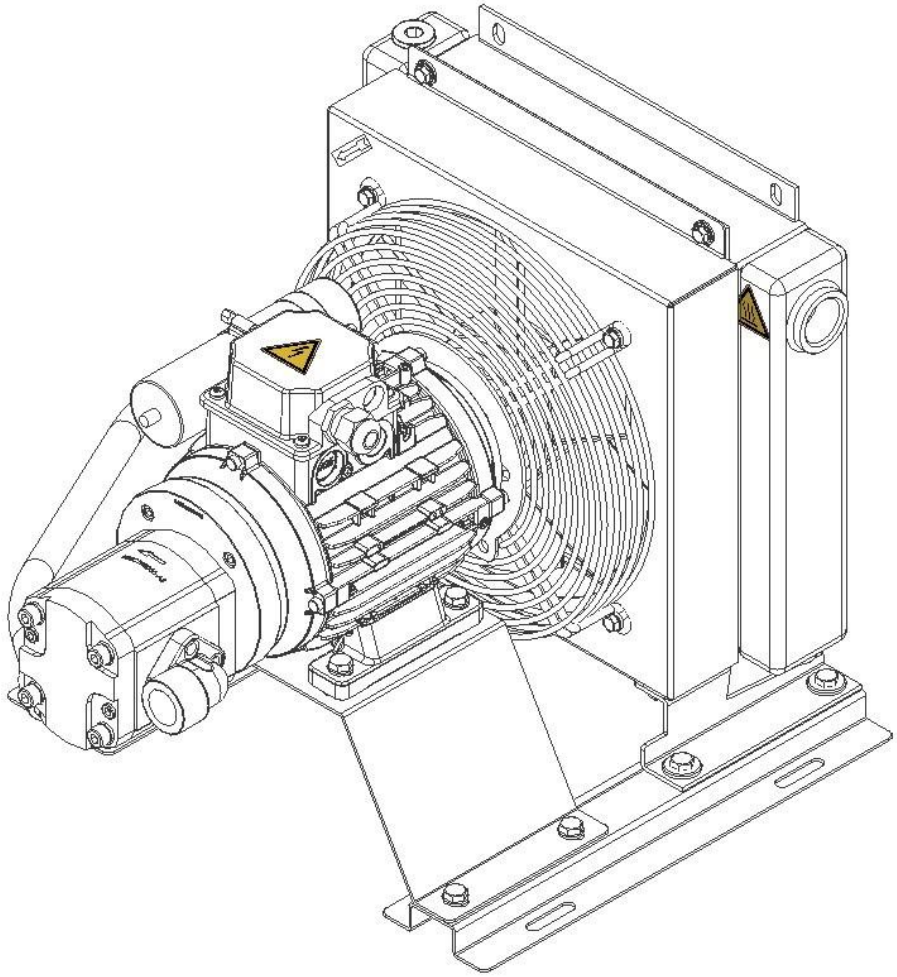
QUIET COOL 6kW

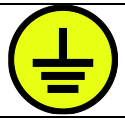


1 Glossary

1.1 Symbols

The installer and maintenance person must have knowledge of the cooling system.

- **Technician:** Qualified technicians should consult the manual prior to performing service
- **Maintenance Mechanic:** Only qualified technicians should perform maintenance and repairs. Do not work on the system while the system is live.
- **Maintenance Electrician:** A trained and qualified electrical technician should only work on the electrical components.
- **Manufacturers Technician:** A qualified manufacturer's technician may be made available only under extreme conditions and as agreed between the user and the seller.

	Notices preceded by this symbol contain important information, instructions and procedures that if not performed correctly, can result in injury.
	Warning, Hot
	Caution, Risk of electric shock.
	Notices preceded by this symbol indicate situations and or procedures that may damage the functionality of this product.
	Protective Gloves must be worn.
	Safety Glasses must be worn.
	Environmentally Hazardous.
	Ground Connection.

	The notices preceded by this symbol contain information of utmost importance failure to comply may result in the loss of the warranty.
	The notices preceded by this symbol contain information requirements or procedures which if not done correctly, can cause harm to the environment.
	Indicates motor rotation.

2 General Information

2.1 Introduction

This manual is intended for people who install and use the QUIET COOL 6kW, heat exchanger.
Although this document contains all the information and warnings necessary for the proper use, it is necessary to observe all safety regulations in force in the country where the exchanger installation takes place.
The manual is part of the heat exchanger, it must be maintained in good condition, and kept near the unit. It should also be provided to any user or end user of the heat exchanger. The manual should be kept in good condition and left in its entirety.

2.2 System Description

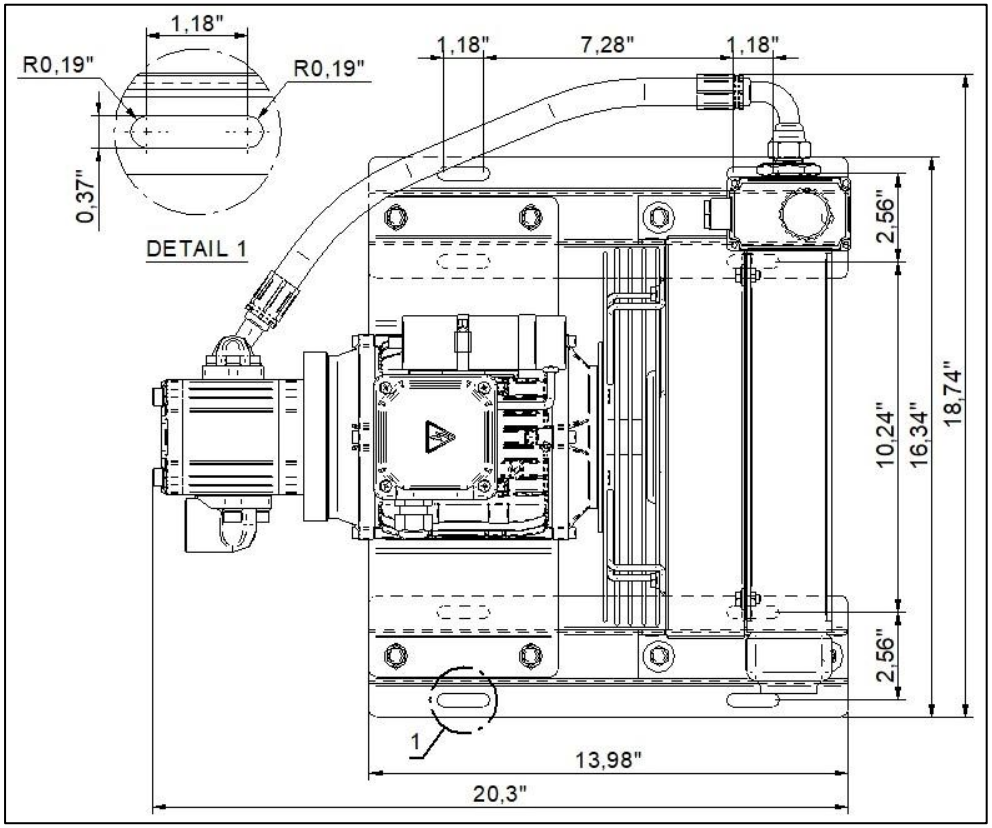
In hydraulic circuits the hydraulic part and the mechanical energy is transformed into heat that raises the temperature of the fluid of the hydraulic system. The principle of recycling oil from the tank, cooling it and returning it to the tank is used.
The unit is comprised of an ultra-quiet gear pump, driven by an electric motor that feeds hot oil through the exchanger with high efficiency which results in lowering fluid temperatures.

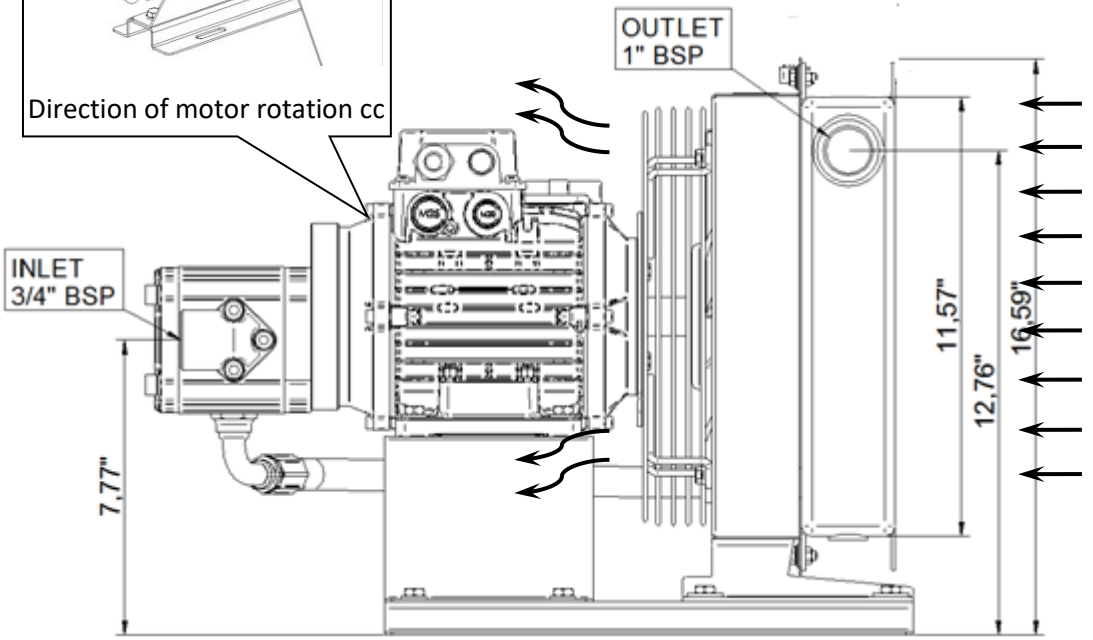
3 Warranty

	The warranty becomes null and void in the following cases: • Improper usage of the heat exchanger. • Failure to observe and follow maintenance procedures. • Tampering with equipment, and /or altering equipment. • Usage of non – original spare parts as provided by the manufacturer. • Measures not implemented by the factory. • Any change and / or non- compliance with the specifications in the technical drawings and in this manual will result in forfeiture of the technical and functional guarantees, and shall release the manufacturer of the heat exchanger of any responsibility. • Quiet cool has a limited warranty based on 12 months from date of purchase

