thermo magnetic switch for possible damage.</td>
</tr>
</tbody>
</table>
11. ELECTRICAL DRAWINGS

JUNCTION BOX CONNECTION

1. NO of the thermal relay of the compressor for sound alarm activation in case of failure.
2. NO of the thermal relay of the agitation motor for sound alarm activation in case of failure.
3. Common terminal of the sound alarms. See the drawing below.
4. Neutral (N) of the 24Vac transformer.
5. Connect to solenoid valve 24Vac of the cooling unit (ON/OFF).
6. Connect to the contactor’s coil (A1-A2) 24Vac of the agitator motor through the NC contact of agitator’s thermal overload relay.
12. WARRANTY CERTIFICATE

The manufacturer warrants this product as being free of defects in material, design and workmanship:

IMERIDIS MAKROPOULOS MILKPLAN S.A.
DAIRY AND FARMING EQUIPMENT
3RD KM LAGADAS - KOLHIKO NAT. ROAD
GR 572 00, P.O.BOX 212
Tel & Fax: +30 23940 20400

IMERIDHS MAKROPOULOS MILKPLAN A.E.
ΕΞΟΠΛΙΣΜΟΙ ΒΙΟΜΗΧΑΝΙΩΝ ΓΑΛΑΚΤΟΣ & ΚΤΗΝΟΤΡΟΦΙΚΩΝ ΜΟΝΑΔΩΝ
3ο χλμ. Λαγκαδα-Κολχικού
Θεσσαλονίκη 57200 Τ.Θ. 212
Τηλ/fax : 23940 20400

ΕΓΓΥΗΣΗ ΝΟ / WARRANTY NO:

Στοιχεία πελάτη / Client data

Name: 
Address: 
City: 
Telephone: 
VAT No: 
Internal revenue service: 
Receipt of trade: 
Date of trade: 

End of warranty:
Machine type: 
Serial number: 
The company provides the machine with one-year (1) warranty of good operation.
The machine has been examined at the manufacturing plant and confirms that it operates normally and does not have any problems.

FOR MILKPLAN S.A. 
(The authorized dealer-stamp and signature)

THE PURCHASER

THE WARRANTY IS NOT VALID IF:

- A non-authorized technician has serviced the machine.
- The machine appears damaged from a fall or strikes etc.
- Flood, excessive moistness or fire has caused the damage.
- The machine malfunctions caused by low voltage, wrong electrical installation (Voltage 220V± 3%, 50Hz).
14. TECHNICAL SUPPORT

For further information for the technical support, contact the MILKPLAN service:

MILKPLAN S.A. IMERIDIS – MAKROPOULOS
DAIRY AND FARMING EQUIPMENT S.A
3RD KM LAGADAS - KOLHIKO NAT. ROAD
GR 572 00, P.O.BOX 212
sales@milkplan.com
www.milkplan.com

Before you contact our company, find the metal plate that has the serial number of the milk cooling tank and write it down so as to have it when you are asked for it.

Manual editing – Copyright

This manual is part of the research into the requirements that should be fulfilled according to the following standard: European Safety Regulations For European machines, 98/37/EEC. According to this research, the machine could have the CE mark.

This manual is a part of the MILK COOLING TANK and it must be available to anyone who wishes to operate, maintain, repair or control the milk cooling tank function.

Do not expose this manual to water, moisture and dust or to extreme temperatures. Keep it near the machine.

In case of damage or loss, ask for a copy from the manufacturer or the Authorized Service Center.

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