AIR OIL HEAT COOLER UNIT

NEG SPLIT

SEIM
SCREW PUMPS

Shanley Pump
& Equipment, Inc.

INSTRUCTION MANUAL

Index

For assistance:

For information contact:

SEIM SRL, Via Alessandro Volta 17, 20090 Cusago (MI) Italy
www.seim.it - seim@seim.it

Shanley Pump & Equipment, Inc.
2525 S. Clearbrook Drive
Arlington Heights, IL 60005
P: (847) 439-9200 F: (847) 439-9388
sales@shanleypump.com
www.shanleypump.com

1 - System description

1.1 - Overall dimensions NEG 03-04

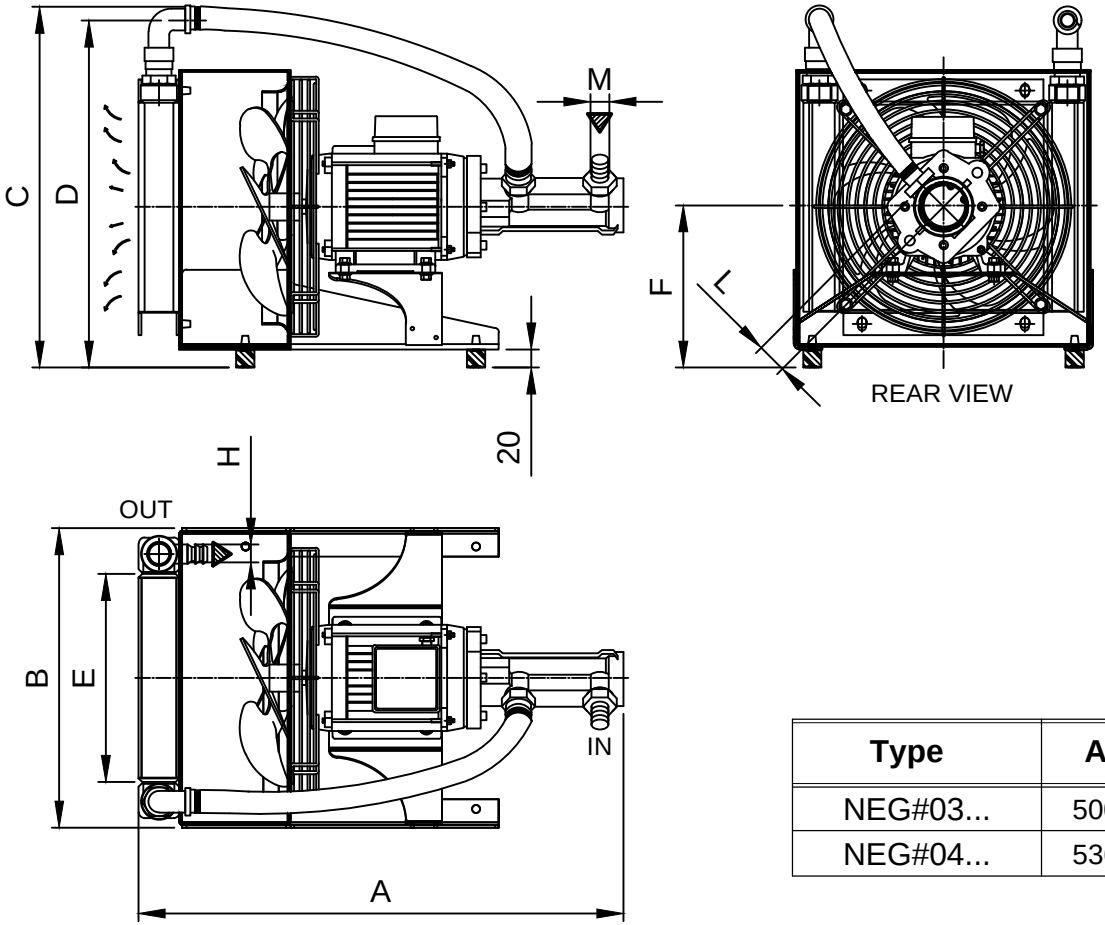
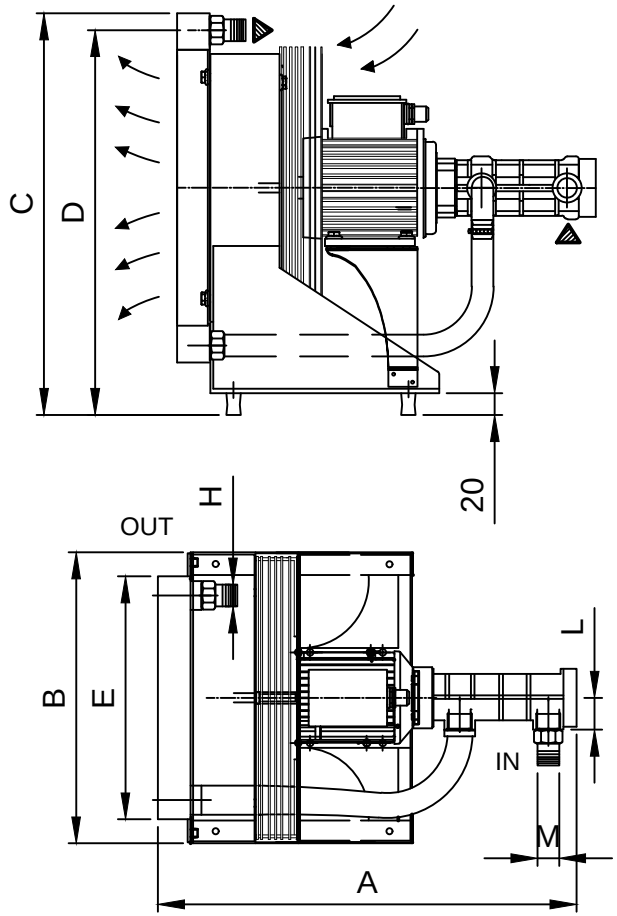


Table of dimension (mm)

Type	A	B	C	D	E	F	H	L	M
NEG#03...	500	317	360	342	184	148	3/4"	33	3/4"
NEG#04...	536	331	400	385	230	178	3/4"	33	3/4"

1.2 - Overall dimensions NEG 06-10-14-20



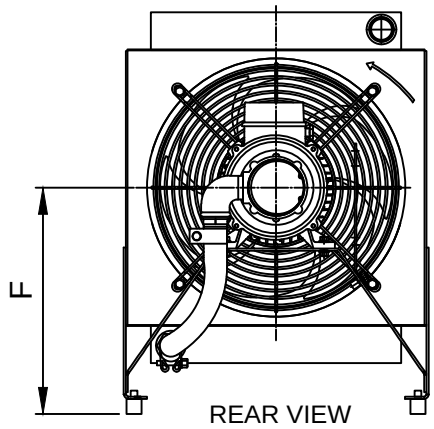
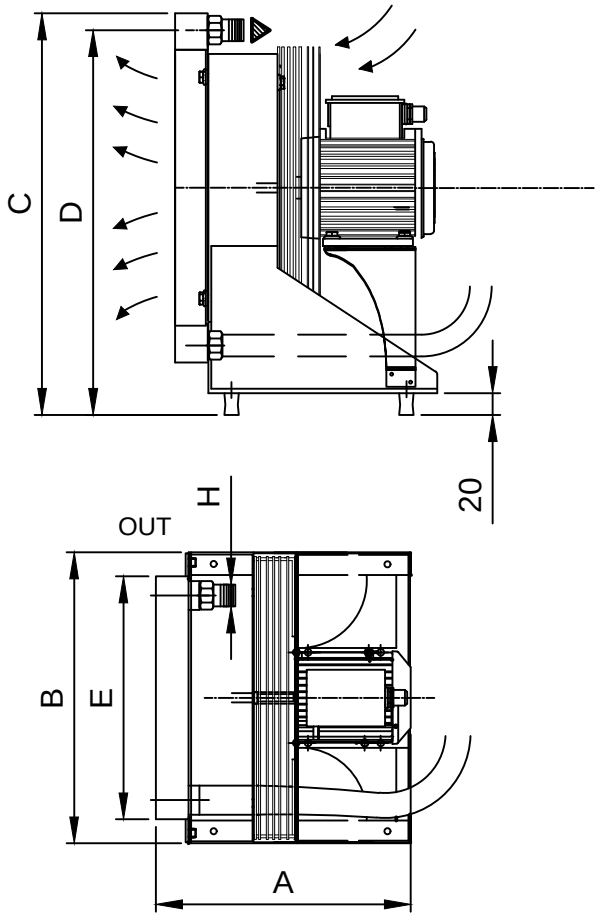


