Milkplan

MPV & MPVC
INSTALLATION MANUAL

EN

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1. Introduction

MILKPLAN S.A. sincerely thanks you for selecting one of its products.

The open-type milk cooling tank MP Vertitank (MPV) provides fast and consistent cooling, preserving the quality of the milk at the highest level. Its carefully engineered design and high-quality construction materials ensure long-term operation and energy efficiency.

The MP Vertitank Closed (MPVC) series consists of closed-type tanks and offers an intelligent combination of the MPV series layout and the advantages of the MP Powertank series. The MPVC is designed as a vertical tank with a manhole and includes the MPP Standard cooling and washing control system.

The MPV & MPVC models are available in various capacities to meet the needs of every customer.

By choosing a milk cooling tank from MILKPLAN S.A., you have selected a premium product manufactured by a company with long-standing experience in milk cooling and milk processing.

This manual has been prepared to guide the installer through the required steps and procedures for the correct and safe installation of the milk cooling tank (MCT). Its purpose is to ensure that the equipment is installed, connected, and put into operation in accordance with the manufacturer's technical specifications and safety standards.

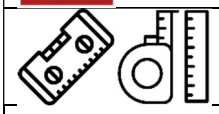
The manual includes:

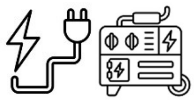
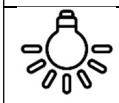
- Safety Rules
- Installation Instructions

The installer is requested to read this manual carefully before installing the MCT.

Reading the manual in advance ensures maximum performance and longevity of the investment.

1.1. Symbol Definitions

Symbol	Description	Explanation
	Consult the instruction manual	Provides additional information.
	Caution!/Mandatory Action	Failure to follow the instructions precisely may result in: - Damage to the tank (such damage is not covered by the warranty). - Deterioration of milk quality.
	Safety Glasses / Gloves / Safety Shoes	The use of personal protective equipment is mandatory.
	Ventilation	Ventilation / exhaust system is required.
	Warning!	Hazard (risk of injury or irreversible equipment damage).
	Crane / Forklift	Use of a crane and/or forklift truck is required.
	Moving Parts	Warning! Moving / rotating parts.
	Electrical Load	Warning! Electrical load / risk of electric shock.
	Flammable	Warning! Contains flammable material.
	Explosive	Warning! Contains explosive material.
	Ignition Source	Use of ignition sources is prohibited.
	Water Spray	Use of water is prohibited.
	Fire Extinguisher	
	Alignment / Measurement	Alignment (leveling) is required.
	Tools	Work must be carried out by qualified personnel / professional.

	Electricity	Power supply from the grid and/or generator.
	Water	Connection to the water supply network.
	Drainage	Wastewater / drainage network.
	Light Source	Adequate lighting required.
	Weather Protection	Shelter / protection from external environmental conditions is required.
	Technical Support	Contact the supplier's Technical Support department.
	Information / Recommendations	Additional information & recommendations.

1.2. Safety Instructions

Safety instructions are preventive in nature and aim to ensure safe and healthy working conditions for workers/users. They are designed to protect against potential hazards in the workplace, such as preventing injuries and illnesses, by minimizing or eliminating risks to health and safety. At the same time, these instructions aim to prevent actions that, in addition to posing a risk of accidents, may also cause material damage to the equipment.

1.3. Installation Guidelines

These guidelines are intended to direct the installer through the correct installation process of the Milk Cooling Tank (MCT). Compliance with these instructions ensures that the product performs its primary function—cooling and preserving milk—at optimum levels, while simultaneously guaranteeing its long-term operational reliability.

The installation process is presented in sequential, numbered steps. These steps must be followed strictly as described in this manual.

IMPORTANT: Failure to comply with the provided installation instructions will result in the voiding of the product warranty.

1.4. Environmental Compliance

MILKPLAN S.A. is committed to conducting its business operations with a focus on environmental sustainability throughout the stages of development, design, manufacturing, operation, and distribution of its products.

Packing and Waste Management

Packaging materials consist of wood, synthetic/plastic components, cardboard, and in some cases, metallic elements. To minimize environmental impact, please manage these materials as follows:

- Wood and Cardboard: These materials can be reused, recycled, or utilized for energy recovery.
- Plastic Components: Should be directed to appropriate plastic recycling streams.
- Metallic Elements: Should be sent to scrap metal recycling facilities.
- Non-Recyclable Waste: Any components that cannot be reused or recycled must be disposed of in full accordance with local waste management regulations.

Note: Proper disposal of packaging materials is the responsibility of the installer/owner, ensuring compliance with national and regional environmental laws.

1.5. Amendments

MILKPLAN S.A. reserves the right to make changes or updates to this manual at any time without prior notice.

2. Safety Regulations

2.1. General Information

This manual constitutes an integral part of the Milk Cooling Tank (MCT) and must be stored in a secure location near the unit, protected from rain and moisture. It is mandatory that all users are aware of its location and familiar with its contents.

The installer is required to study this manual thoroughly, regardless of any prior experience with similar equipment. A few moments of careful reading will save time and prevent future operational issues.