4 System Description

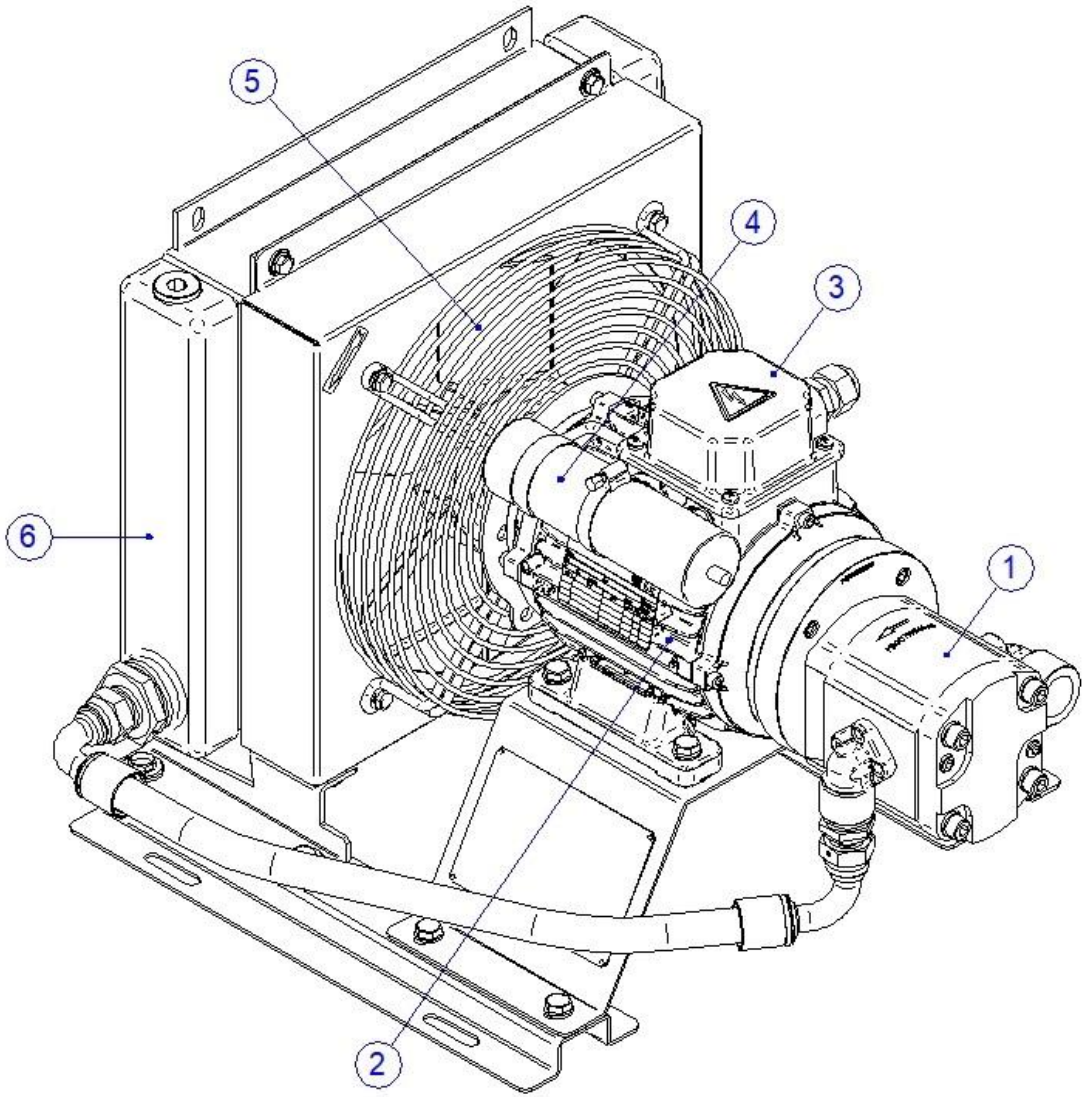
4.1 Dimensions





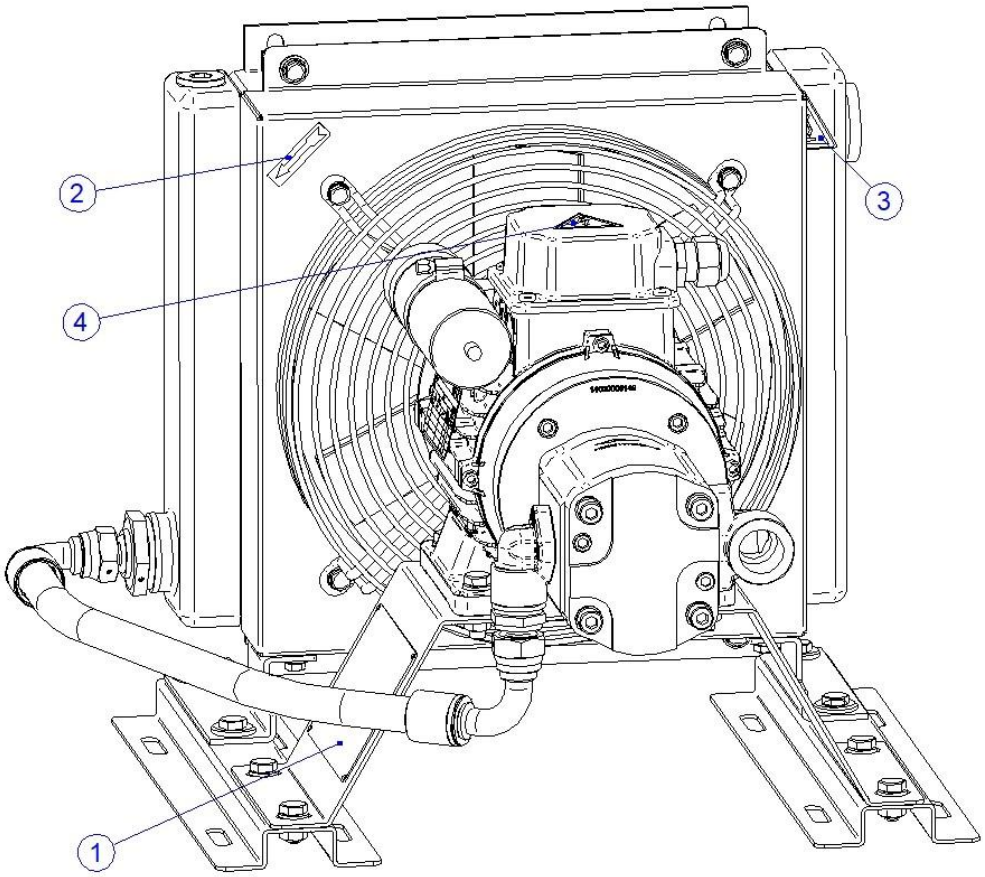
	Check that the motor rotates in the direction indicated by the arrow.

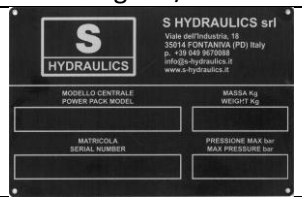
4.2 Main components of QUIET COOL 6kW



1. Helical gear pump
2. Electric Motor
3. Electric motor terminal box
4. Motor capacitor
5. Fan
6. Radiator

4.3 Pictograms & labels

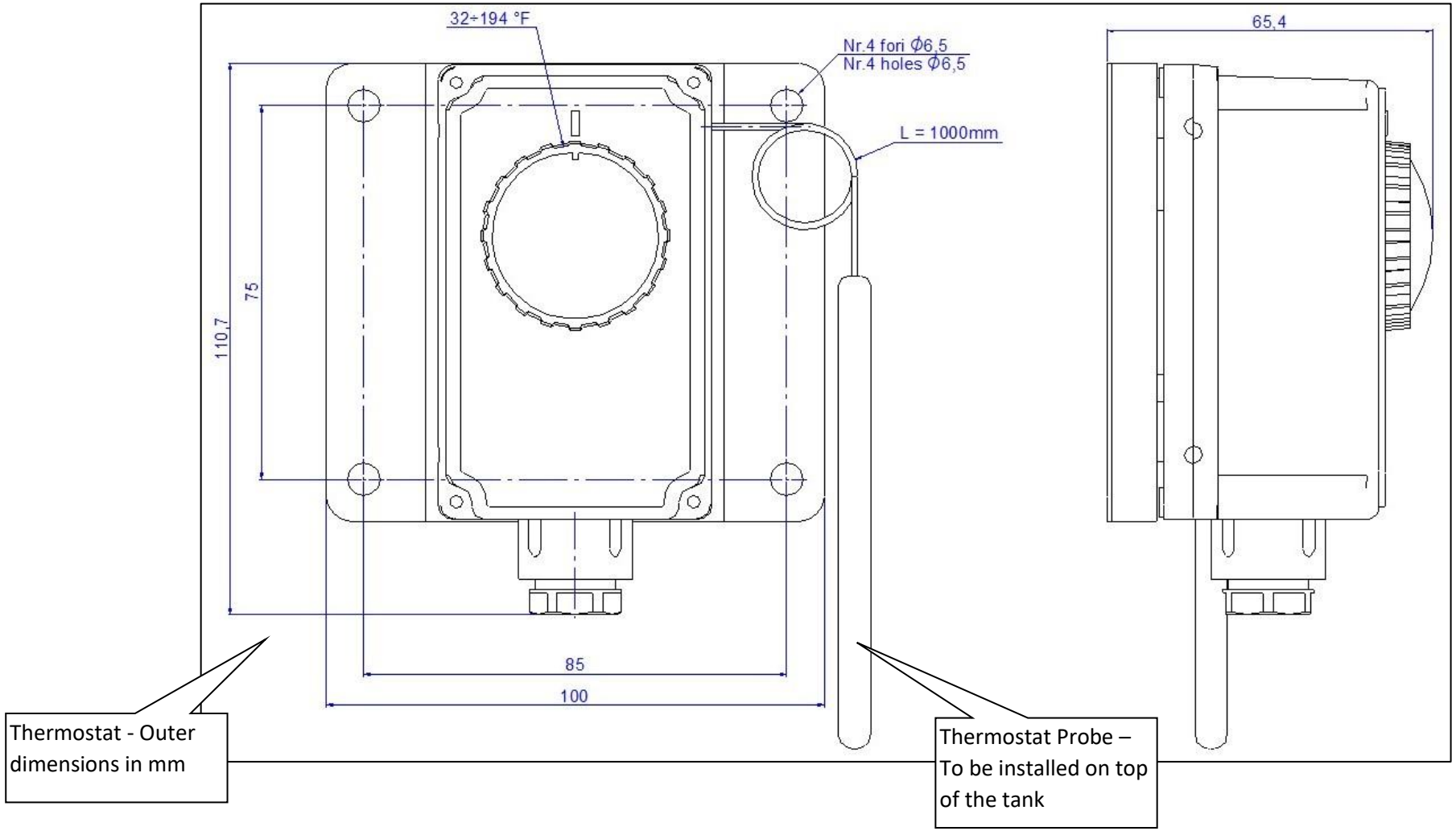


Position	Pictogram/Label	Description
1		Label denotes product code/serial number for ease of traceability.
2		Indicates direction of pump/motor.
3		Warning! Can cause Burns, Use caution.
4		Warning! Can cause shock – Use extreme caution.

- The (image) in this page is for reference only. Position of the pictograms/Labels may not be the same as indicated.