Table of dimension (mm)

Tipo / Type	A	B	C	D	E	F	H	L	M
NEG#06...	578	410	536	513	335	303	1" GAS	44	1" GAS
NEG#10...	578	410	536	513	335	303	1" GAS	44	1" GAS
NEG#14...	637	536	695	675	457	340	1" GAS	44	11/4" GAS
NEG#20...	637	536	695	675	457	340	1" GAS	44	11/4" GAS

1.2.1 Overall dimensions SPLIT 06-10-14



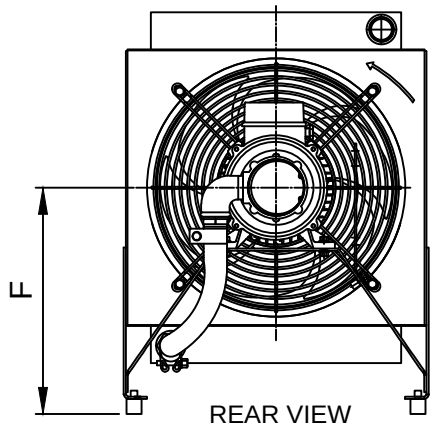


Table of dimension (mm)

Tipo / Type	A	B	C	D	E	F	H
SPLIT#06...	400	410	536	513	335	303	1" GAS
SPLIT#10...	400	410	536	513	335	303	1" GAS
SPLIT#14...	460	536	695	675	457	340	1" GAS

SPLIT VERSION

1.3 - Part number method of assignment

SPLIT / NEG | # | A | B | C |

A — Power yield reference

03 = 3000 kCal
04 = 4000 kCal
06 ** = 6000 kCal
10 ** = 10000 kCal
14 ** = 14000 kCal

B — Model code (*)

500** = T 50Hz 380-415V (1)
50B = T 50Hz 220-230V (1)
50F = T 50Hz 440V (1)
50M = M 50Hz 230V (2)
600 = T 60Hz 380V (1)
60B = T 60Hz 220V (1)
60C = T 60Hz 480V (1)
60D = T 60Hz 575V (1)
60E = T 60Hz 460V (1)
60F = T 60Hz 440V (1)
60M = M 60Hz 220V (2)

C — Electric board

Q** = with electric board and thermostat

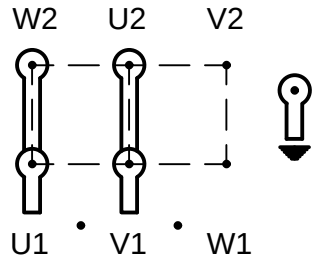
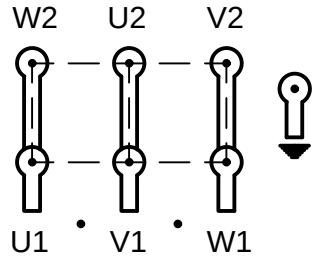
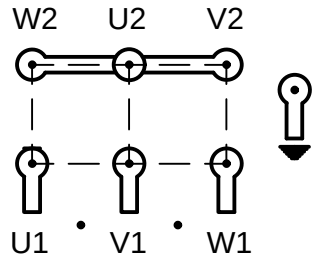
T** = with thermostat

(*) The variation range for the supply voltage is: + / - 10% for frequencies of 50Hz ÷ + / - 6% for frequencies of 60Hz

(1) T = three-phase
(2) M= Monophase

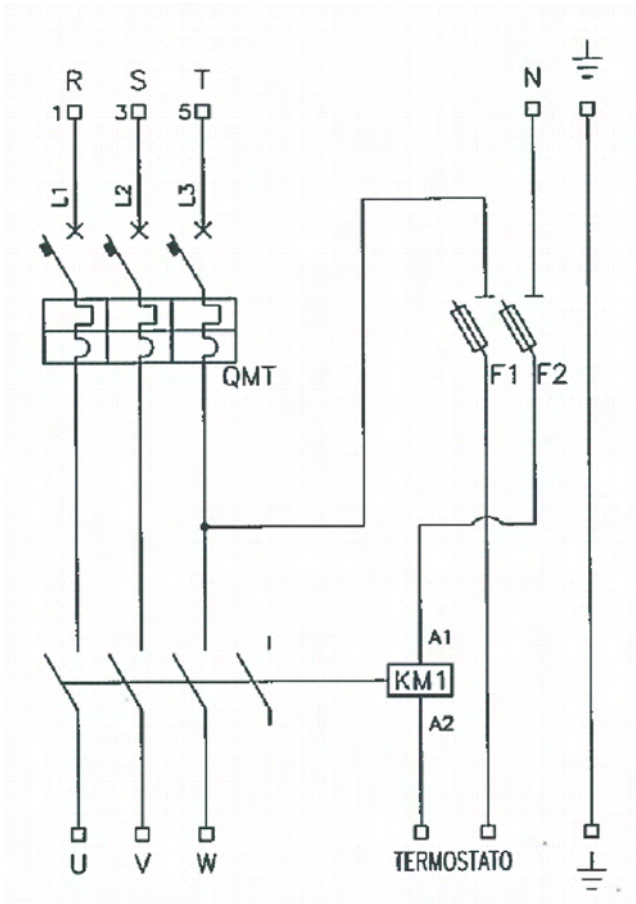
**** SPLIT Version avaiable**

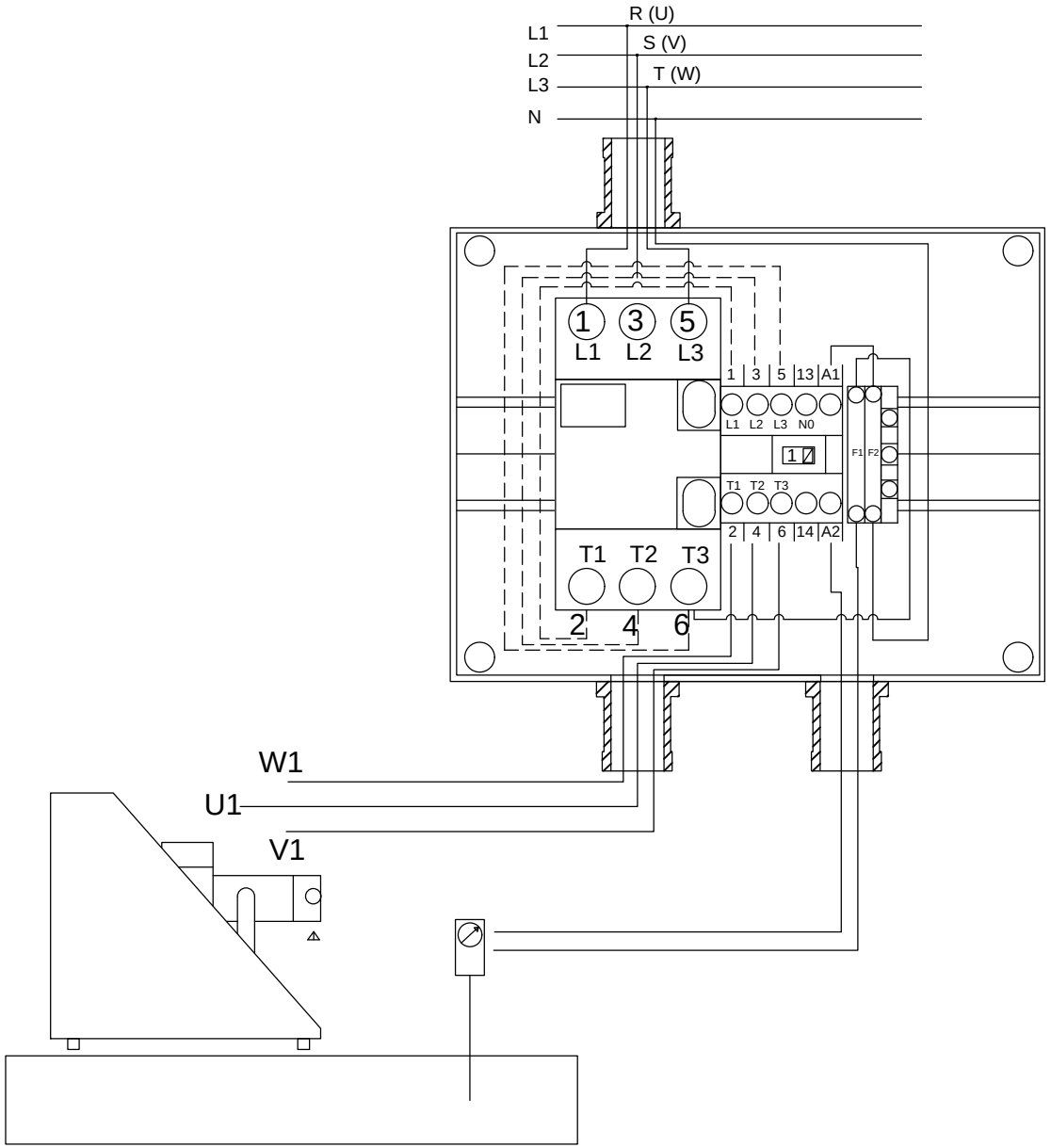
1.4 - Electrical diagrams of engines NEG