Unauthorized personnel must not come into contact with any part of the device!

The operation manual must be studied carefully before proceeding with the installation of the equipment!
All recommendations, warnings, and guidelines for proper installation and operation provided in this manual must be strictly observed.
Installation must be performed exclusively by qualified personnel.
MILKPLAN S.A. is liable only for the equipment it has supplied.
MILKPLAN S.A. bears no responsibility for any damages resulting from Improper transportation and unloading, misuse or incorrect operation or faulty installation or inadequate maintenance.

CAUTION: During the welding or brazing of copper pipes, there is a severe risk of fire. Furthermore, any overheating of the insulation materials may trigger chemical reactions, leading to the release of hazardous gases.

The tank must be perfectly leveled with the floor.
Before the initial startup, all water, electrical, and piping connections must be thoroughly inspected.
The cooling tanks are specifically designed for the cooling and preservation of milk.
The machine must not be used for any purpose other than its intended one.
The tank is not suitable for any other liquids or solids.
Do not place any objects on top of the tank.

Upon completion of the installation, the user must be provided with Simple and clear guidance on how to use the unit and detailed, safe, and effective protocols for the proper sanitation of the tank.

2.2. Electrical Operations and Power Supply

Prior to performing any technical intervention, the Milk Cooling Tank (MCT) must be isolated from the primary power source. To ensure complete de-energization switch the main circuit breaker to the OFF/0 position. Alternatively, disconnect the power supply plug from the mains outlet.
All electrical installations, repairs, and inspections must be executed strictly by a licensed Electrician in accordance with local regulations.
De-energization is mandatory for the following procedures:

1. Accessing Enclosures: Opening of electrical control panels, terminal boxes, or housing units.
2. Component Maintenance: Servicing or replacing any mechanical or electrical components of the cooling tank.
3. Internal Inspection: Inspection of the agitator assembly, the CIP (Clean-In-Place) spray ball system, or the tank interior.
4. Refrigeration Unit Service: Any technical works involving the condensing unit or cooling circuit.

ELECTRICAL HAZARD: Operating or handling the device with wet hands is strictly prohibited, as it poses a severe risk of electric shock.

2.3. Tank Entry Procedures

In the event that entry into the tank is required, the task must be performed strictly under continuous supervision and only after a complete electrical power isolation. It is mandatory to ensure that the agitator cannot be activated. Although the agitator motor is equipped with a gravity-fed safety switch, this does not eliminate the possibility of mechanical or electrical

failure. Only the designated, factory-provided ladder must be used for entering the tank.

The lid must be operated (opening/closing) exclusively via the specially designed handle. The lid must be opened to its full extent to ensure it is securely stabilized during operations. Avoid leaving the lid in an intermediate or partially open position, as there is a significant risk of accidental closure, which may lead to serious injury.

SAFETY RESTRICTION: It is strictly prohibited to open the lid or the Ø200 manhole while the milk cooling tank is in operation.

In cases where frequent access to the tank interior is required, it is recommended to install a fixed work platform around the perimeter of the tank. The height and design of the platform must ensure the safe and unobstructed entry and exit of personnel. The platform must comply with local industrial safety standards regarding fall protection and ergonomic access.

2.4. Cleaning Procedure

The operation manual must be studied thoroughly before initiating any equipment cleaning process!
All recommendations, safety warnings, and standardized rules for the proper cleaning of the equipment must be strictly observed to ensure hygiene and equipment integrity.

In compliance with European Directives 2015/1094 & 2015/1095, MILKPLAN S.A. utilizes as refrigerants, R290 for cooling tanks with a capacity of up to 300L and R454C for cooling tanks with capacities ranging from 400L to 2500L. Due to the flammable and explosive nature of these refrigerants, the following supplemental Safety Instructions must be strictly followed during the installation and maintenance of the refrigeration unit.

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3. Product Description

For a comprehensive and detailed description of the product, the Operation Manual must be studied thoroughly.

4. Installation Instructions

4.1. Overview

This chapter provides analytical instructions for the installation of the Milk Cooling Tank. Installation must be performed exclusively by qualified personnel.

4.2. Delivery

Delivery Inspection

Verify that the delivered equipment corresponds fully to your order. Cross-check all delivered items against the provided Delivery Note (Packing List). Record any missing items or discrepancies directly on the delivery note before signing. In the event of shortages or errors, you must notify the supplier immediately.

Unpacking

The tank has been carefully packaged by MILKPLAN S.A. to ensure its safe transportation. However, during the delivery and unpacking process, it is strongly advised to inspect the unit for any potential damage sustained during transit. In the event of any visible damage, you must notify the supplier immediately. Ensure that all protective materials are removed safely without scratching the Stainless Steel surfaces.

Handling and Transport of MPV / MPVC

It is critical to adhere strictly to the following schematic guidelines during the lifting and transportation of an MPV/MPVC unit. Failure to do so may result in permanent damage to the tank. Always take into account the tank's center of gravity during any lifting operation to ensure stability.

Do not lift or move the tank while it contains any liquid. The movement of liquid during transport significantly shifts the center of gravity. Such instability creates a high risk of the tank tipping or falling, which can lead to equipment destruction or serious injury.