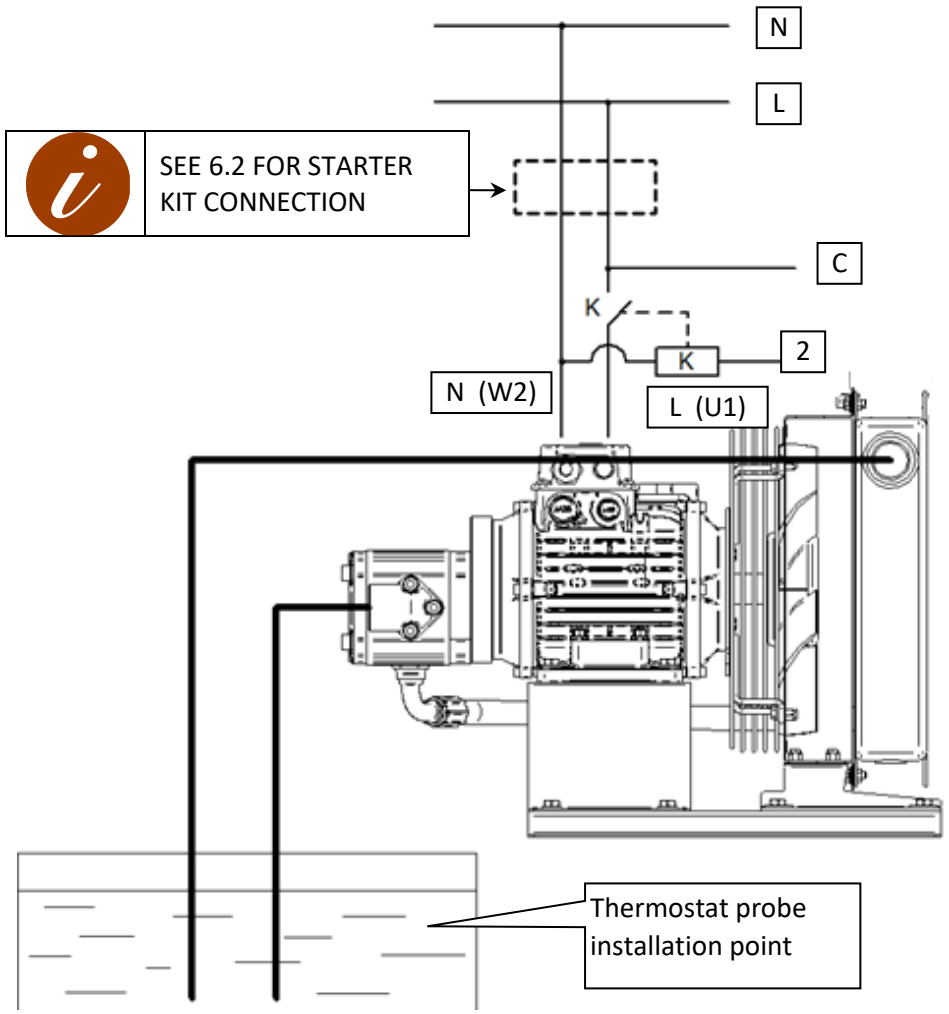
5 Electrical connections

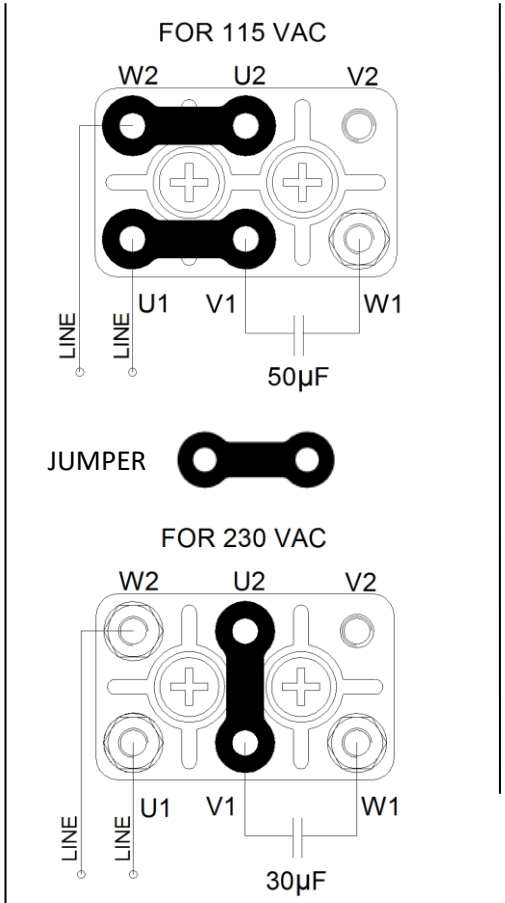
5.1 Installation of Thermostat

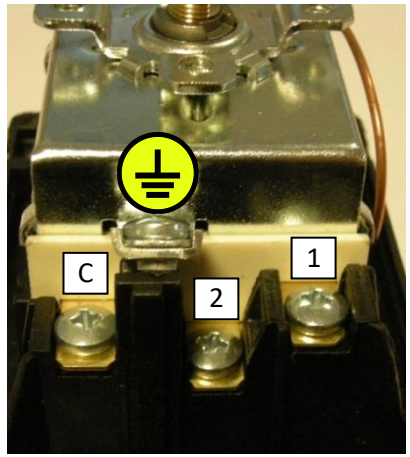


6 Electrical connections

6.1 Connection diagram of the motor and thermostat (115-230V 60Hz Single Phase)



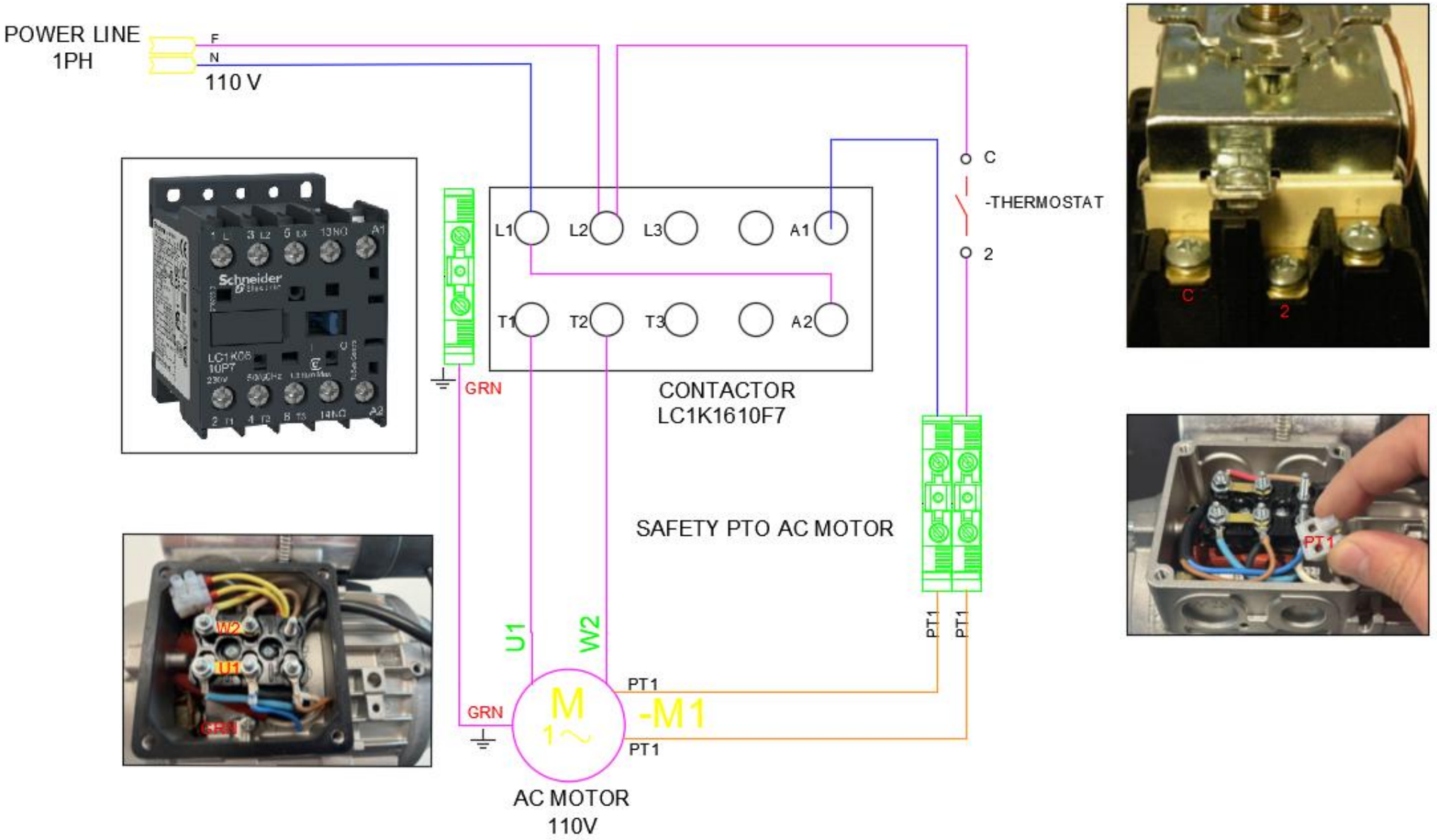




VAC	NORMAL	MAXIMUM
115	9,2 A	12,6 A
230	5,2 A	5,7 A

The motor is pre-wired for 115 VAC (Pay attention to connection).

6.2 Starter kit connection (115V 60Hz Single Phase) – Main diagram



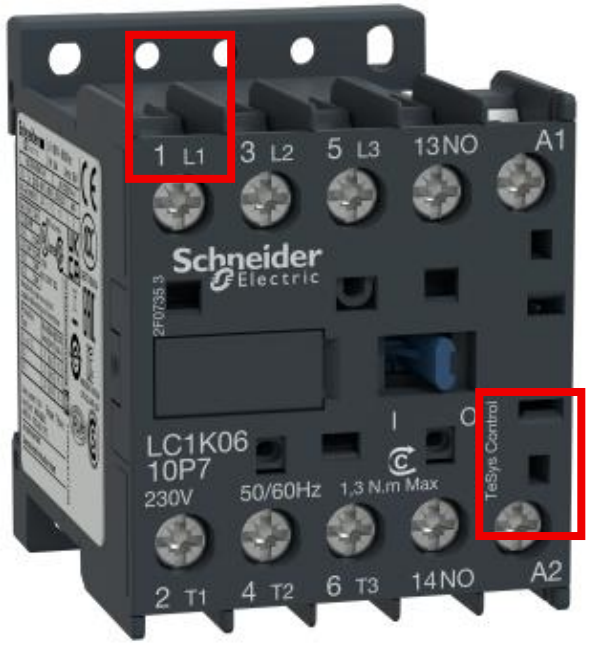
6.2.1 Starter kit connection (115V 60Hz Single Phase) – Preliminary connections

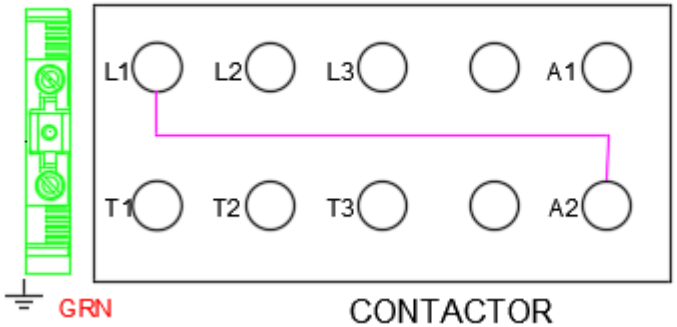
Each cooler is equipped with an electric starter kit for all safety features.

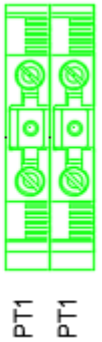
THE STARTER KIT MUST BE WIRED TO THE COOLER FOR THE PRODUCT WARRANTY TO BE VALID!!

Before starting to wire the motor and thermostat, proceed with the preliminary wiring of the starter kit:

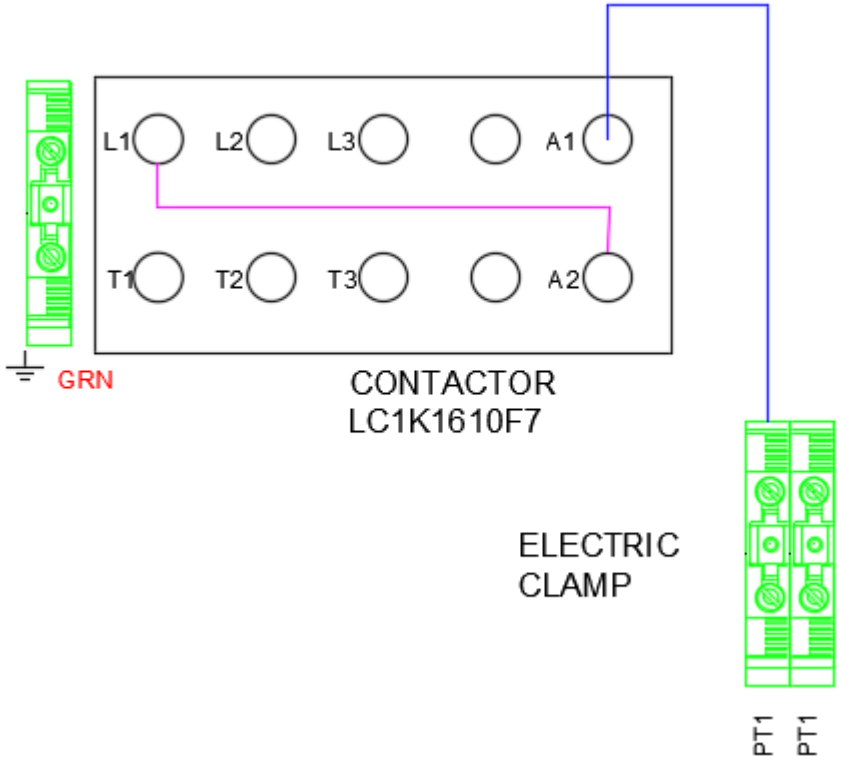
1. Connect with a wire L1 pin of the contactor to A2 pin of the contactor:







2. Connect with a wire A1 pin of the contactor to the first top available pin of the electric support clamp:

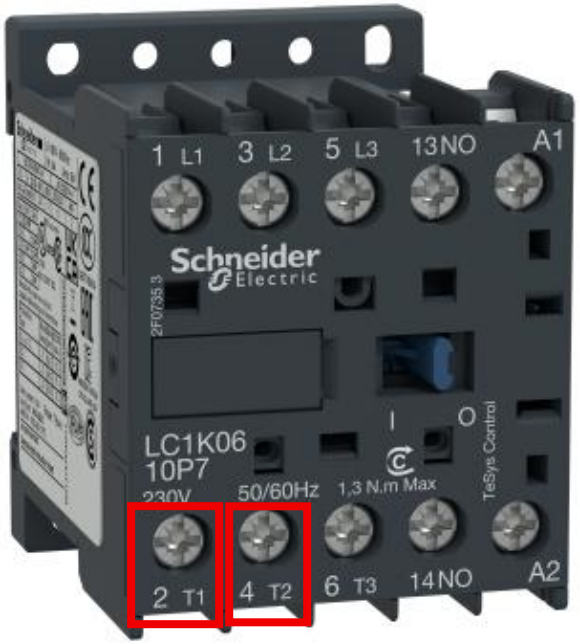


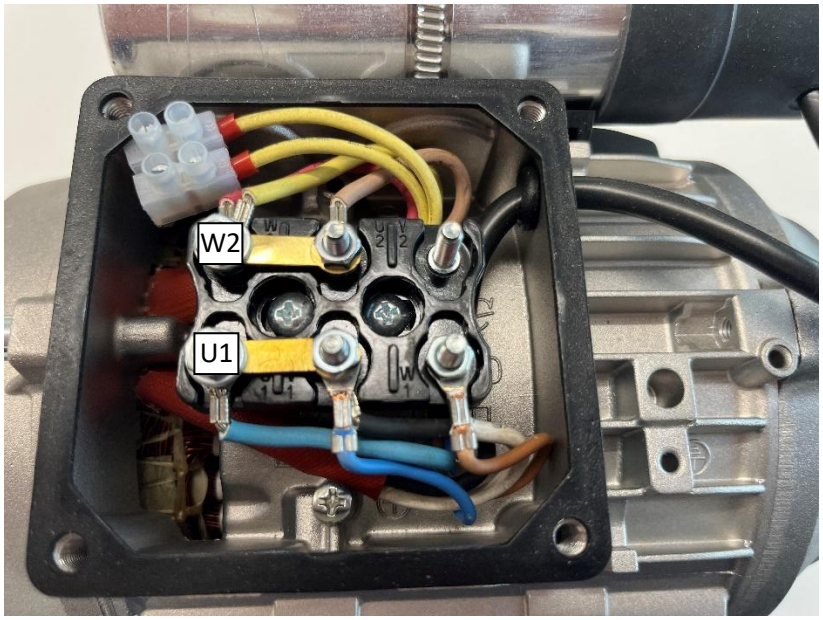
6.2.2 Starter kit connection (115V 60Hz Single Phase) – AC MOTOR connections