Voltage	Frequency	Connection
V	Hz	
220 / 230	50 / 60	
210 / 240	50 / 60	
360 / 420 480 575 460 440	50 / 60 60 60 60 60	

2 - Electric board

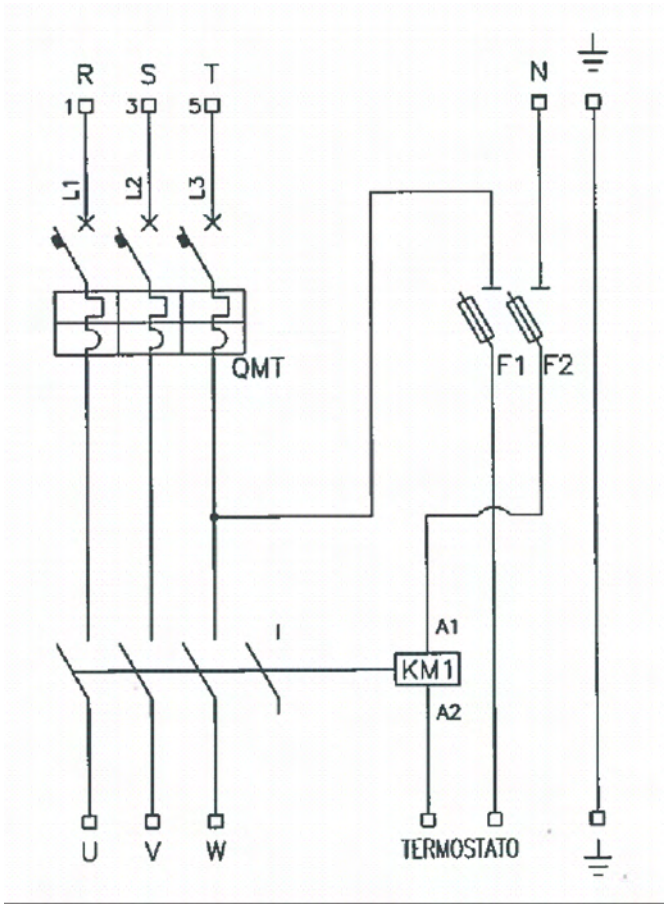
2.1 - 1QE#L (380-415 V 50-60 Hz three-phase)