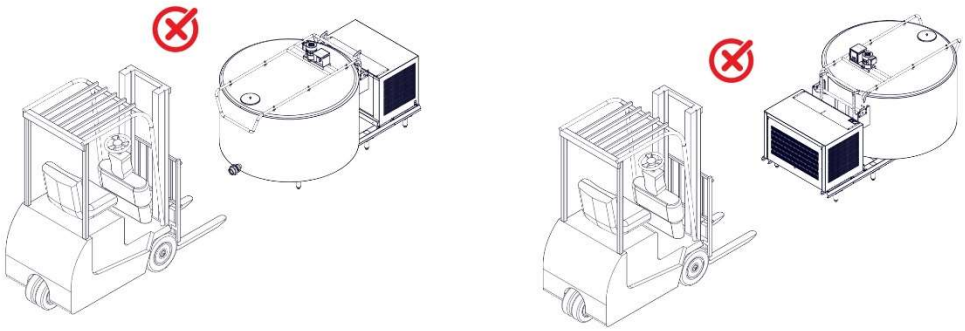


Figure 1 : Incorrect lifting and transport method for MPV - MPVC

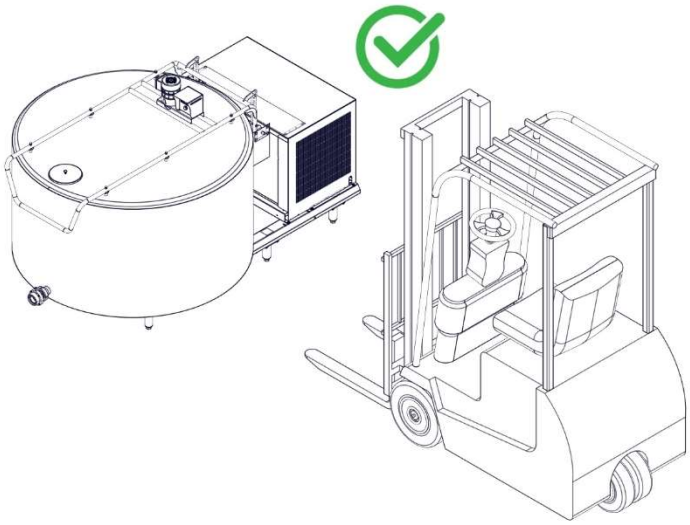


Figure 2: Correct lifting and transport method for MPV - MPVC

4.3. Site Space and Installation Requirements

Before proceeding with the installation, the following critical parameters must be evaluated.

Farm Access Requirements

Ensure that the delivery truck has easy access to the farm premises and sufficient clearance for maneuvering or turning if necessary.

It is highly recommended to have a forklift (Clark) available for the safe unloading and transport of the tank.

The ground surfaces of the outdoor and loading areas must be capable of supporting the combined weight of the delivery truck and/or the forklift.

Electrical Requirements

The farm facility must provide a stable and adequate power supply, effective earthing system for safety and equipment protection, protection against voltage fluctuations and power surges and sufficient amperage to cover the total electrical load of the cooling tanks and auxiliary equipment.

In cases where the electrical grid is unstable, it is recommended to provide a backup power source, such as a generator. This ensures that operation is not interrupted due to power outages, which could compromise the cooling process and the quality of the milk.

Plumbing and Water Requirements

The farm must have a stable and sufficient water supply. The water supply must strictly comply with the requirements and quality standards set by European Directive 80/778/EEC (relating to the quality of water intended for human consumption).

Drainage Requirements

A suitable floor drain must be located on the side of the milk outlet. All local and international protocols regarding the disposal and management of wastewater resulting from the cleaning processes must be strictly followed. Ensure that the drainage system is capable of handling the flow rate and chemical composition of the detergents used during the sanitation cycle.

Tank Placement and Space Requirements

The milk cooling tank is designed for installation in either indoor or outdoor environments.

<u>If the unit is installed indoors:</u>

The tank must be positioned on a robust, hard-surfaced floor (e.g., reinforced concrete or industrial tiling). The flooring must be capable of withstanding a minimum compressive pressure of 12 N/mm^2 to support the operational weight of the fully loaded tank.

The dimensions of the entrance/door must allow for the unobstructed transport and positioning of the tank. Ideally, the doorway should be at least 20% wider than the maximum width of the milk cooling tank to prevent damage during movement.

The room must be sufficiently spacious to accommodate the tank while providing ample clearance around the perimeter of both the vessel and the refrigeration unit. This clearance is essential to ensure that personnel have easy and immediate access to all components for routine maintenance, inspections, and emergency procedures.

A minimum free space of 0.6 m is recommended around the entire perimeter of the tank. If any auxiliary equipment is installed alongside the tank—such as a ladder or a work platform—the footprint of this equipment must be factored into the total surface area calculations to ensure the required clearance is maintained.

The room must be equipped with adequate lighting, drainage, and ventilation. Proper ventilation is critical to prevent the accumulation of gases and to dissipate the heat generated by the refrigeration system. Adequate airflow ensures the cooling unit operates at peak performance. Efficient heat dissipation prevents overheating, which could otherwise compromise the safety and longevity of the cooling tanks.