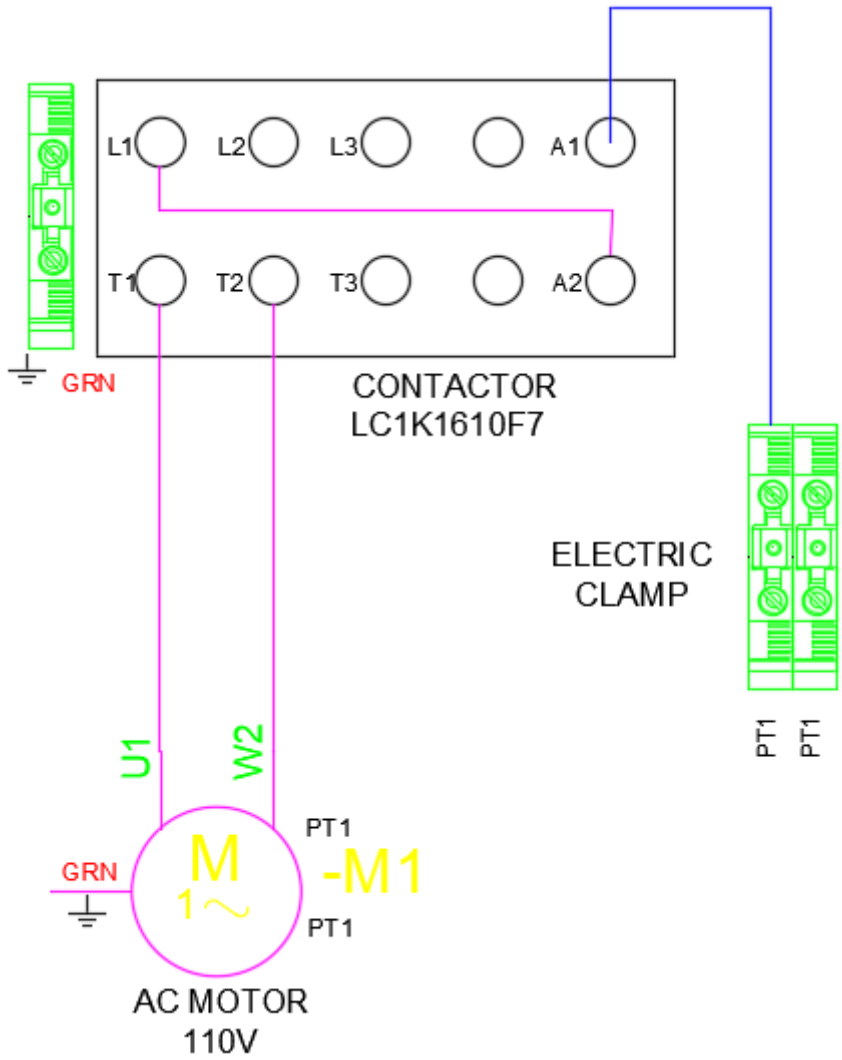
Electric motor is pre-wired for 115V AC single phase.

AC motor must be wired to the starter kit as follows:

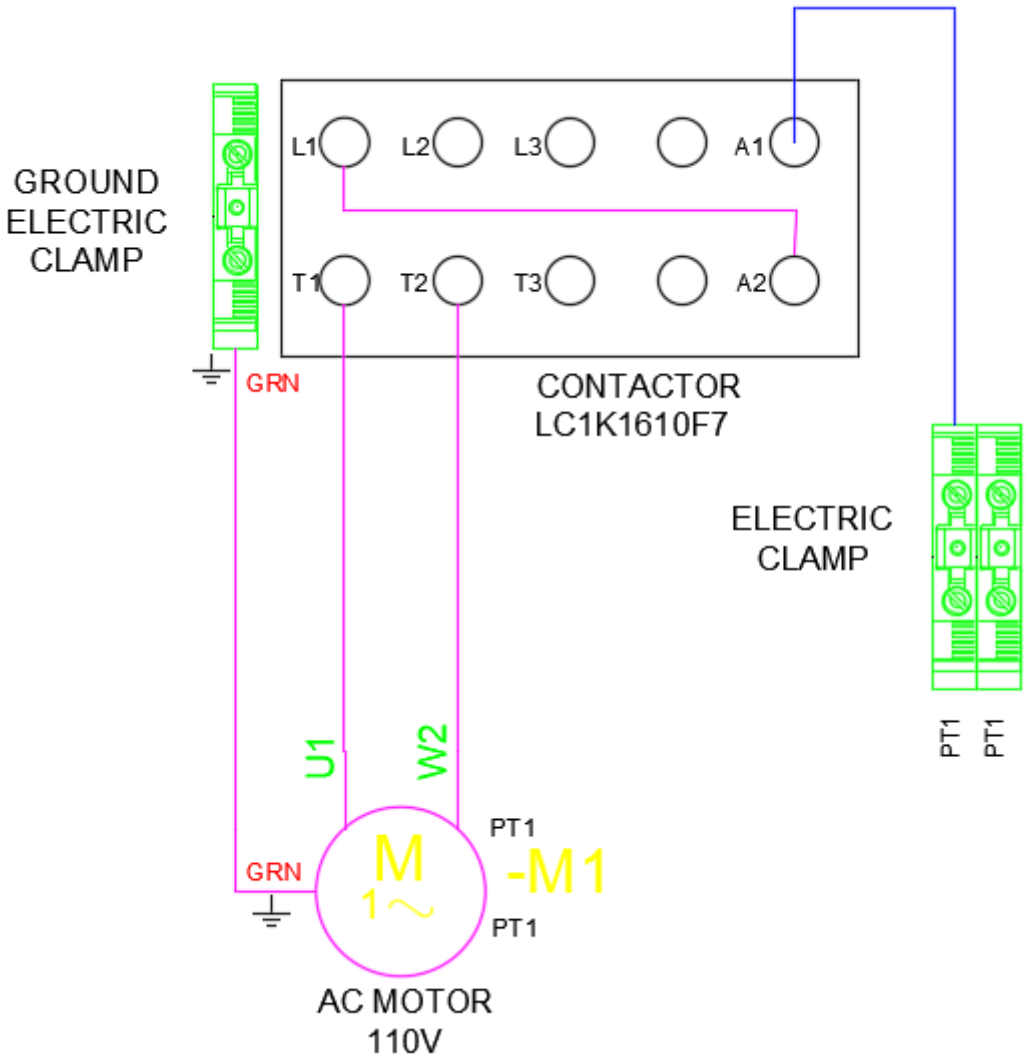
1. Connect with a wire U1 pin of the electric motor to T1 pin of the contactor, then connect with a wire W2 pin of the electric motor to T2 pin of the contactor:





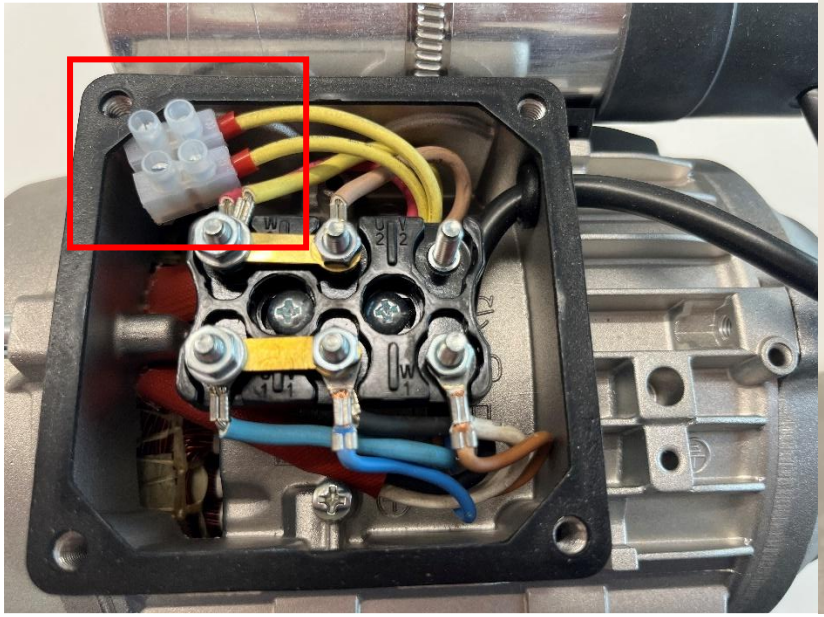

L1
L2
L3
A1
T1
T2
T3
A2
GRN
CONTACTOR
LC1K1610F7
ELECTRIC
CLAMP
PT1
PT1
U1
W2
PT1
GRN
M
1~
-M1
PT1
AC MOTOR
110V

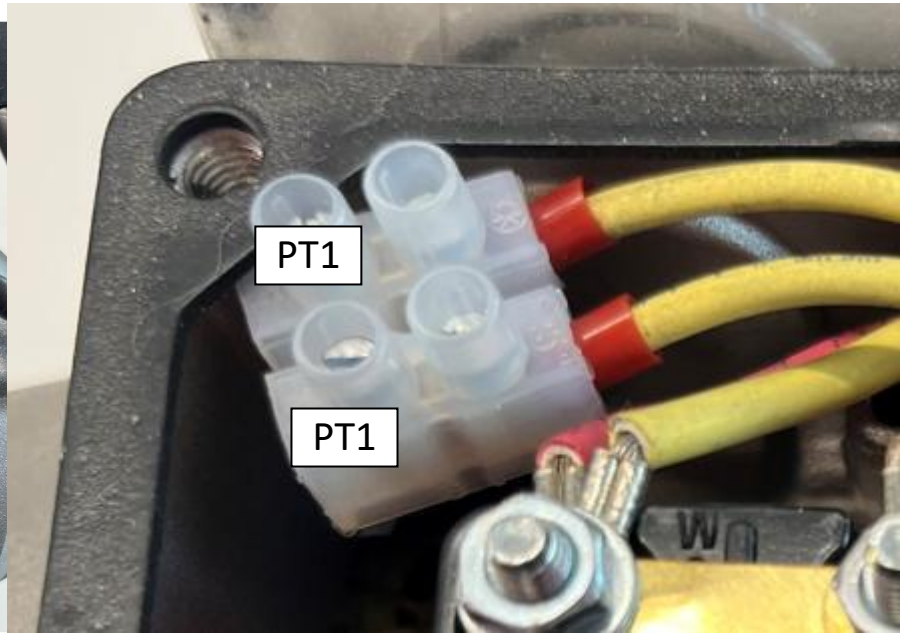
2. Connect with a wire the ground pin (GRN) of the motor to the specific YELLOW/GREEN GROUND ELECTRIC CLAMP:



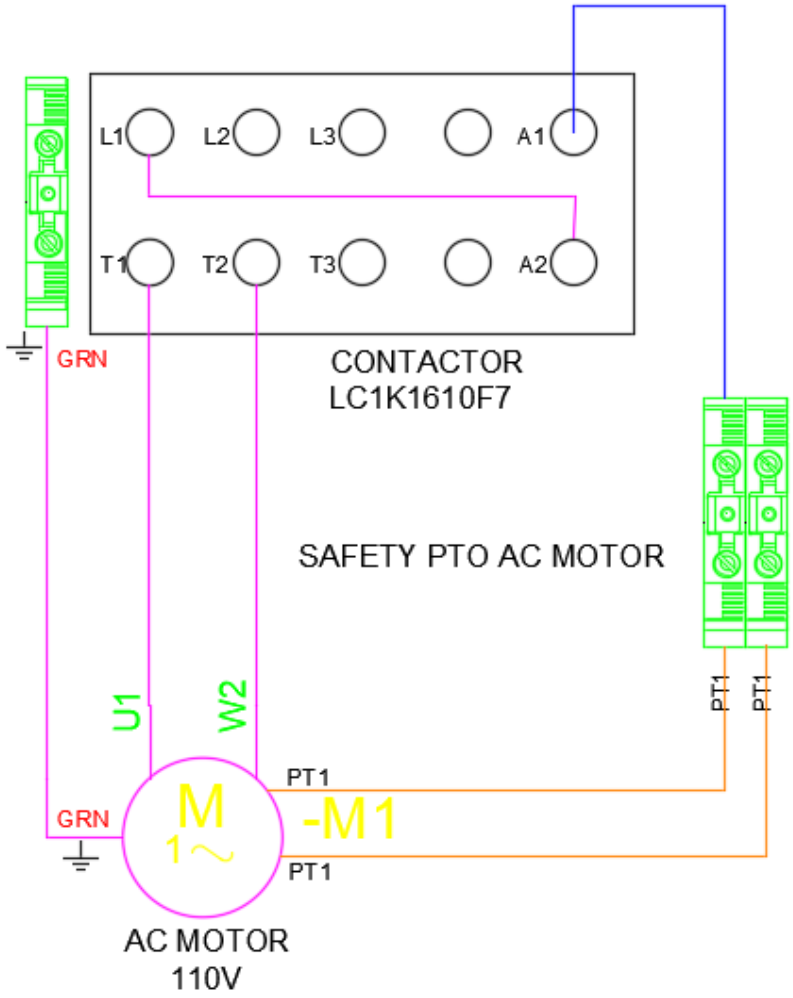
6.2.3 Starter kit connection (115V 60Hz Single Phase) – AC MOTOR SAFETY PTO connections

Each motor is equipped with a thermal protection system (PTO), located into the motor terminal box:





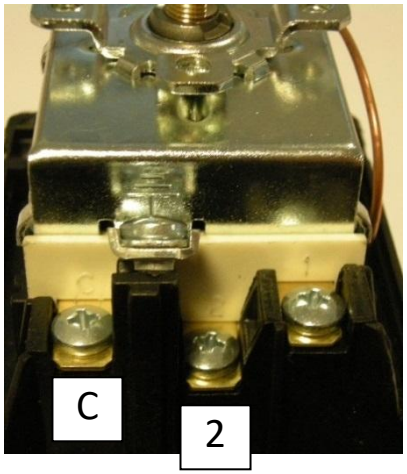
Connect motor PTO (2 pins PT1) to the PT1 pins (2 pins) of the electric clamps:



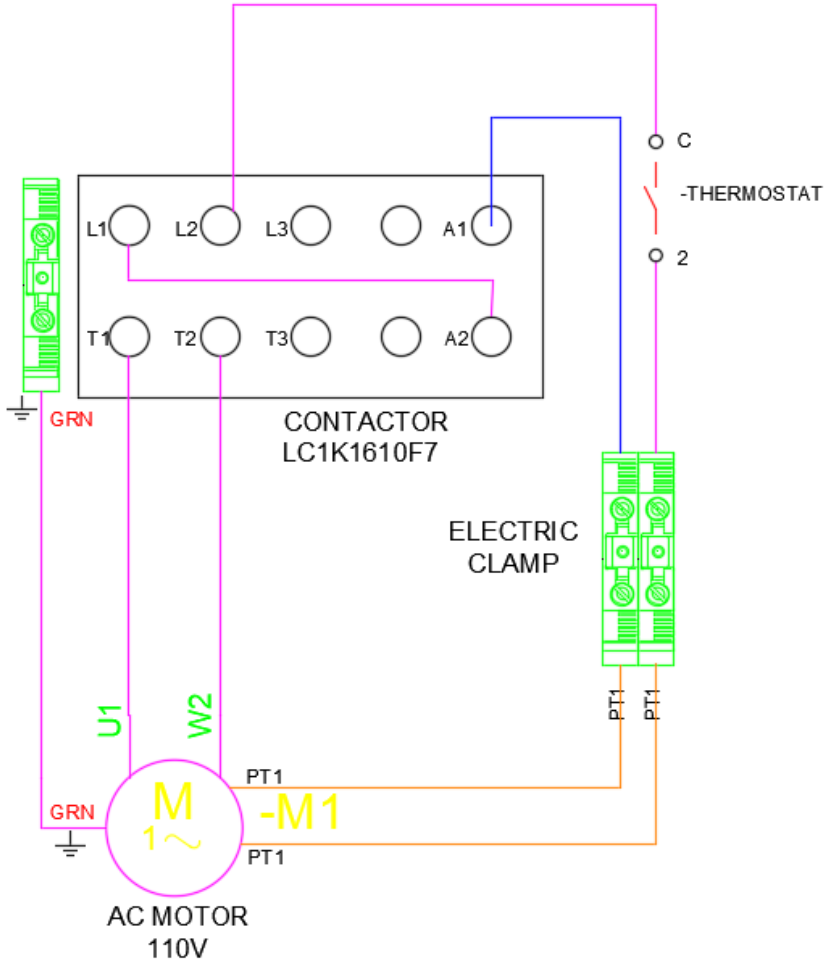
6.2.4 Starter kit connection (115V 60Hz Single Phase) – THERMOSTAT connections

Thermostat must be wired to the starter kit as follows:

1. Connect with a wire L2 pin of the contactor to C pin of the thermostat:

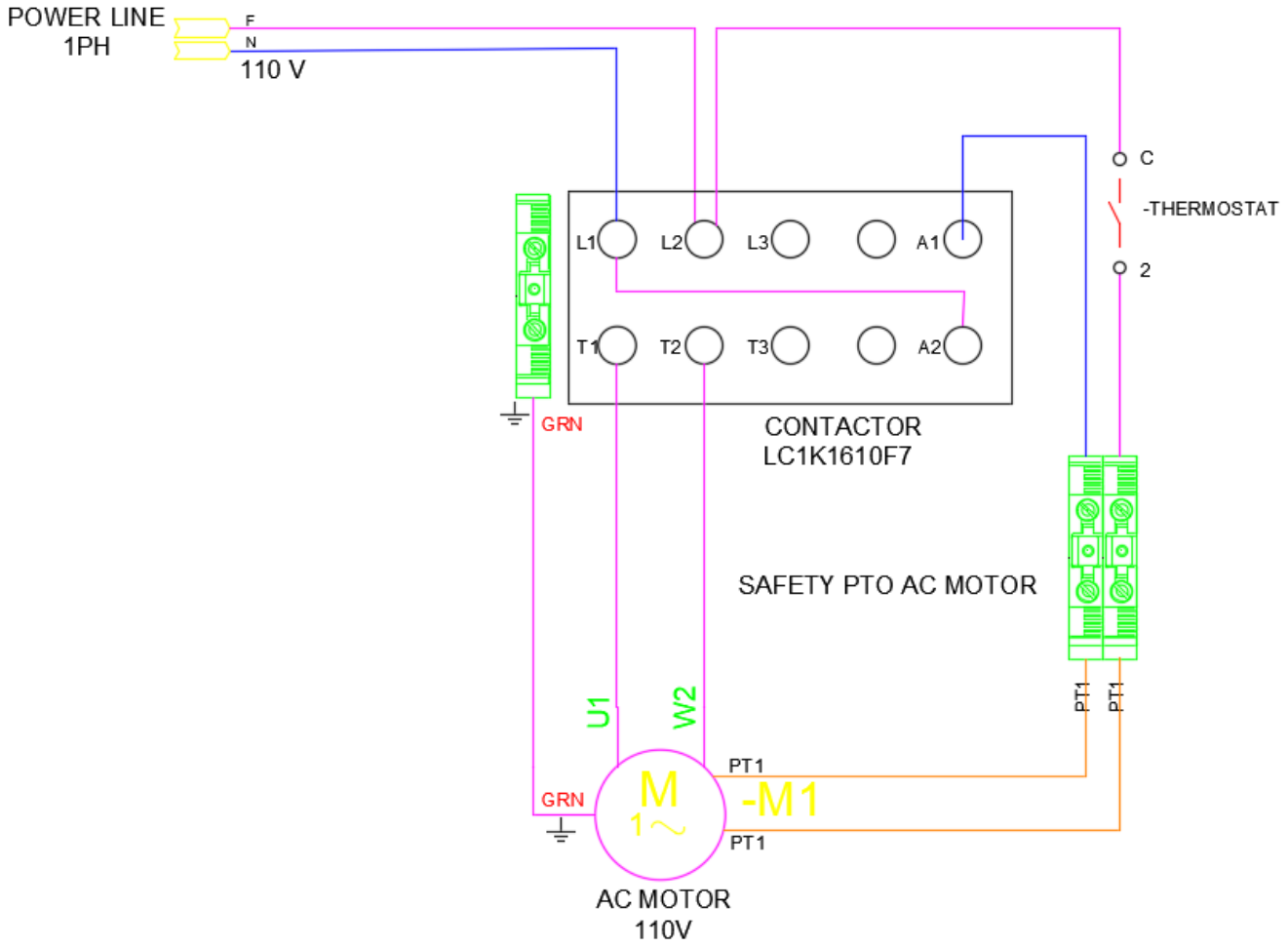


2. Connect with a wire the pin 2 of the thermostat to the top free pin of the electric clamp :



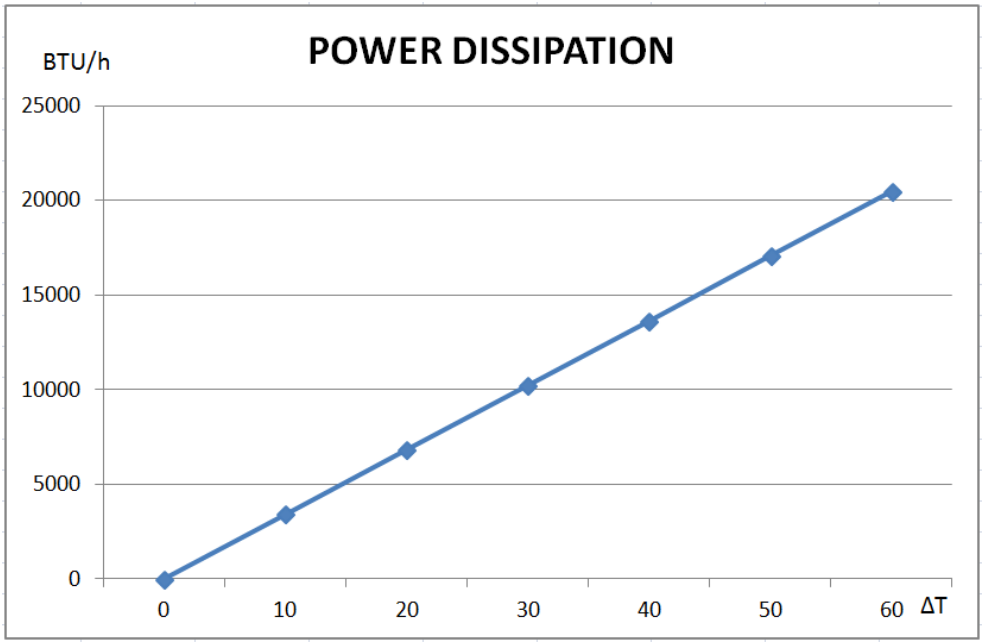
6.2.5 Starter kit connection (115V 60Hz Single Phase) – POWER SUPPLY connections

Power supply line connection must be wired to L1 and L2:

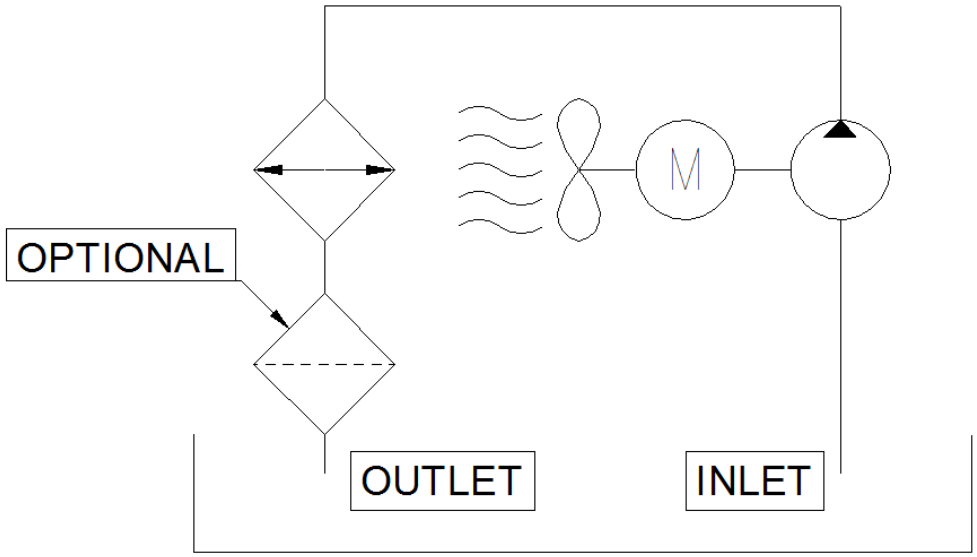


7 Specific Technical Information

7.1 Heat exchange diagram



7.2 Hydraulic Diagram



7.3 Main Features

Description	Unit of Measure	Values
Heat Exchange ΔT 68°F (Ambient Room Temperature 68°F)	kW kCal/h BTU	3,8 3267,41 12966,13
Pump Capacity	l/min USGPM	32 8.45
Air Volume	m^3/h CFM	1350 794,58
Oil Viscosity	cSt	10÷100
Motor RPM	rpm rpm	1690 at 115V 60Hz With Capacitor 50µF 1720 at 230V 60Hz With Capacitor 30µF
Motor duty factor	min	S3 = 30%
Avg. Noise Level	dB (A)	55 (measured at 1m – 3.28ft)
Weight	Kg LBS	20 Packaged without Hoses and fittings 44 Packaged without Hoses and fittings
Maiximum/Minimum Oil Temp	°C °F	20÷70 68÷150
Maximum Permissible Pressure	bar PSI	20 290,076
NpsH Positive suction of pump	bar PSI	-0,2 -2,9
Compatible Fluids		Mineral oil, HL, HLP

8 Installation

8.1 Background Information

The cooling system QUIET COOL 6kW must be connected to the tank with the oil to be cooled by means of hoses. It is good practice in the area where the QUIET COOLER 6kW is running, that there be sufficient exchange of air so that the air itself is not heated thereby affecting the thermal efficiency of the heat exchanger; the necessary climatic conditions must be guaranteed (68 ÷ 104 ° F) .The unit must be installed in a clean environment.
The group must be installed so that the air flow is not impeded at both the intake and output from the radiator fins. It is essential that the suction and delivery pipes/hoses, are of a diameter equal to or greater than that of the existing fitting on the group; otherwise you may experience cavitation causing high noise and possible failure of the pump. For the same reason the suction hose should not give excessive pressure drops, so you should avoid too many restrictions by routing hoses, having too many reducers, reductions etc.)
The mounting position of the cooler, comparing to the tank, must follow the directions reported in this manual. Please see, Length and diameter of hoses etc.
At start up, It is necessary to check that the motor and pump so that it rotates in the direction of the arrow. Please check this manual.
Persons responsible for installation and maintenance of this cooler, should be trained in this type of installation. The manufacturer accepts no responsibility for damage or failure caused by poor mechanical or incorrect connectivity, or incorrect use of the unit.

8.2 General Remarks

- Make sure to position the hose, so as to maintain a certain amount of oil to the inside the pump. The pump should never be started dry.
- Insure that all hoses and fittings are tight so as to eliminate any air intake.
- Provide a suction filter in order to prevent debris from entering the cooling circuit. Recommended.
- DO NOT START THE UNIT DRY, ALWAYS INSURE THAT THE SYSTEM IS LUBRICATED OR DAMAGE TO THE PUMP MAY OCCUR.
- The unit is designed only for mineral oils. Please inquire for any other fluids.
- The cooler should not be started with oil temperature **below** 68°F.
- Make sure to pre fill the hoses when the heat exchanger is not under positive head pressure.
- Do not kink or constrict the hoses.
- Protect the hoses from any damage caused by abrasion.
- Insulate hoses from heat.
- DO NOT COVER THE UNIT FOR ANY REASON, especially the protective fan grill as this can cause overheating and irreversible damage.
- Always use special care and attention when working on or installing the cooler.

- Make sure that correct oil is used in the system. Consult the factory if there are any questions.
- Any foreign matter exchanged within the system may damage the components of the heat exchanger. Oil filtration is always recommended
- The oil should maintain a good kinematic viscosity. Temperatures above 195°F should not be exceeded.
- This unit has been specifically designed to cool oil in hydraulic systems. We accept no responsibility and or liability for incorrect application or usage for that other than which the unit is designed for.

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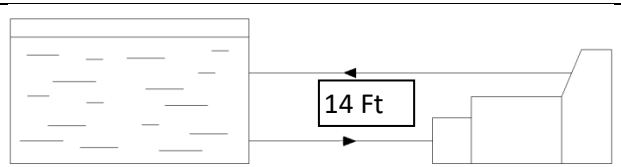
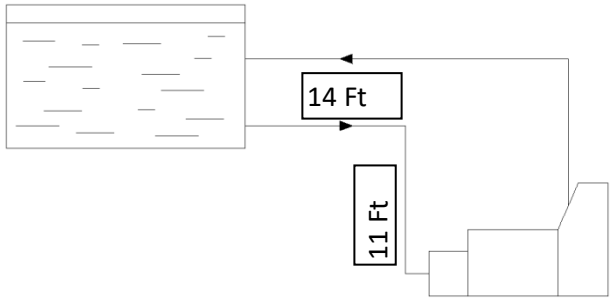
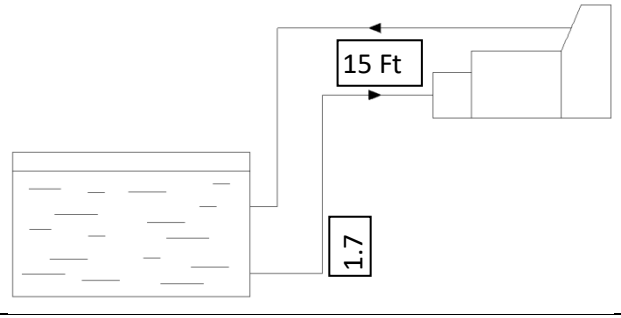
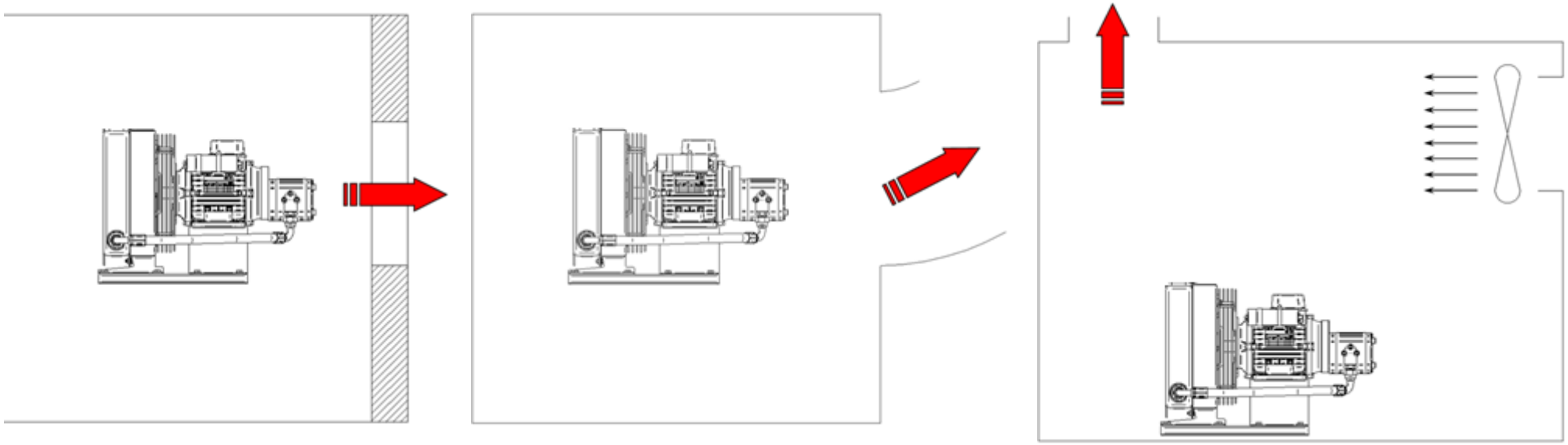
8.3 Length and hose diameter

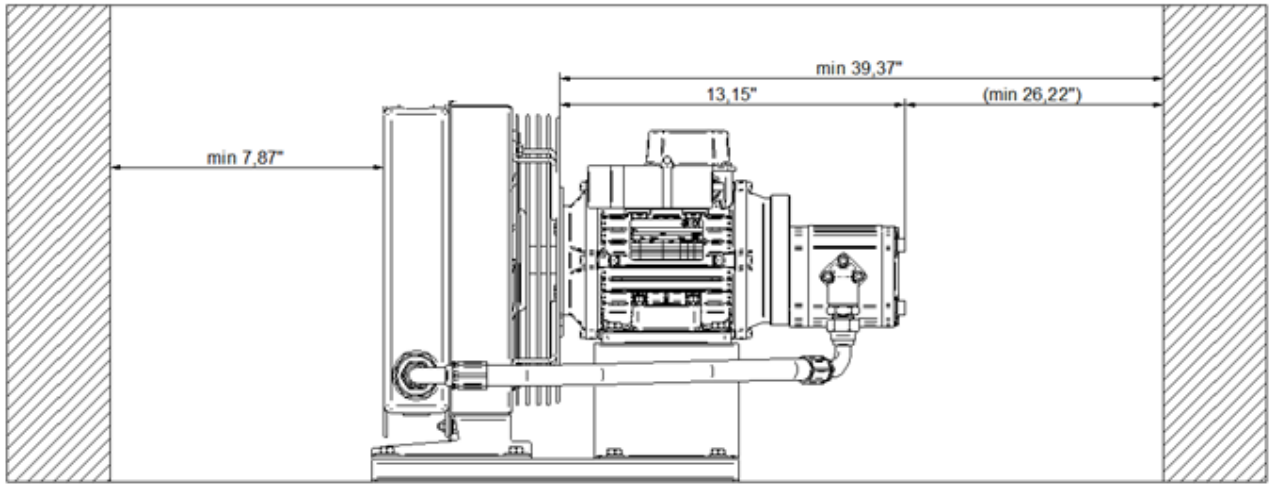
Scheme	Overview	Ø Hose	Maximum Hose length
	Cooler and tank at the same level	3/4"	26,2 Ft
	The Power Unit should not exceed a height of 13.2 Feet Above the heat exchanger.	3/4"	32,8 Ft
	**The heat exchanger shall not exceed 2 feet above the Power Unit. Failure to comply may result in poor performance and cavitation**	3/4"	16,4 Ft

- The above figures have been calculated considering an oil viscosity of 44 cSt.
- **Each sharp bend of 90 ° that is done to the suction pipe/hose, you must subtract 6ft maximum length of the Hose.**

8.4 Orientation



Flow of hot air 



8.5 Capacitor Replacement (optional)

The Cooler can work with a voltage supply of 115VAC or 230VAC.
The Cooler is pre-wired for 115 Vac.
To convert to 230VAC follow the directions in below.

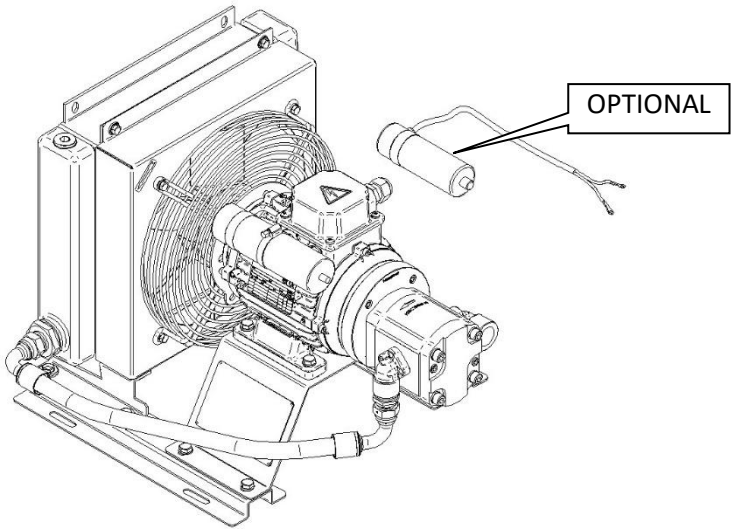
Basing on the required voltage, the installer will need to modify the connection in the motor wire box, as shown in "6.1 Connection diagram of the motor and thermostat (115-230V 60Hz Single Phase)" and replace the capacitor (supplied as a kit) of the cooler.