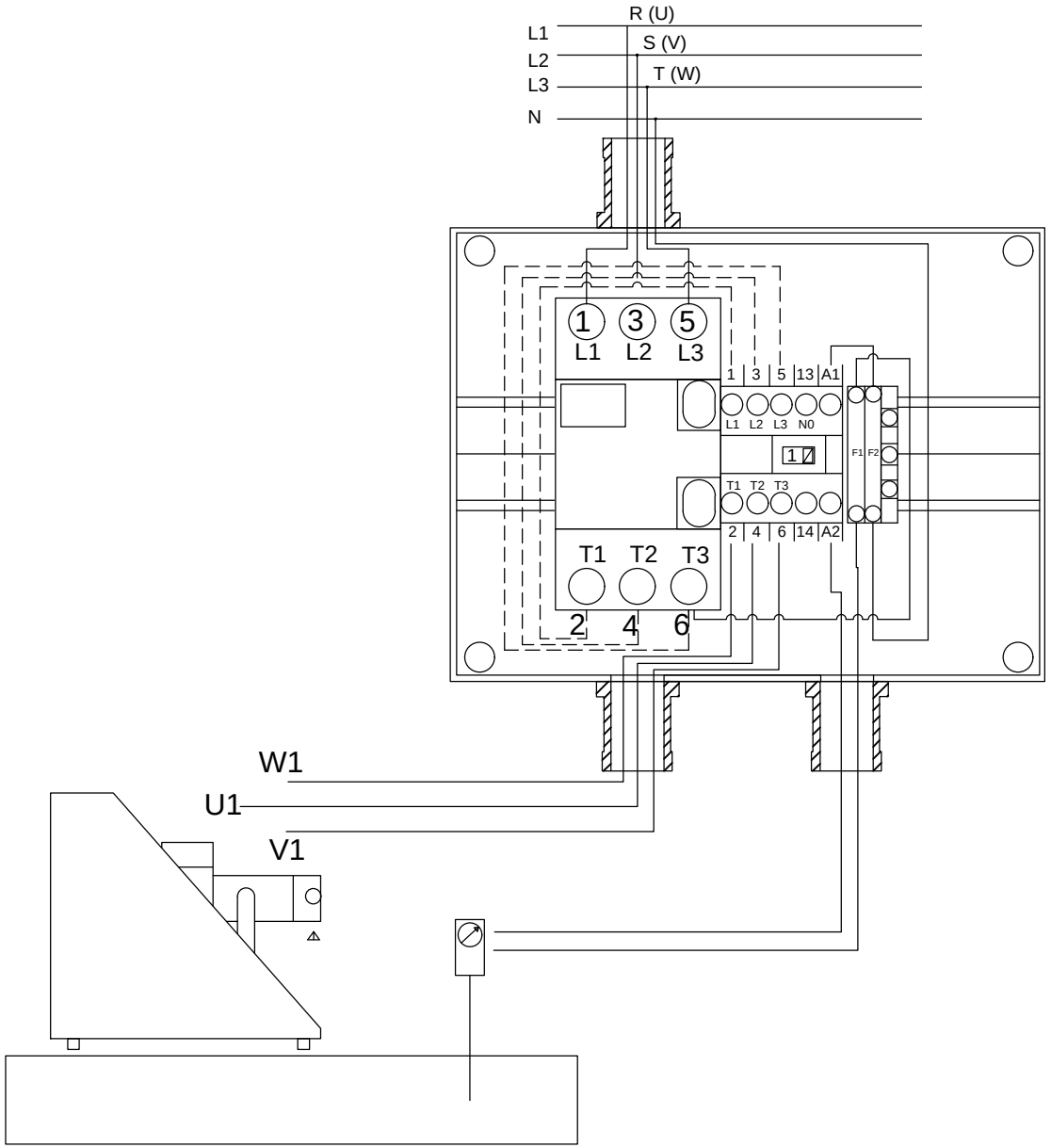




STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

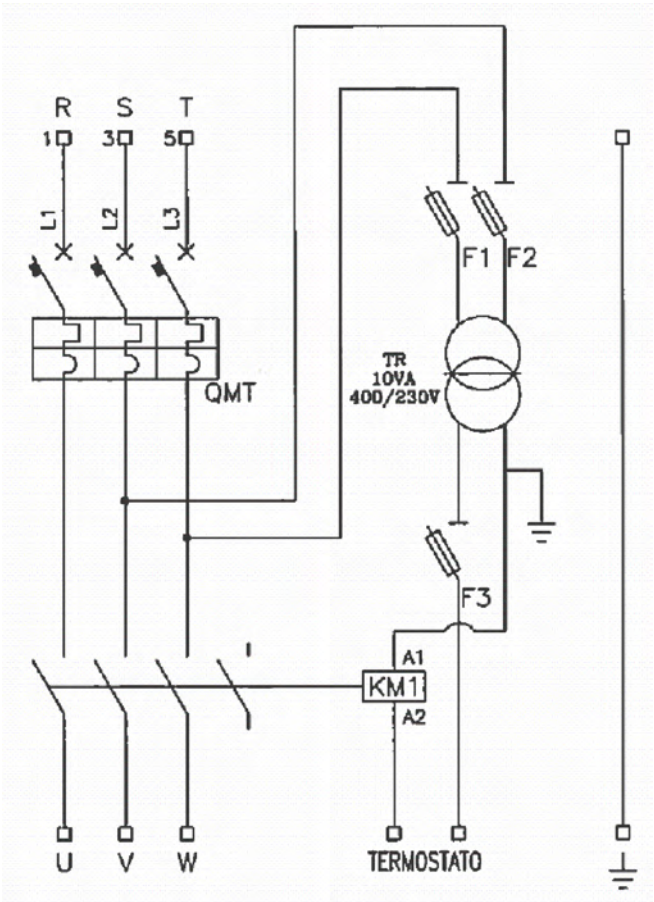
2.2 - 1QE#I (380-415 V 50-60 Hz three-phase)

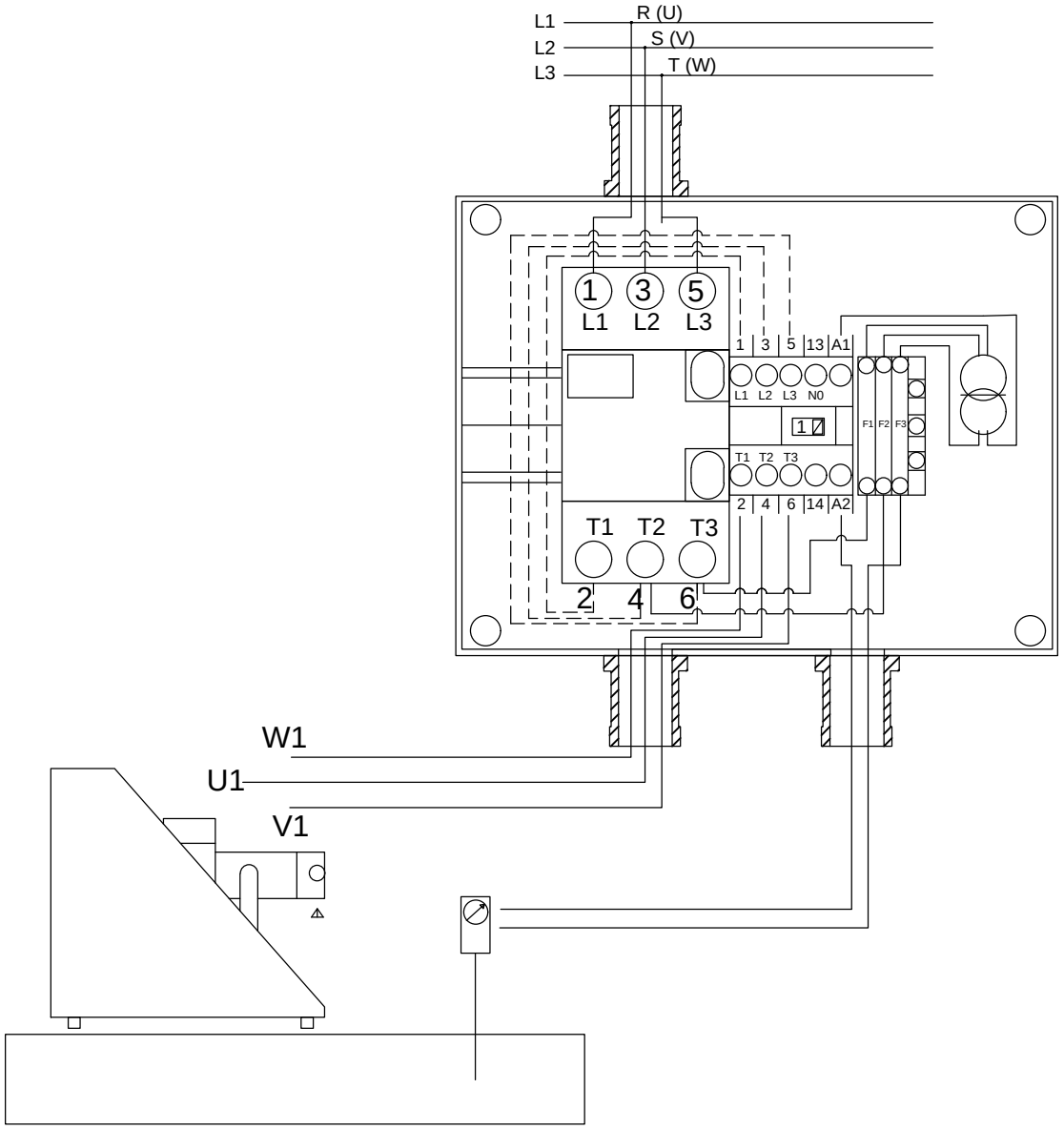




STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

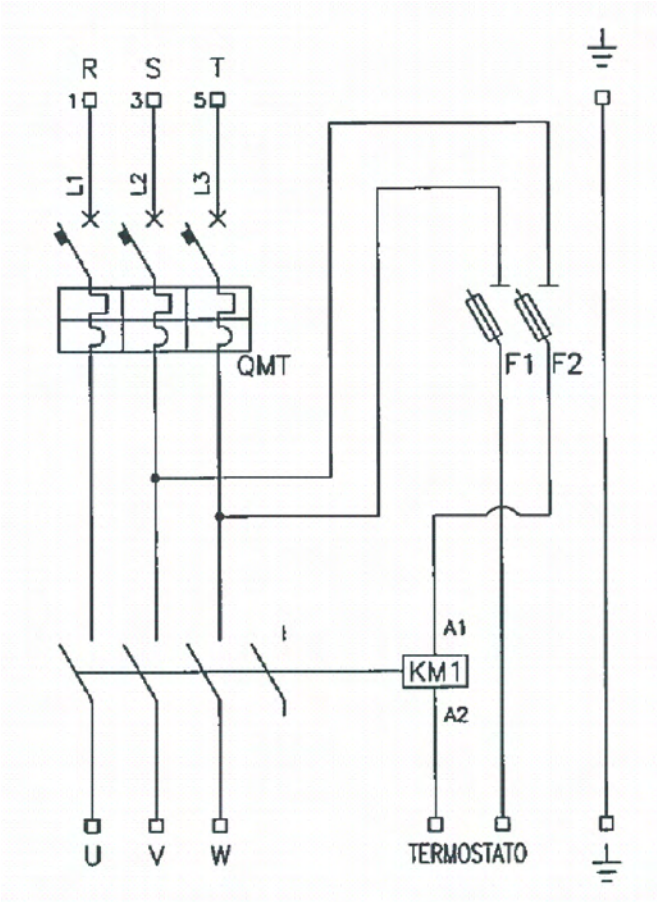
2.3 - 1QE#5 (380-415 V 50-60 Hz three-phase 230V)