If the unit is installed **outdoors**, the following conditions must be met to ensure the longevity and efficient operation of the equipment:

The tank must be fully protected from adverse weather conditions (rain, snow, direct sunlight, etc.). Consequently, the installation area must be equipped with adequate roofing or a permanent structural cover to ensure the long-term integrity of the equipment and its electrical components.

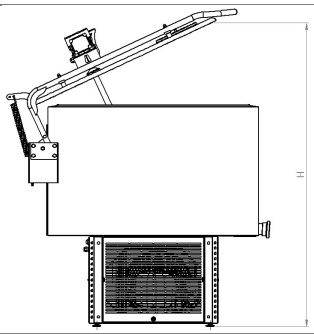
The installation surface must be a hard, level floor (constructed of reinforced concrete). The floor must be capable of withstanding a minimum pressure of 12 N/mm^2. A perfectly level mounting surface is essential for the accurate measurement of milk volume.

General Installation Guidelines (Indoor & Outdoor):

Position the tank with the milk outlet (valve) facing the access opening/doorway to facilitate easy milk collection and hose connection. Ensure the tank is positioned so that the condenser remains completely unobstructed. This is critical for the immediate dissipation of generated heat and the efficient operation of the cooling system. The tank and its associated plumbing must be installed in an area protected from frost to prevent damage to the components and ensure the integrity of the cleaning systems.

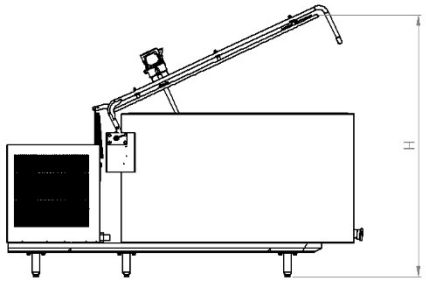
The vertical distance between the floor and the ceiling (or the lowest point of a sloped roof/outdoor structure) must be sufficient to allow the tank lid to open fully without obstruction. Specific clearance dimensions for the MPV series are detailed in Table 1 and Table 2. Also for the MPVC series are detailed in the Table 3.

Table 1: Minimum Installation Height Requirements for MPV50-MPV300



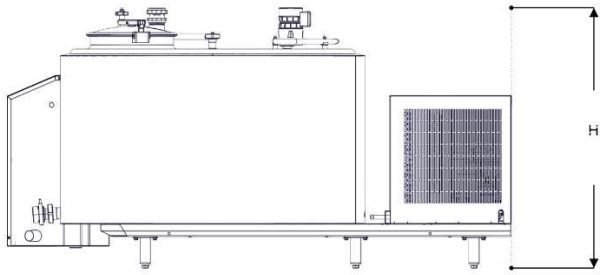
Type	H (mm)
MPV 50	1350
MPV 100	1660
MPV 200	1520
MPV 300	1700

Table 2: Minimum Installation Height Requirements for MPV400-MPV2500



Type	H (mm)
MPV 400	1445
MPV 500	1620
MPV 650	1765
MPV 800	1910
MPV 1000	1925
MPV 1250	2090
MPV 1500	2200
MPV 2000	2200
MPV 2500	2390

Table 3: Minimum Installation Height Requirements for MPVC500-MPVC3000



Type	H (mm)
MPVC500	1235
MPVC650	1400
MPVC800	1335
MPVC1500	1595
MPVC2000	1590
MPVC2500	1780
MPVC2800	1880
MPVC3000	1960

In addition to the base height specified in Table 3, a minimum free overhead space of one meter (1m) must be maintained above the tank. This clearance is required for the unobstructed opening of the Ø400 manhole lid. The space is essential to facilitate the potential removal or replacement of the agitator motor and the stirring shaft assembly.

4.4. Tank Leveling (Alignment)

It is vital that the tank is installed perfectly horizontal to ensure that milk volume measurements are accurate. Even a slight tilt can lead to significant inventory discrepancies.

Place the tank on a flat, hard surface and follow the procedure described below:

1. Open the tank lid and place a spirit level on the rim of the vessel, as shown in Figure 3. Rotate the adjustable feet of the base until perfect alignment is achieved.
2. Place the spirit level on the rim of the vessel at a 90-degree angle to the previous position, as shown in Figure 4. Rotate the adjustable feet until absolute leveling is achieved in this direction as well.

Once the adjustments are complete, perform a final check with the spirit level in both directions to ensure that the horizontal alignment has not shifted while tightening the legs or settling the tank.