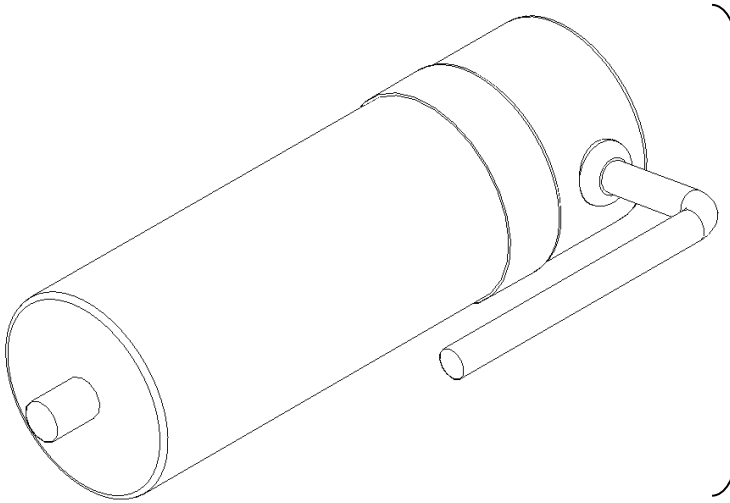
- Protective clothing and accessories must be worn while performing capacitor installation

All field work must be done in safe working-conditions:

- The activities regarding these operations must be performed by authorized and qualified persons.
- The Quiet Cooler must be switched off.
- The power supply must be not connected. After electrical disconnection you must wait for a waiting period of about 2 minutes before the start of these operations.

- When replacing the capacitor, please read the label so as to replace the same correctly

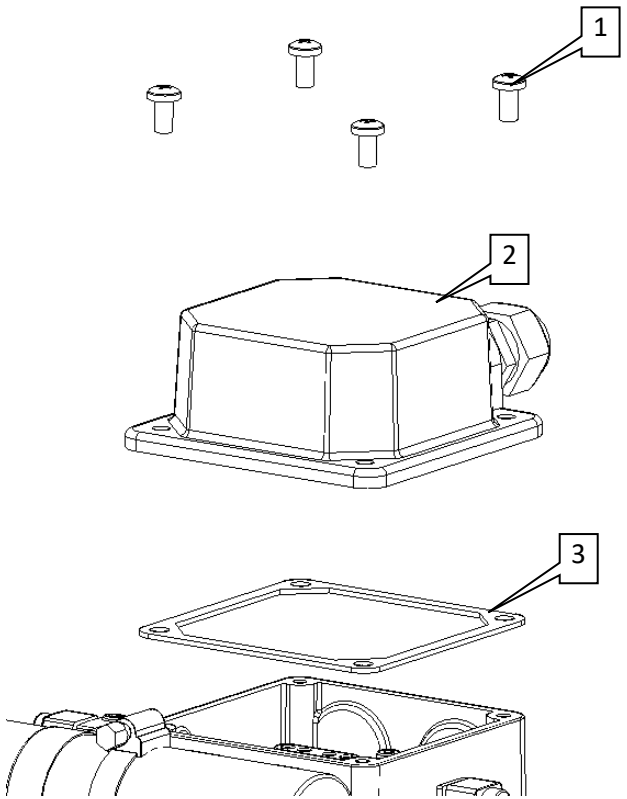




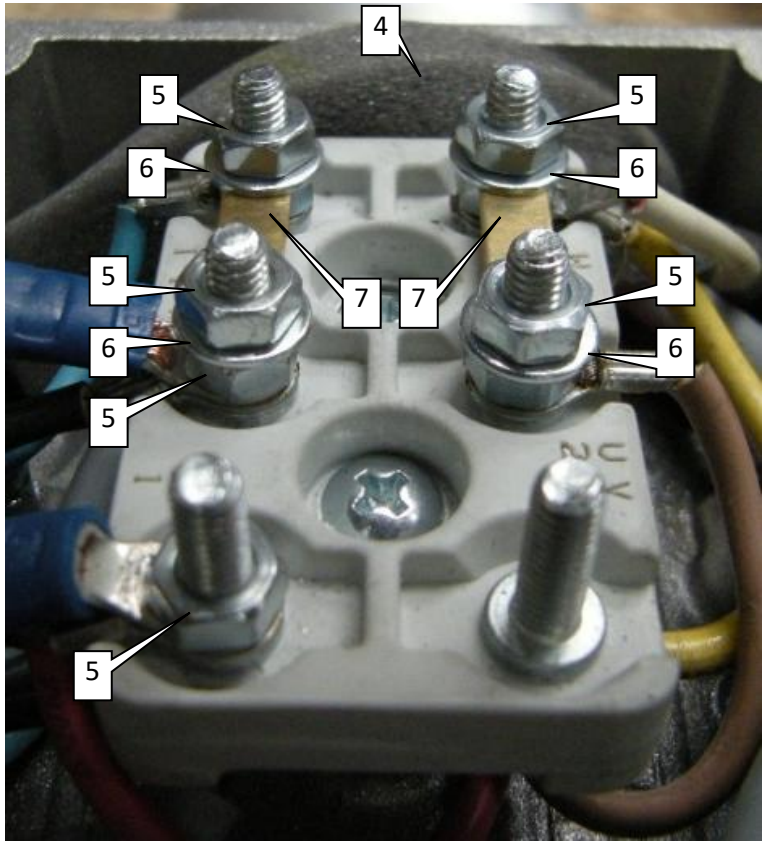
CAPACITOR KIT 230VAC
Ordering code 000020940000005

Follow these steps to change the capacitor:

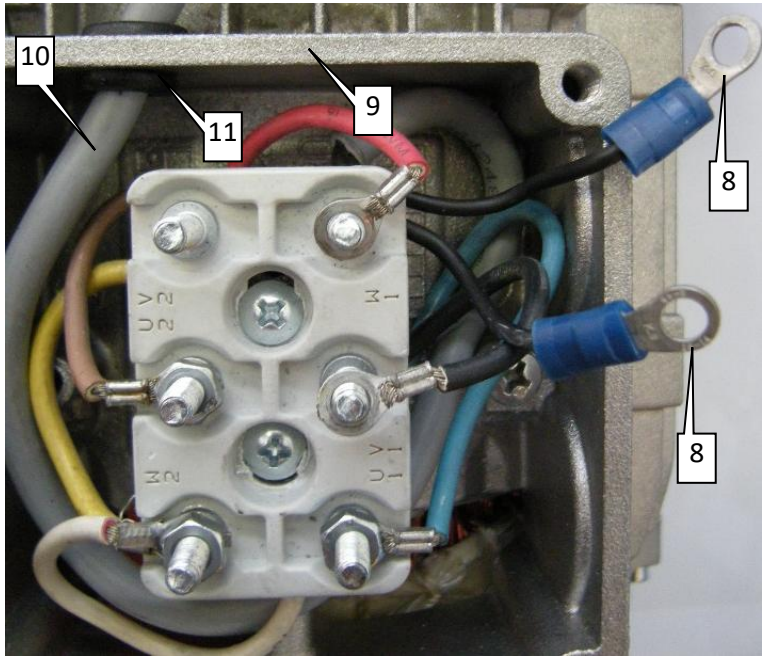
	• The instructions for replacing or changing the capacitor are on the inside cover of the electrical box. The instructions are for converting to 230VAC.



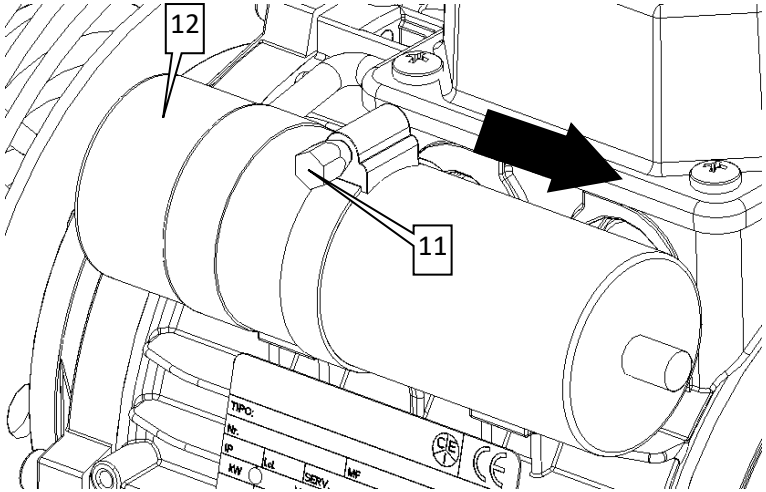
1. Unscrew the screws [1] needed to close the cover [2] of the wiring box of the motor.
2. Remove the cover [2] and the seal [3].



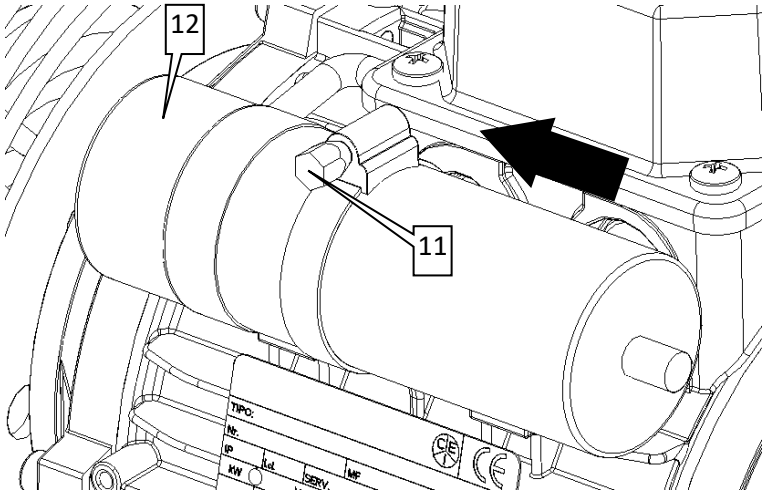
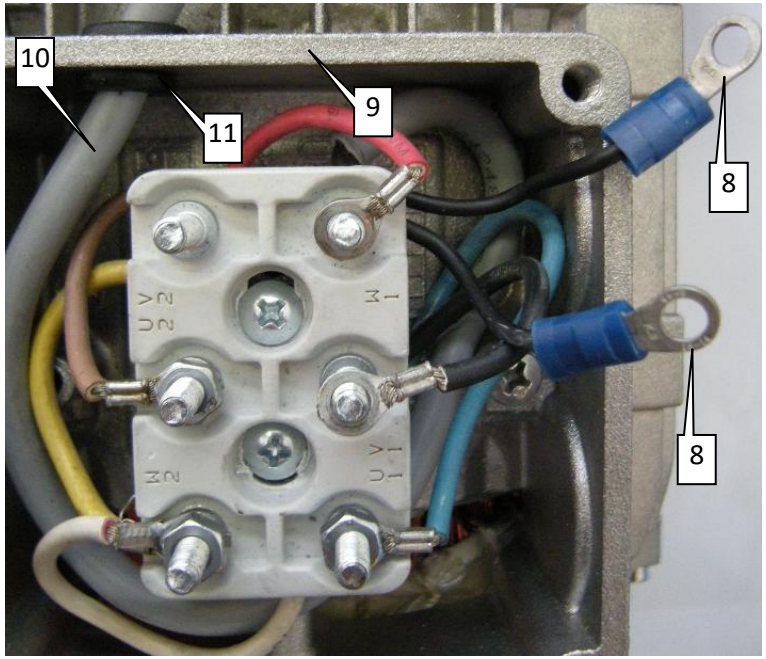
3. Remove the insulation [4].
4. Unscrew the bolts M4 [5] and remove the washers [6].
5. Remove the jumpers [7].

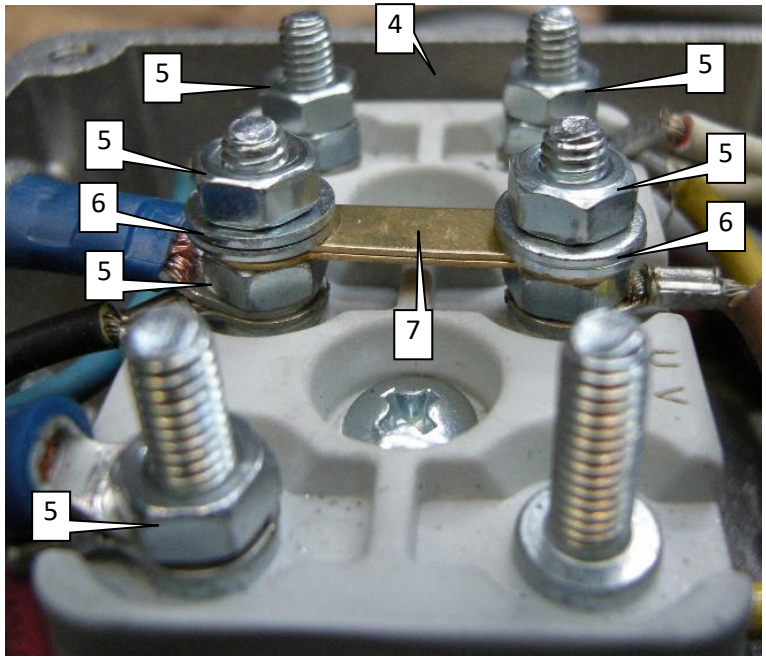


6. Remove the eyelets [8].
7. Withdraw, to the external part of the terminal box [9], the capacitor wire [10], though the cable gland [11].