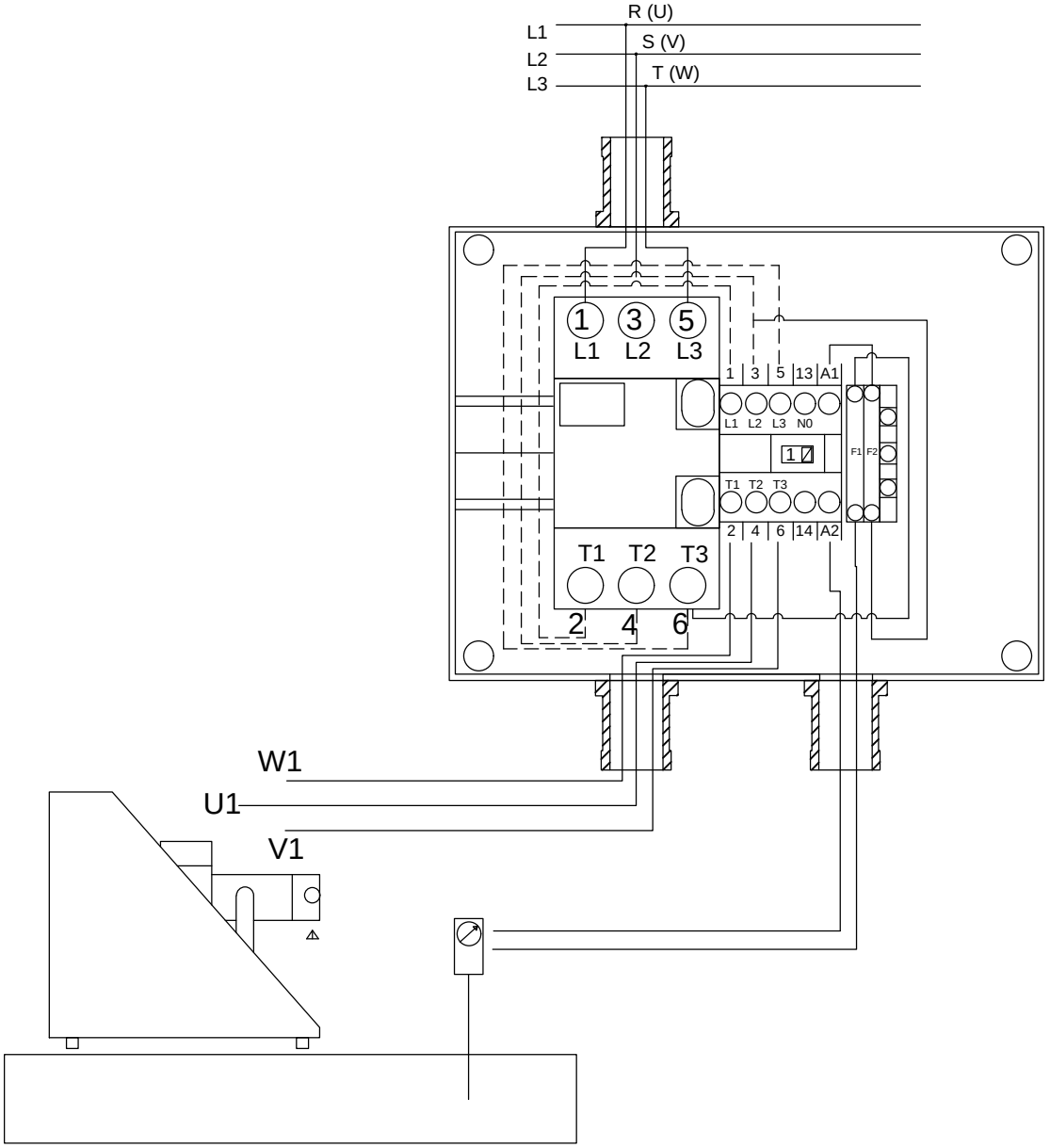




STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

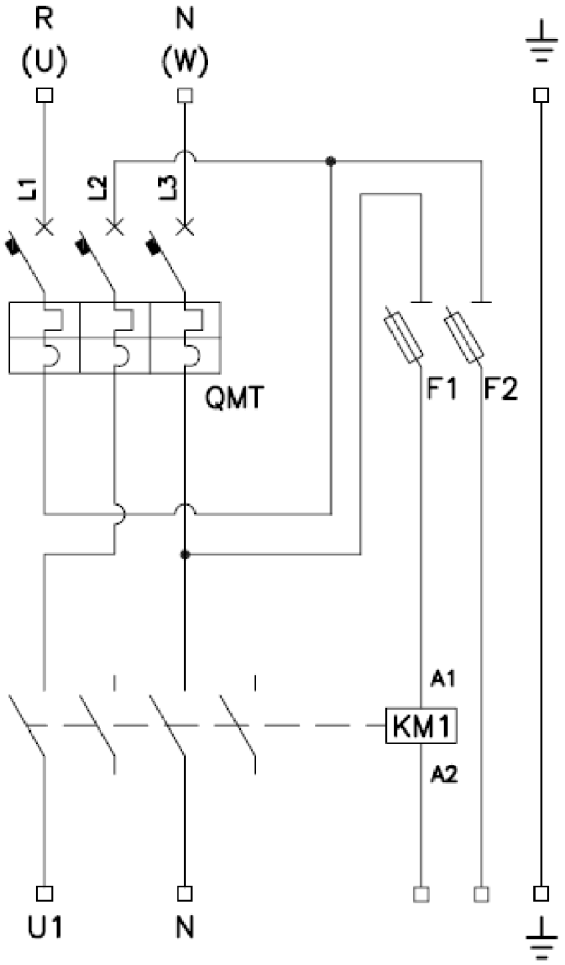
2.4 - 1QE#H (208-230 V 50-60 Hz three-phase)