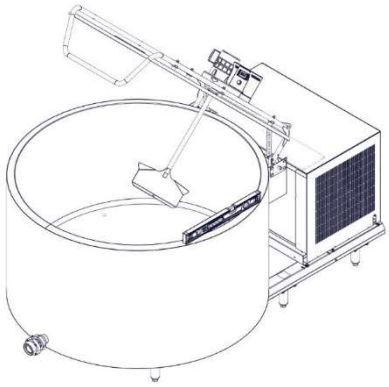


Figure 3: Tank leveling process. Stage 1A

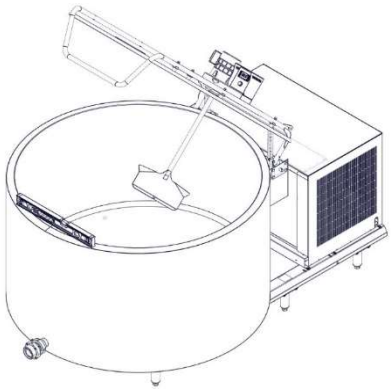


Figure 4: Tank leveling process. Stage 1B

3. Fill the tank with water until it reaches approximately 15-20% of its nominal capacity.
4. Once the water surface has completely settled, insert the metal dipstick into the designated point, as shown in Figure 5, and measure the water level.

If the water level is too low and does not reach the dipstick, add more water until a reading can be taken. Wait for the water to settle completely! Any ripples or movement on the surface will lead to an inaccurate reading and improper leveling of the tank.

Insert the metal dipstick at the second point, as illustrated in

5. Figure 6, and record the water level measurement.
6. If there is a discrepancy between the two measurements, adjust the rear feet of the base. Continue adjusting until the readings at both points are identical. The maximum allowable deviation between the measurements must not exceed ±1 mm. Precision at this stage is critical for the long-term accuracy of your milk volume records.

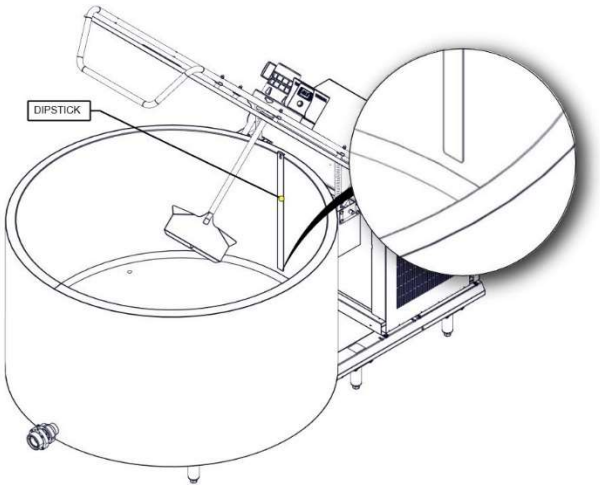


Figure 5: Tank leveling process. Stage 2A

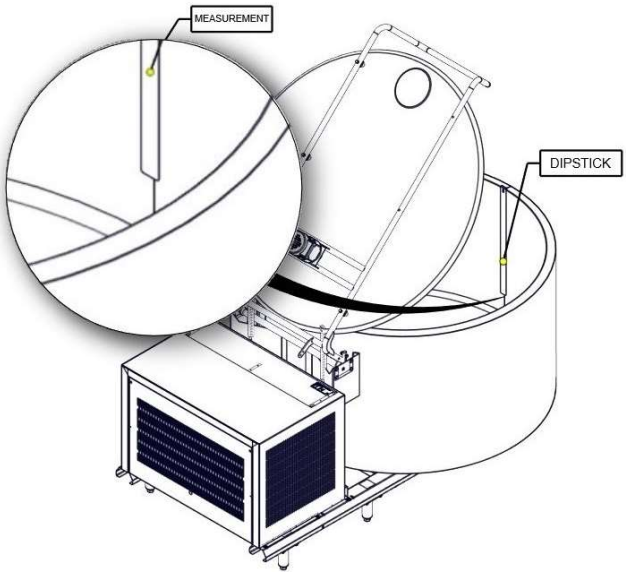


Figure 6: Tank leveling process. Stage 2B

4.5. Electrical Specifications

Power Requirements

The electrical power demand varies depending on the specific MPV/MPVC model and the associated refrigeration unit. Exact power specifications are provided on the equipment's rating plate (nameplate). Detailed information regarding electrical loads can also be found in Table 4 and Table 5.

Electrical Supply Line & Distribution Board

All electrical connections must be performed by a certified licensed professional, strictly adhering to current national and local regulations. Cable cross-sections and panel resistance depend on the power rating of the MPV & MPVC units, as specified in Table 6.

The electrical supply line must be fully installed prior to the placement of the cooling tank, according to the specifications in Table 6. An independent power supply line is required. It must be protected at the main distribution board with a fuse or a Type C or Type K miniature circuit breaker (MCB). The power cable must be laid straight. Do not form coils (e.g., using coiled extension cords), as this can cause overheating and interference.

If the unit is single phase model, it must be supplied by 230V, 50Hz with dedicated grounding conductor.

If the unit is three phase model, it must be connected to a 400V, 50Hz using five-core cable (3 phases, neutral & ground).

For capacities exceeding 400L, electrical connections must be made within the control panel, while the supply line must terminate at an industrial-type socket/plug.

Verify the voltage drop on the supply line using a voltmeter. While the cooling tank is in operation, the voltage drop must not exceed 3% of the nominal network voltage. On a 230V network, the voltmeter should read at least 223V during operation.