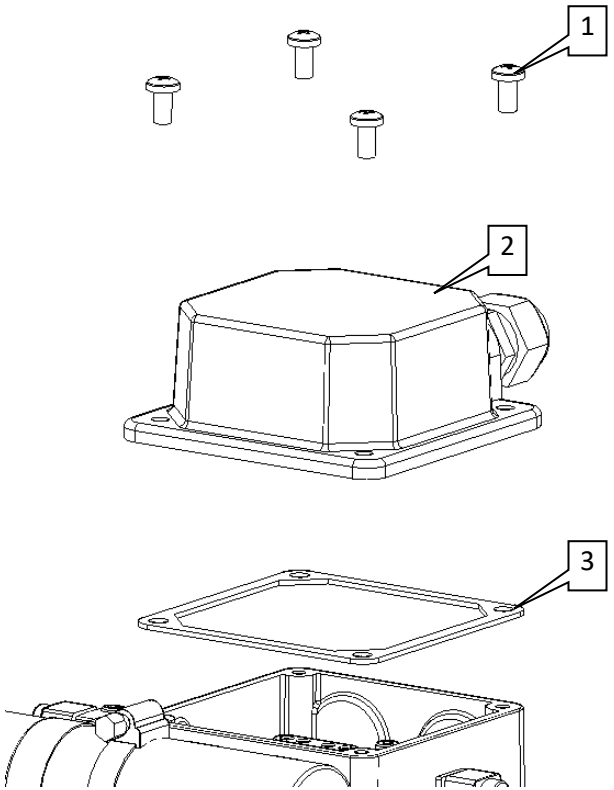


8. Loosen softly the screw of the metal band [11] needed to lock the capacitor [12].
9. Withdraw the capacitor [12] from the metal band [11] in direction indicated by the arrow, and replace with the new capacitor.

	10. Position the capacitor [12] in the metal band [11] in direction indicated by the arrow. 11. Tighten the screw of the metal band [11] needed to hold the capacitor [12].
	12. Tuck the cable [10], from the outside to the inside of the wiring box [9], through the cable gland [11]. 13. Position the eyelets [8], instead of the previous.



14. Set the jumpers [7] as indicated in the chapter "6.1 Connection diagram of the motor and thermostat (115-230V 60Hz Single Phase)"
15. Place the washers [6] and the nuts M4 [5].
16. Replace insulation [4].



17. Place the seal [3] and the cover [2]
18. Screw the screws [1] needed to close the cover [2] of the motor wiring box.

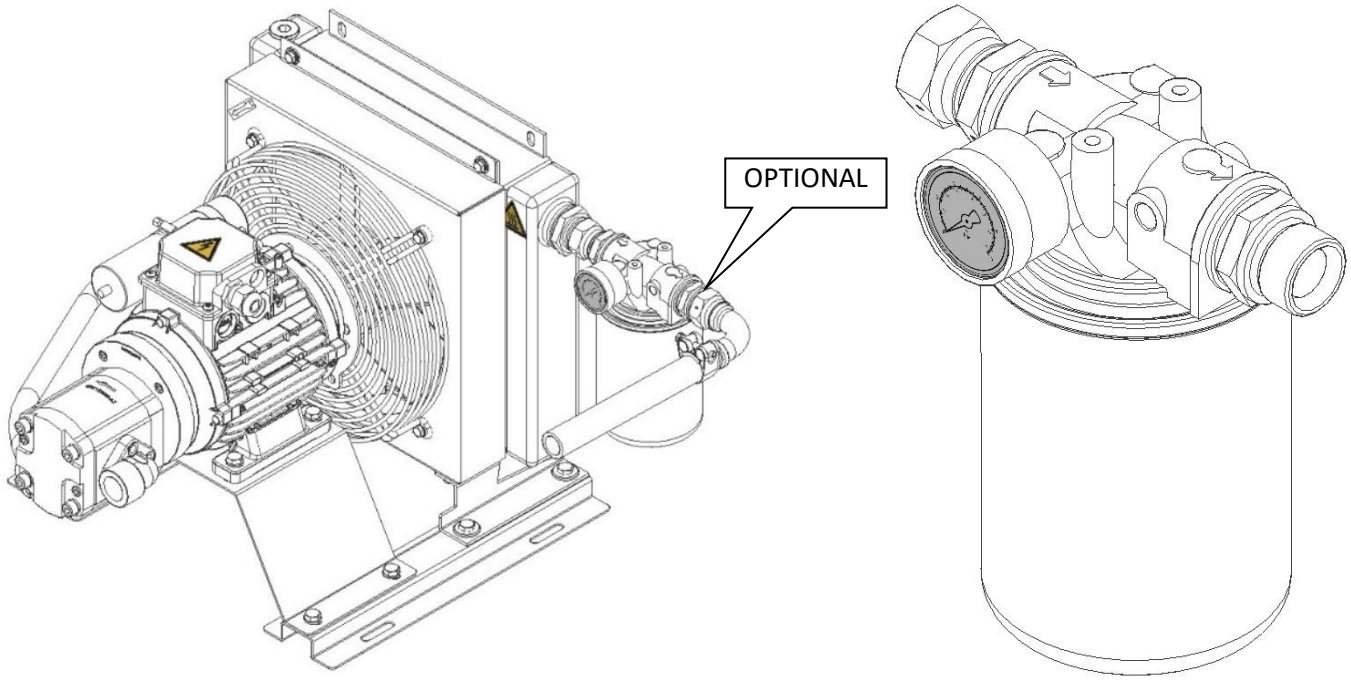
8.6 Filter Installation (optional)

A filter kit may be installed, the filter is placed prior to the oil returning to the tank

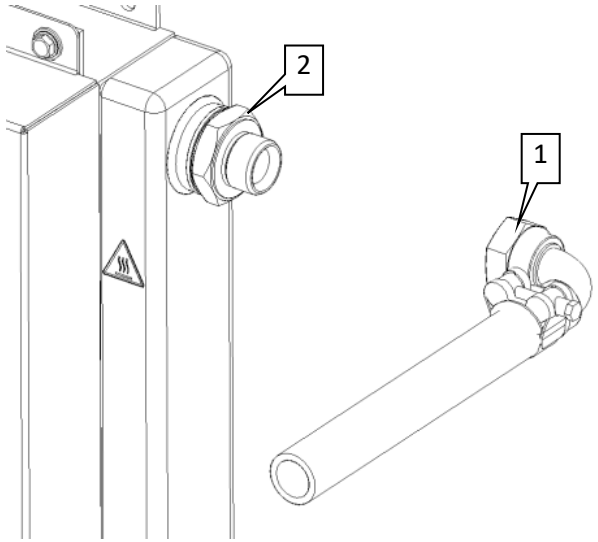
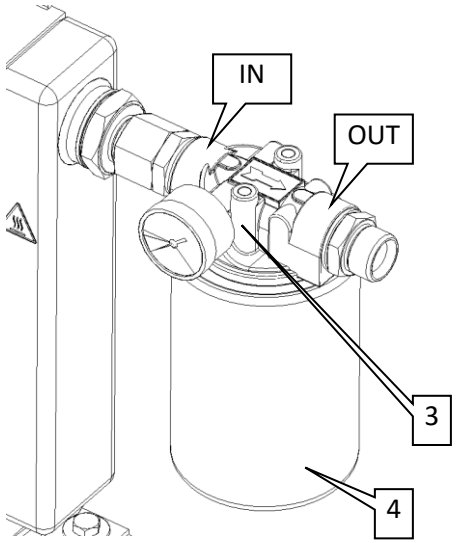
- Protective clothing and accessories must be worn while performing filter installation.

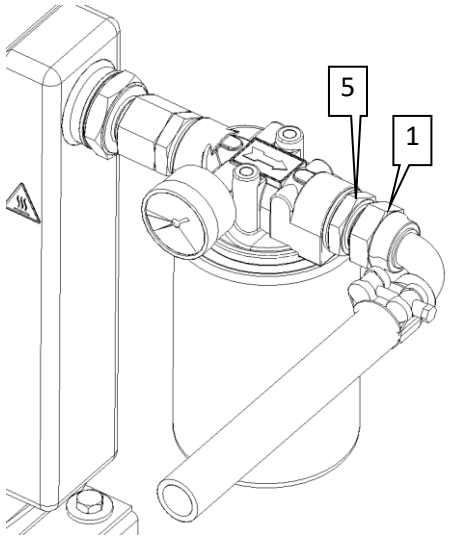
All the operations must be done in a safe working manner:

- The activities regarding these operations must be performed by authorized and qualified persons.
- The Quiet Cooler must be switched off.
- The power supply must be disconnected. After electrical disconnection, you must wait for a period of about 2 minutes before the start of these operations.



Follow these steps to install the filter:

	1. Unscrew the connector [1] from cooler side, taking care to position, under the fittings, a sealed container for the collection of oil leakage 2. (Snug the nipple if loose)
	3. Screw the filter kit [3], completed with fittings, with the filter element in down position [4].

	4. Screw the connector [1] to the fitting [5].

9 Maintenance and Dismantling

9.1 General Remarks

- Protective clothing and accessories must be worn while performing maintenance.

- Some products to clean the cooler may be harmful. Use proper precautions if you use such products. Provide for a sealed container for the collection of liquids during maintenance and dismantling operation.

work and maintenance must be done under safe conditions:

- The activities regarding these operations must be performed by authorized and qualified persons.
- The Quiet Cooler must be switched off.
- The power supply must be disconnected. After electrical disconnection you must wait for about 2 minutes before restarting.

- When disposing of the cooler, any of its parts or the fluid inside, please follow local regulations for proper disposal.
- It is absolutely necessary to apply the rules in force in the country and locality of the fluid within the cooling unit, it is forbidden to dispose of or release to the environment any kind of cutting waste , oils , etc.

9.2 Cleaning the air element

This may be cleaned by means of compressed air or water, with the direction of the jet parallel to the radiator fins. More vigorous cleaning may be achieved by using detergent. During such cleaning the motor must be switched off and protected from water.

9.3 Cleaning the oil element

To perform this type of cleaning, the exchanger must be removed and flushed with a perchlorethylene solution for a period ranging from 10 to 20 minutes. Then proceed to empty the internal circuit with compressed air, making sure that the pressure does not exceed the maximum permitted by the exchanger. When using this type of cleaner, the maintenance person must wear protective gloves, safety glasses and a proper breathing mask to avoid any health risks.
SEE ABOVE WARNING NOTATION

9.4 Decommissioning/Dismantling

In case the heat exchanger is out of service for an extended period of time, the unit should be quarantined to prevent access to the unit by unauthorized persons.

	• Please abide by local laws and regulations as to the dismantling and proper disposal of the unit.

Due to the fact that there are different materials that comprise of the entire unit, it is important that proper disposal be used and followed according to local rules and regulations.

	• Decommissioning of the unit must be performed by qualified personnel.

	• Disposal of electrical components must be handled according to local laws, rules and regulations

10 Trouble Shooting

10.1 Motor Not Running

- The following procedures must be performed by a qualified technician.

If the motor does not rotate when hooked up to correct voltage:

1. Verify the correct wiring according to the supply voltage.
2. Make sure that the correct capacitor is installed according to voltage.
3. Make sure that the thermostat is properly set.
4. Verify that there is power to the unit.

10.2 The motor runs but produces a dull sound

- The following procedures must be performed by a qualified technician.

In case the motor turns with proper voltage but produces a dull sound:

1. Verify that the wiring is correct in conjunction with the correct voltage.
2. Make sure you have installed the correct capacitor according to the supply voltage.
3. Check the layout of the tank connections in this section, make sure that the length and hose diameter are correct.

10.3 The motor turns but there is no flow

- The following procedures must be performed by a qualified technician.

In case the motor turns with the correct voltage but produces a dull sound:

1. Check that the fan turns in the correct direction.
2. Check connection and tightness of fittings and pipes.

11 Attachments

Associated	Document	Document Code
1	Overall design	130300000500000
2	Overall design hoses kit	120300000500000
3	Overall design hoses kit	120300000500001
4	Overall design of capacitor kit for 230V	000020940000005
5	Overall thermostat kit	150300000500000
6	Overall design filter kit	150300000500001
7	Thermostat instructions	-
8		

Emission date 22.06.2022-REV_00