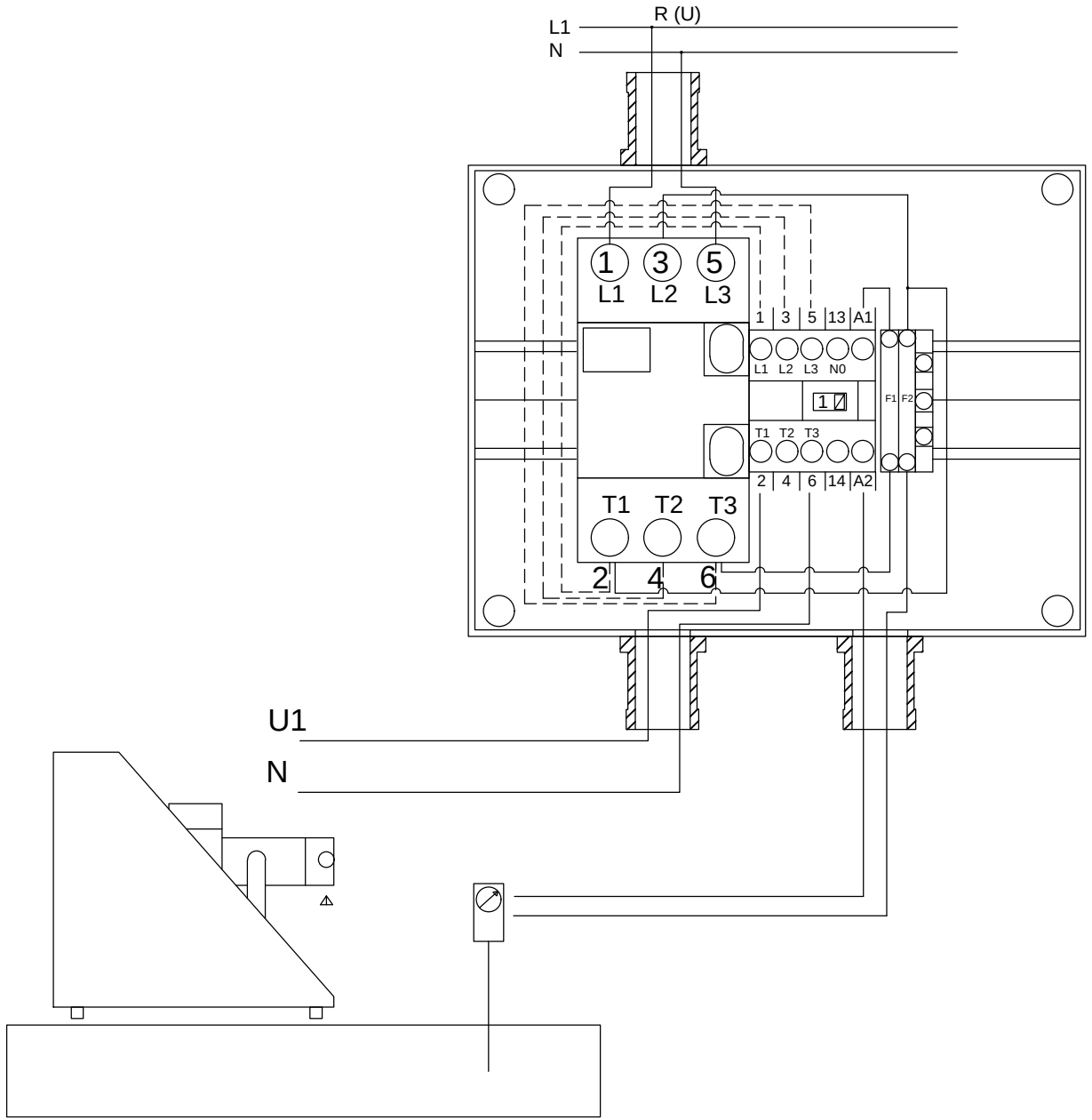




STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

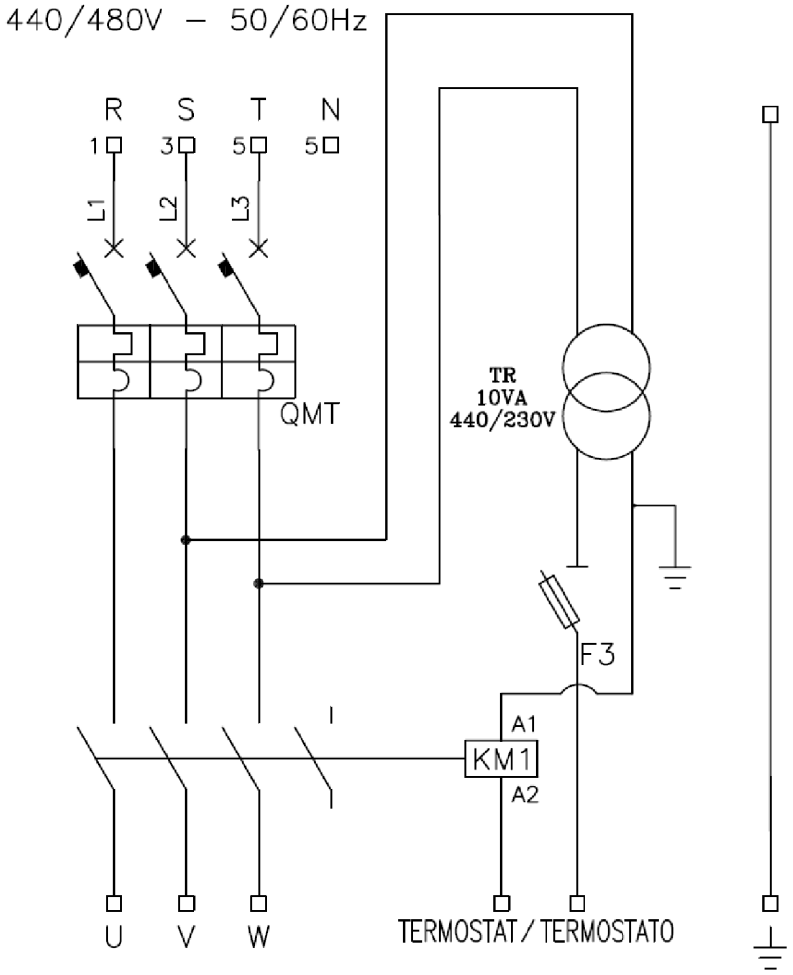
2.5 - 1QE#R (220-230 V 50-60 Hz mono-phase)



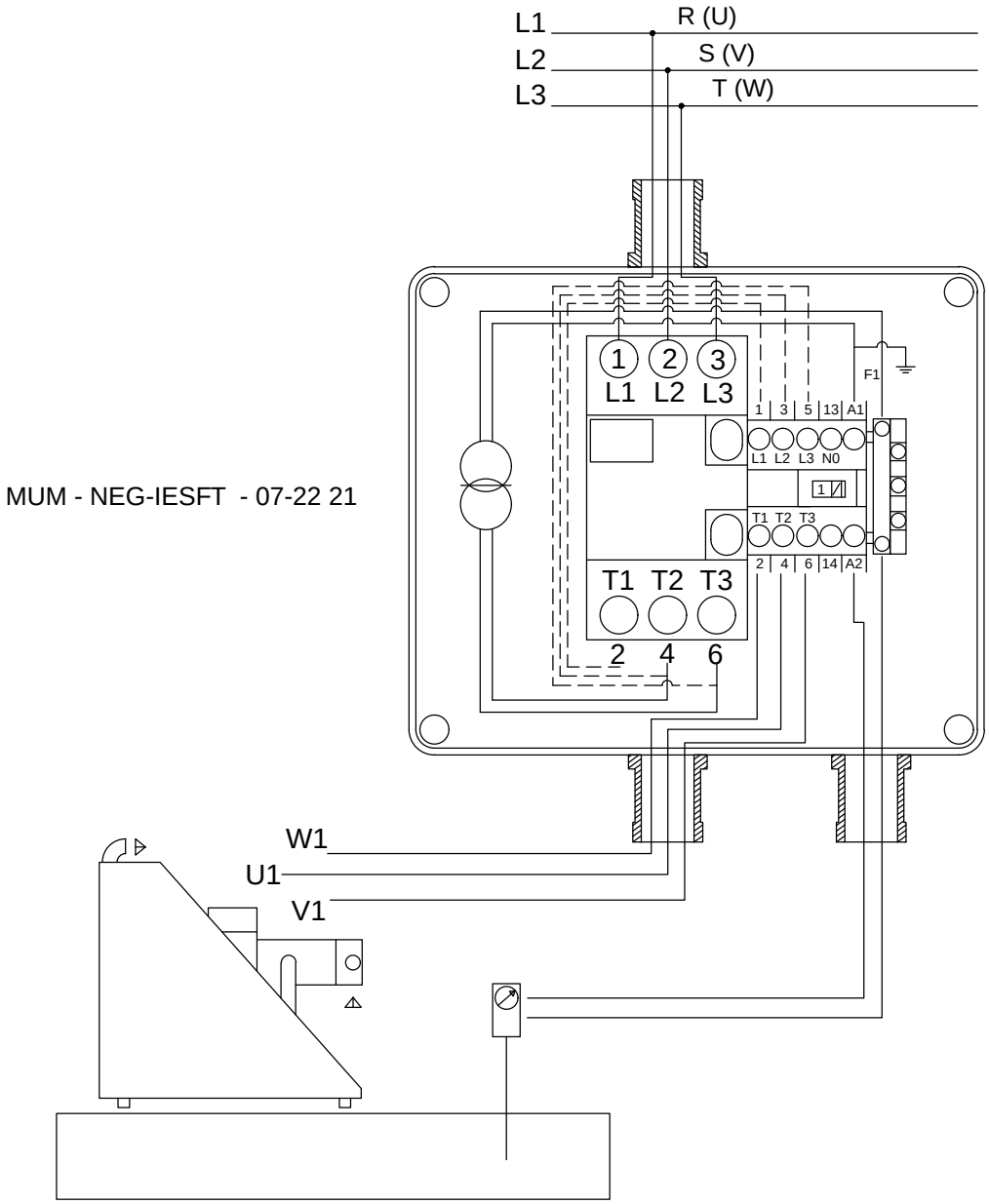


STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

2.6 - 1QE#S (440-480 V 50-60 Hz three-phase)