Beyond the cable cross-section (gauge), significant voltage drop can also be caused by poor connection quality. Loose or improperly tightened wires at the distribution board terminals (busbars or terminal blocks) increase resistance and heat. Poor contact within industrial sockets or plugs can lead to localized voltage drops and potential electrical failure.

ATTENTION: Warranty Exclusion. Excessive voltage drop can cause severe damage to the cooling mechanism (compressor and electrical components). Please note that failures resulting from unstable power supply or improper electrical installation are not covered by the warranty.

ATTENTION: It is strictly prohibited to power two cooling tanks from the same fuse or circuit breaker. Each tank must be connected to its own dedicated protection device to ensure operational safety and prevent overloading.

ATTENTION: For your own safety, ensure that the tank is correctly grounded using a dedicated earthing conductor. Proper grounding is mandatory to prevent electrical shock and ensure the safe operation of the equipment.

Grounding Specifications

The installation must be equipped with a functional grounding system. The earthing resistance must be ≤ 5 Ohm. The earthing conductor must have a minimum cross-section of 6mm^2, or as dictated by current local electrical regulations and safety standards.

Grounding must always be performed using a Yellow/Green color-coded cable. Attach the earthing conductor exclusively to the designated grounding terminal on the tank, which is clearly marked with the relevant grounding symbol sticker.

ATTENTION: **Do not connect the earthing terminal to the electrical distribution board!** The grounding conductor must be connected to a dedicated, certified earth electrode (ground rod) to ensure a true earth connection, rather than relying on the internal neutral-earth bridges of a distribution panel which may carry interference.

Residual Current Device (RCD / Safety Relay)

It is highly recommended to install a Residual Current Device (RCD), commonly known as a safety relay, with a sensitivity (rated residual operating current) not exceeding 30mA. The RCD must be appropriately rated and selected based on the total installed electrical power of the unit. This device provides critical protection against electric shock and prevents potential fires caused by earth leakage currents.

Table 4: Power and Current Ratings per MPV & MPVC Model, Refrigerants: R290 & R454C

Model / Type	Capacity (L)	Class	Cooling Unit	Voltage	Max Power	Max Current
MPV50	50	2BII	EMX6210U	220V-240V 50Hz, 1~	500W	3A
MPV100	100	2BII	EMX6210U	220V-240V 50Hz, 1~	500W	3A
MPV200	200	2BII	NEX6225UA	220V-240V 50Hz, 1~	1100W	4,5A
MPV200	200	4BII	EMX6210U	220V-240V 50Hz, 1~		4A
MPV300	300	2BII	NEX6225UA	220V-240V 50Hz, 1~	1100W	5A
MPV300	300	4BII	NEX6217U	220V-240V 50Hz, 1~	W	A
MPV400	400	2BII	AJ4517P	220V-240V 50Hz, 1~	1500W	9A
MPV400	400	4BII	AJ4517P	220V-240V 50Hz, 1~	W	7A
MPV500	500	2BII	AJ4519P	220V-240V 50Hz, 1~	1500W	9.5A
MPV500	500	4BII	AJ4517P	220V-240V 50Hz, 1~	W	7A
MPV650	650	2BII	AJ4522P	220V-240V 50Hz, 1~	1500W	9A
MPV650	650	4BII	η AJ4519P	220V-240V 50Hz, 1~	W	10A
MPV800	800	2BII	AJ4532P	220V-240V 50Hz, 1~	2000W	10A
MPV800	800	4BII	AJ4522P	220V-240V 50Hz, 1~	W	11,5A
MPV1000	1000	2BII	AJ4538P	220V-240V 50Hz, 1~	2500W	12A
MPV1000	1000	2BII	MTZ36	380V-400V 50Hz, 3~	2600W	6.5A
MPV1000	1000	4BII	AJ4532P	380V-400V 50Hz, 3~	W	A
MPV1250	1250	2BII	MTZ40	380V-400V 50Hz, 3~	3200W	7.5A
MPV1500	1500	2BII	MTZ50	380V-400V 50Hz, 3~	3200W	7.5A
MPV1500	1500	4BII	MTZ40	380V-400V 50Hz, 3~	W	9A
MPV2000	2000	2BII	MTZ72	380V-400V 50Hz, 3~	5000W	12A
MPV2000	2000	4BII	MTZ50	380V-400V 50Hz, 3~	W	9A
MPV2500	2500	2BII	MTZ80	380V-400V 50Hz, 3~		A
MPV2500	2500	4BII	MTZ72	380V-400V 50Hz, 3~		A