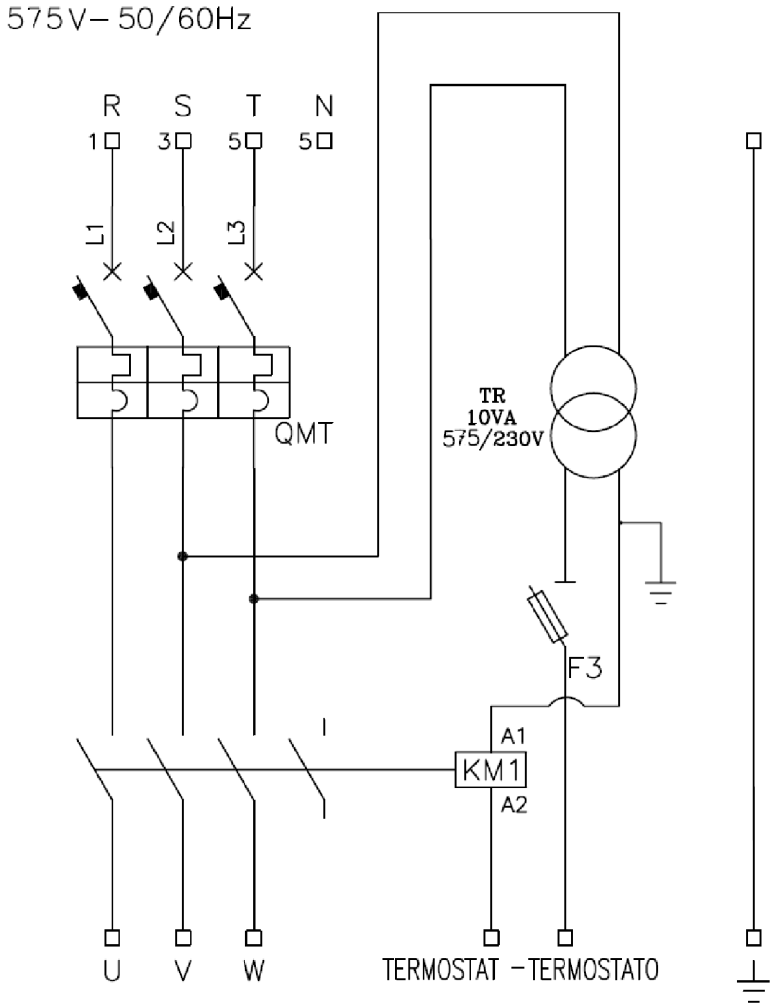


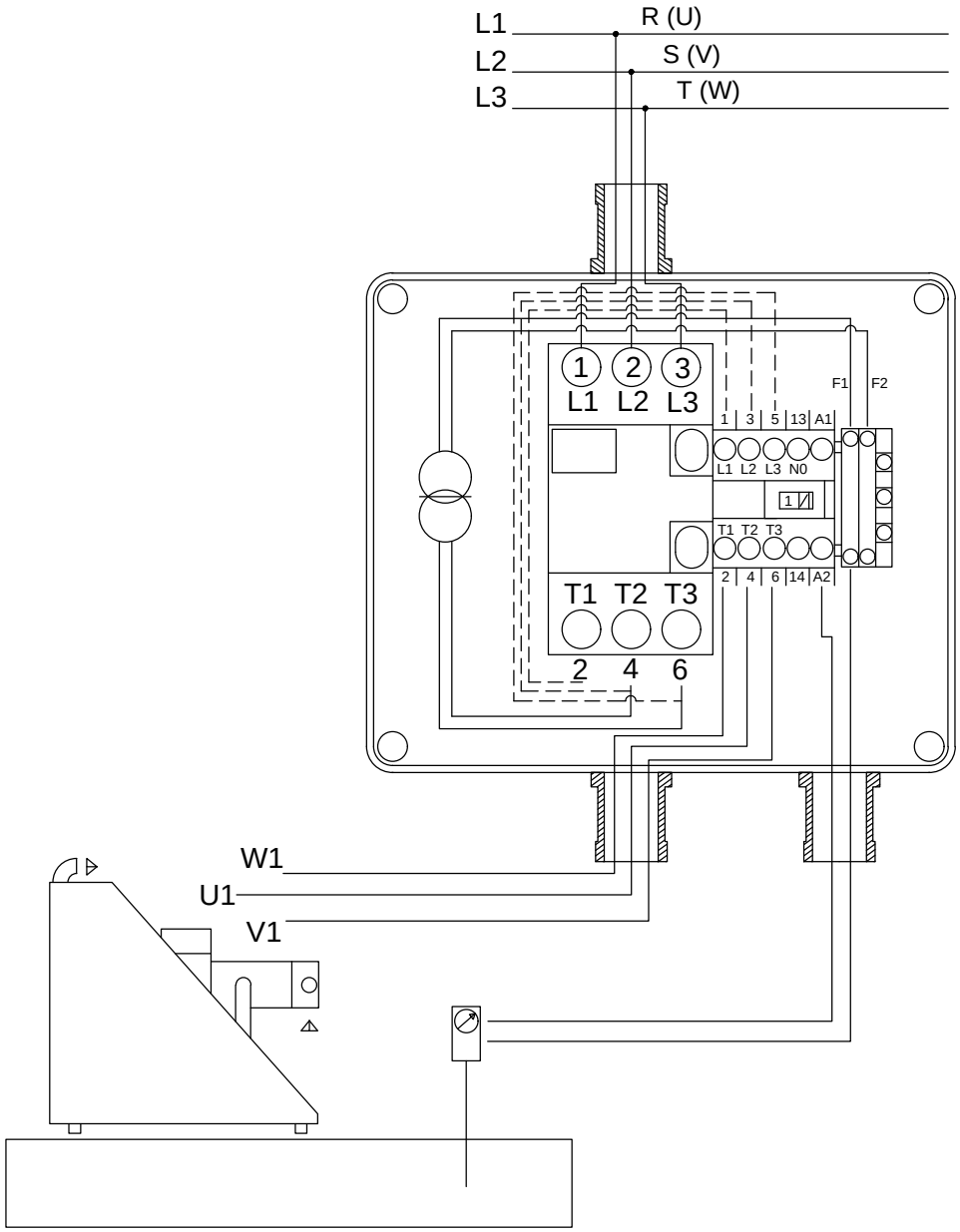
MUM - NEG-IESFT - 07-22 21



STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

2.7 - 1QE#T (575 V 60 Hz three-phase)