Table 5: Power and Current Ratings per MPV & MPVC Model, Refrigerants: R449A

Model / Type	Capacity (L)	Class	Cooling Unit	Voltage	Max Power	Max Current
MPV50	50	2BII	AEZ 9440Z	220V–240V 50Hz, 1~	580W	4,65A
MPV100	100	2BII	NEK6210GK	220V–240V 50Hz, 1~	703W	4,54A
MPV200	200	2BII	NT6224GK	220V–240V 50Hz, 1~	1303W	7,30A
MPV200	200	4BII	NEK6210GK	220V–240V 50Hz, 1~	703W	4,54A
MPV300	200	2BII	NJ9232GK	220V–240V 50Hz, 1~	1612W	9,16A
MPV300	300	4BII	NT6224GK	220V–240V 50Hz, 1~	1303W	7,30A
MPV300	300	2BII	TAJ9513	380V–400V 50Hz, 3~	1450W	4,47A
MPV400	400	4BII	NJ9232GK	220V–240V 50Hz, 1~	1612W	9,16A
MPV400	400	2BII	TAJ4519Z	380V–400V 50Hz, 3~	2124W	5,90A
MPV400	400	2BII	NJ9238	220V–240V 50Hz, 1~	2149W	16,00A
MPV500	500	2BII	NJ9238	220V–240V 50Hz, 1~	2149W	16,00A
MPV500	500	2BII	TAJ4519Z	380V–400V 50Hz, 3~	2124W	5,90A
MPV500	500	4BII	NJ9232GK	220V–240V 50Hz, 1~	1612W	9,16A
MPV500	500	4BII	TAJ9513	380V–400V 50Hz, 3~	1437W	4,47A
MPV650	600	2BII	FH 4524Z	220V–240V 50Hz, 1~	2396W	19,20A
MPV650	600	2BII	TFH 4524Z	380V–400V 50Hz, 3~	2399W	8,80A
MPV650	600	4BII	NJ9238	220V–240V 50Hz, 1~	2149W	16,00A
MPV650	600	4BII	TAJ4519Z	380V–400V 50Hz, 3~	2124W	5,90A
MPV800	800	2BII	FH4531Z	220V–240V 50Hz, 1~	3186W	24,15A
MPV800	800	2BII	TFH4531Z	380V–400V 50Hz, 3~	3066W	10,75A
MPV800	800	4BII	FH4524Z	220V–240V 50Hz, 1~	2396W	19,2A
MPV800	800	4BII	TFH4524Z	380V–400V 50Hz, 3~	2399W	8,80A
MPV1000	1000	2BII	FH4540Z	220V–240V 50Hz, 1~	3978W	28,75A
MPV1000	1000	2BII	MTZ36	380V–400V 50Hz, 3~	3567W	10,75A
MPV1000	1000	4BII	FH4531Z	220V–240V 50Hz, 1~	3186W	24,15A
MPV1000	1000	4BII	TFH4531Z	380V–400V 50Hz, 3~	3066W	10,75A
MPV1250	1250	2BII	MTZ40	380V–400V 50Hz, 3~	4024W	11,75A
MPV1250	1250	4BII	FH4540Z	220V–240V 50Hz, 1~	3978W	28,75A
MPV1250	1250	4BII	MTZ36	380V–400V 50Hz, 3~	3567W	10,75A
MPV1500	1500	2BII	MTZ50	380V–400V 50Hz, 3~	4349W	13,54A
MPV1500	1500	4BII	FH4540Z	220V–240V 50Hz, 1~	4008W	28,88A
MPV1500	1500	4BII	MTZ36	380V–400V 50Hz, 3~	3597W	10,88A
MPV2000	2000	2BII	ZB45	380V–400V 50Hz, 3~	5210W	15,14A
MPV2000	2000	4BII	MTZ40	380V–400V 50Hz, 3~	4054W	11,88A
MPV2500	2500	4BII	ZB45	380V–400V 50Hz, 3~	5210W	15,14A

Power Supply Cable & Line Protection (Fuse)

Table 6: Fuse Rating & Cable Cross-Section based on Unit Type and Supply Line Length

Model / Type	Power (kW)	Line Fuse / Breaker (A)	Supply Line Length (m)	Cable Cross-Section(mm^2)
MPV50	650W	10	25	1,5
			50	1,5
			75	1,5
			100	1,5
			125	2,5
			150	2,5
MPV100	800W	10	25	1,5
			50	1,5
			75	1,5
			100	1,5
			125	2,5
			150	2,5
MPV200	1300W	10	25	1,5
			50	1,5
			75	1,5
			100	2,5
			125	2,5
			150	4
MPV300	1700W	10	25	1,5
			50	1,5
			75	2,5
			100	4
			125	4
			150	6
MPV400	2500W	16	25	2,5
			50	2,5
			75	2,5
			100	4
			125	4
			150	4
MPV500	2500W	16	25	2,5
			50	2,5
			75	2,5
			100	4
			125	4
			150	4
MPV650	2800W	16	25	2,5
			50	2,5
			75	2,5
			100	4
			125	4
			150	6

MPV800	3600W	20	25	2,5
			50	2,5
			75	4
			100	4
			125	6
			150	6
MPV1000	4700W	25	25	2,5
		30	50	4
			75	4
			100	6
			125	6
			150	10
MPV1250	4850W	3x16	25	5x2,5
		3x20	50	5x4
			75	5x4
			100	5x4
			125	5x6
			150	5x6
MPV1500	5500W	3x16	25	5x2,5
		3x20	50	5x4
			75	5x4
			100	5x4
			125	5x6
			150	5x6
MPV2000 & MPV2500	7900W	3x20	25	5x2,5
		3x25	50	5x4
			75	5x4
			100	5x4
			125	5x6
			150	5x6

Wiring Diagrams (Electrical Schematics)

For a detailed analysis and interpretation of the electrical wiring diagrams for these products, the Maintenance Manual must be studied thoroughly and carefully.

4.6. Refrigeration Unit

The refrigeration unit is integrated into the **MPV & MPVC** models. Consequently, all necessary connections and settings of the cooling system have been completed at the factory by **MILKPLAN S.A.**

In compliance with European Directives 2015/1094 & 2015/1095, MILKPLAN S.A. utilizes R290 for cooling tanks with a capacity of up to 300L and R454C for capacities ranging from 400L to 2500L. Due to the flammable and explosive nature of these refrigerants, the following instructions must be studied carefully. Failure to adhere to safety protocols may result in severe injury or equipment damage.

All individuals involved in installation, maintenance, or any intervention in the refrigerant circuit must hold a valid certificate from an industry-accredited authority. This certification must verify their competence in handling refrigerants safely, in accordance with recognized industry assessment standards.

Supplementary Safety Rules for R290 & R454C

Before proceeding with the installation or operation of the unit, please familiarize yourself with the safety symbols and warning signs used throughout this manual.

Please read all safety precautions carefully prior to installation and operation.

ATTENTION: Incorrect installation due to disregard of instructions may cause serious damage or injury.

1. Installation (Site Requirements):
   - The refrigerant piping network must be kept to a minimum.[1]
   - Pipework shall be protected from physical damage.[1]
   - Spaces where refrigerant pipes are located must comply with national gas regulations. [1]
   - Mechanical connections must be accessible for maintenance purposes.
   - In cases where mechanical ventilation is required, ventilation openings must be kept clear of any obstructions.
   - Upon disposal, the product must be handled according to national regulations and undergo proper environmental processing.

[1] In the event that the refrigeration unit is not installed.

2. Any maintenance or repair work that requires the assistance of specialized personnel must be conducted under the supervision of a person competent in the use of flammable refrigerants.
3. Do not use any means to accelerate the defrosting process other than those recommended by the manufacturer.
4. **Do not pierce or burn** the refrigerant pipework.
5. *The appliance must be stored in a room without continuously operating ignition sources (for example: open flames or an operating electric heater).*
   All potential ignition sources, including smoking, should be kept sufficiently far away from the installation site. "NO SMOKING" warning signs must be prominently displayed.

6. Take extreme care to prevent foreign substances (oil, water, etc.) from entering the pipework. Furthermore, during storage, ensure all pipe openings are securely sealed using clamping, adhesive tape, or other appropriate means.
7. Ensure that the refrigerants remain odorless.
8. The refrigeration unit must be stored in a well-ventilated area, where the room size corresponds at least to the minimum space required for operation, as defined by the technical specifications.
9. The refrigeration unit must be stored and protected in a manner that prevents any potential mechanical damage.

Typical refrigeration units are shown in Figure 7.

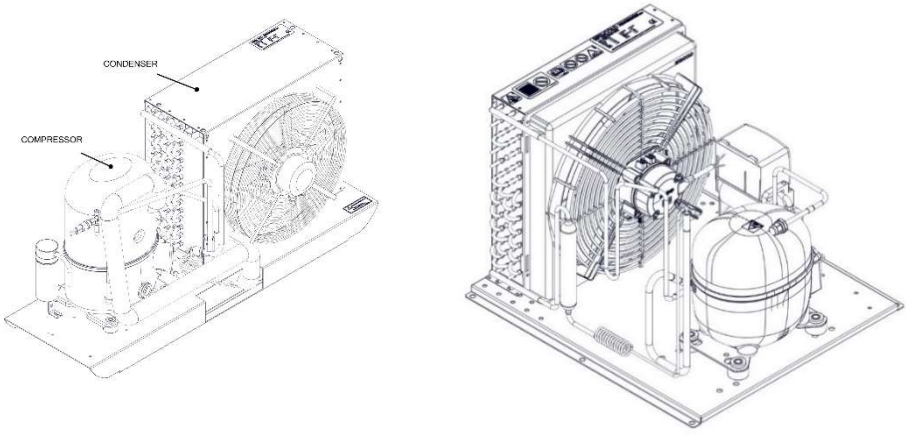


Figure 7: Refrigeration units

Installation of the Refrigeration Unit

The tank, and consequently the refrigeration unit which is part of it, must be installed in a location that allows for sufficient air circulation.

If the refrigeration unit is placed in front of a wall with an opening, the opening must be the same size as the condenser. A clearance of at least 25 cm must be maintained between the wall and the condenser.

If the refrigeration unit is placed in front of a wall without an opening, the required clearance between the wall and the condenser is calculated using the following formula:

$$A = \frac{L \times H}{2 \times H + L} \ (m^2)$$

Where L is the length and H is the height of the condenser.

Alternatively, the minimum free surface area can be calculated based on the airflow principle:

$$A = \frac{Q}{v} \ (m^2)$$

Where Q is the fan airflow rate and v is the allowable air intake velocity. In cold weather conditions, the front part of the condenser may be partially covered.

The refrigeration unit must not be located in an area where the exhaust gases from the milking machine's Vacuum Unit are discharged.