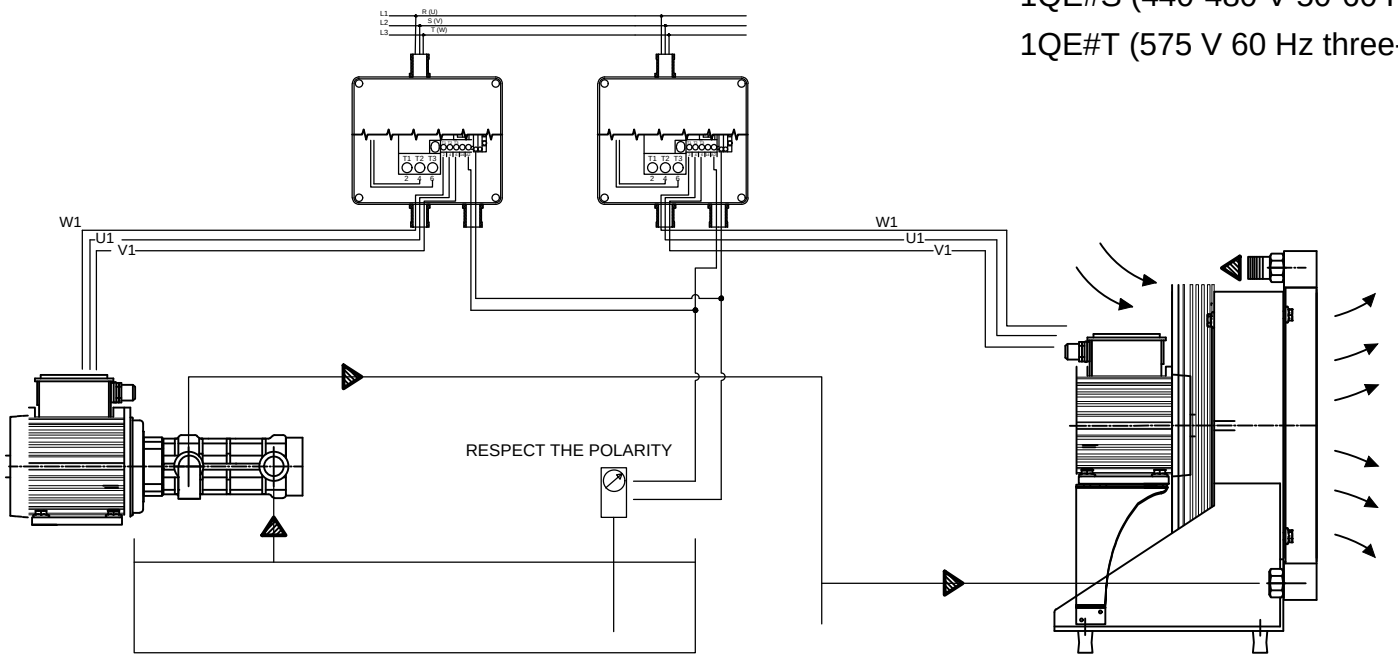




STANDARD : EN 64 - 08 (LOW VOLTAGE REGULATIONS 7323) ; SPECIAL : EN 60 204 - 1

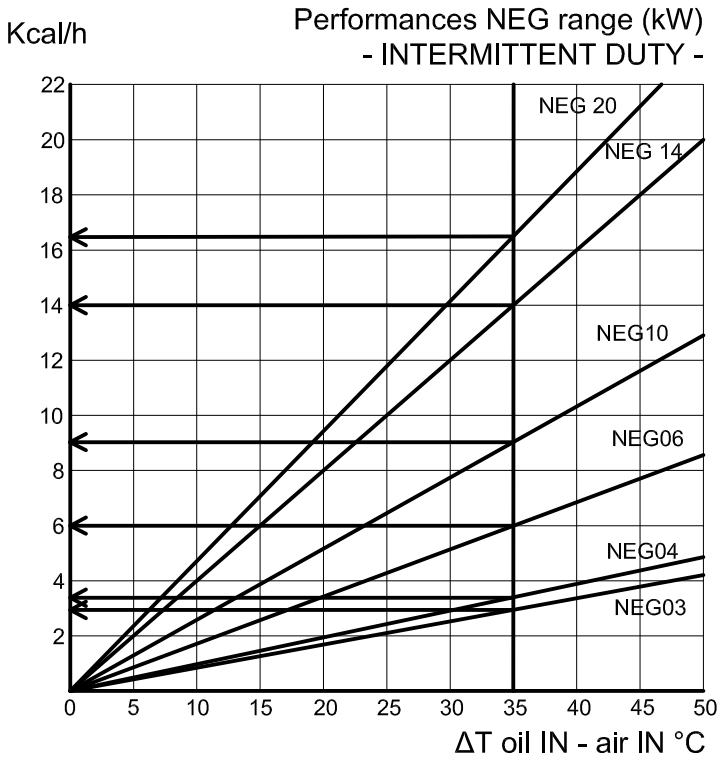
2.8 - SPLIT - Electric board - Connection scheme

1QE#L (380-415 V 50-60 Hz three-phase)
1QE#I (380-415 V 50-60 Hz three-phase)
1QE#5 (380-415 V 50-60 Hz three-phase 230V)
1QE#H (208-230 V 50-60 Hz three-phase)
1QE#R (220-230 V 50-60 Hz mono-phase)
1QE#S (440-480 V 50-60 Hz three-phase)
1QE#T (575 V 60 Hz three-phase)



3 - Technical specifications

3.1 - Thermal exchange diagram



The values indicated in the diagram refer to hydraulic oil with a kinematic viscosity of 32 cSt at 40°C **and an ambiente temperature during testing of 20°C.**

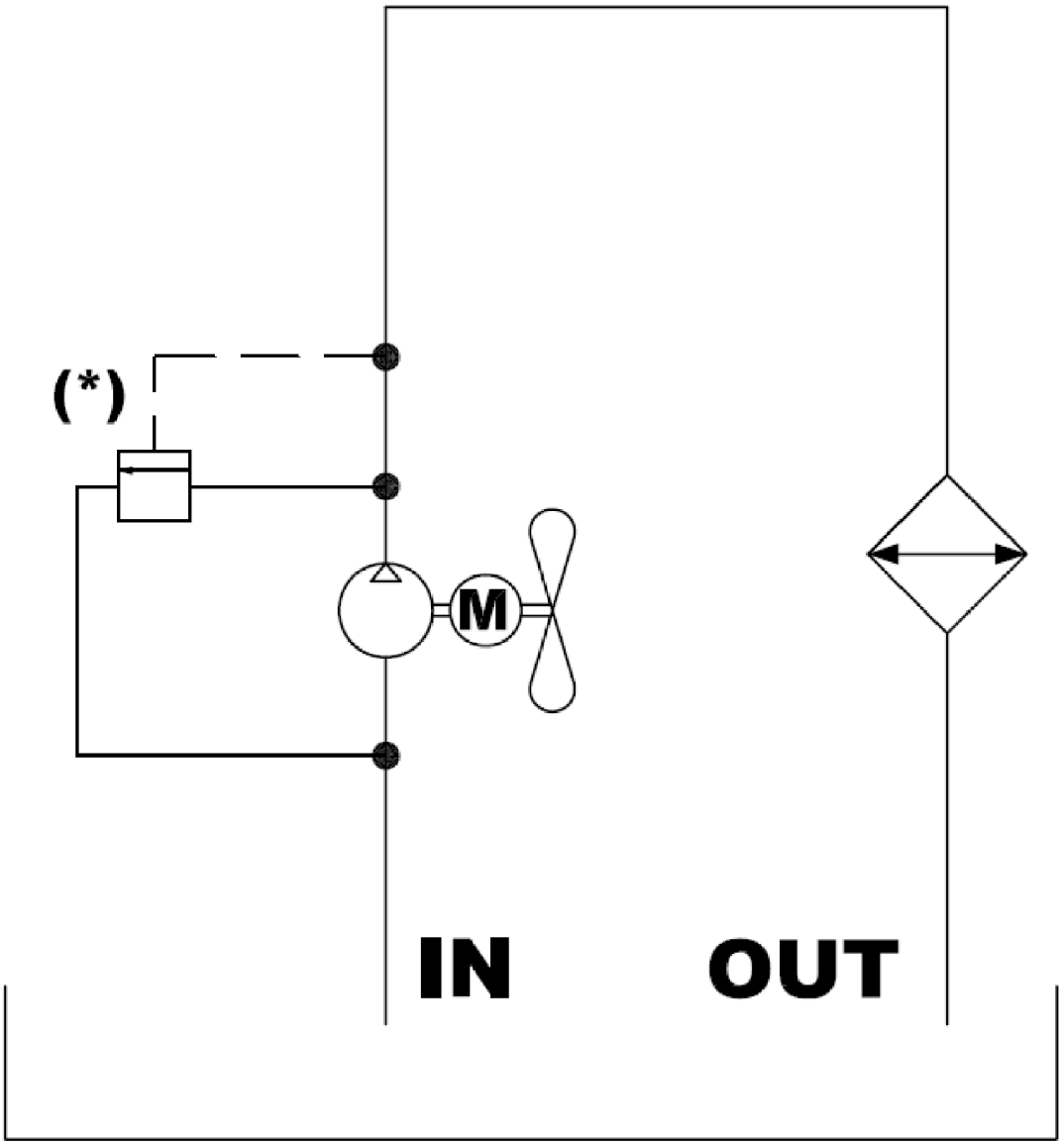
ΔT = T oil IN - T air IN

3.2 - Operating features

		NEG#03		NEG#04		NEG#06		NEG#10		NEG#14		NEG#20	
Dispersion when dT = 35 °C (ambient temperature 20°C)	kW kCal/h BTU	3,49 3000 11900		3,8 3300 13035		6,98 6000 23810		10,5 9000 35550		16.28 14000 55556		19.2 16500 65556	
		50 Hz	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**
Pump flow rate	l/min USGPM	25 6,6	30 7,9	13,5 3,6	16 4,3	30 7,9	36 9,5	38 10	45,5 12	55 14.5	66 17.4	85 22.5	100 26.5
Fan capacity	m³/h CFM	600 353		550 326		1300 764		1300 764		2500 1471		2500 1471	
		50 Hz	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**	**50 Hz**	**60 Hz**
Running speed	giri RPM	2800	3300	1500	1800	1400	1680	1400	1680	1400	1700	1420	1750
Average noise level	dB(A)	70		68		68		68		71		71	
Weight	DaN LBS	17 37		20 40		35 77		35 77		55 121		55 121	
MIN-MAX oil temp	°C °F	20-70 68-150		20-70 68-150		20-70 68-150		20-70 68-150		20-70 68-150		20-70 68-150	
Max admitted pressure	bar PSI	4 58		4 58		4 58		4 58		4 58		4 58	
Required NpsH	bar PSI	-0,4 -5,8		-0,4 -5,8		-0,4 -5,8		-0,4 -5,8		-0,4 -5,8		-0,4 -5,8	

3.3 - Plumbing diagram

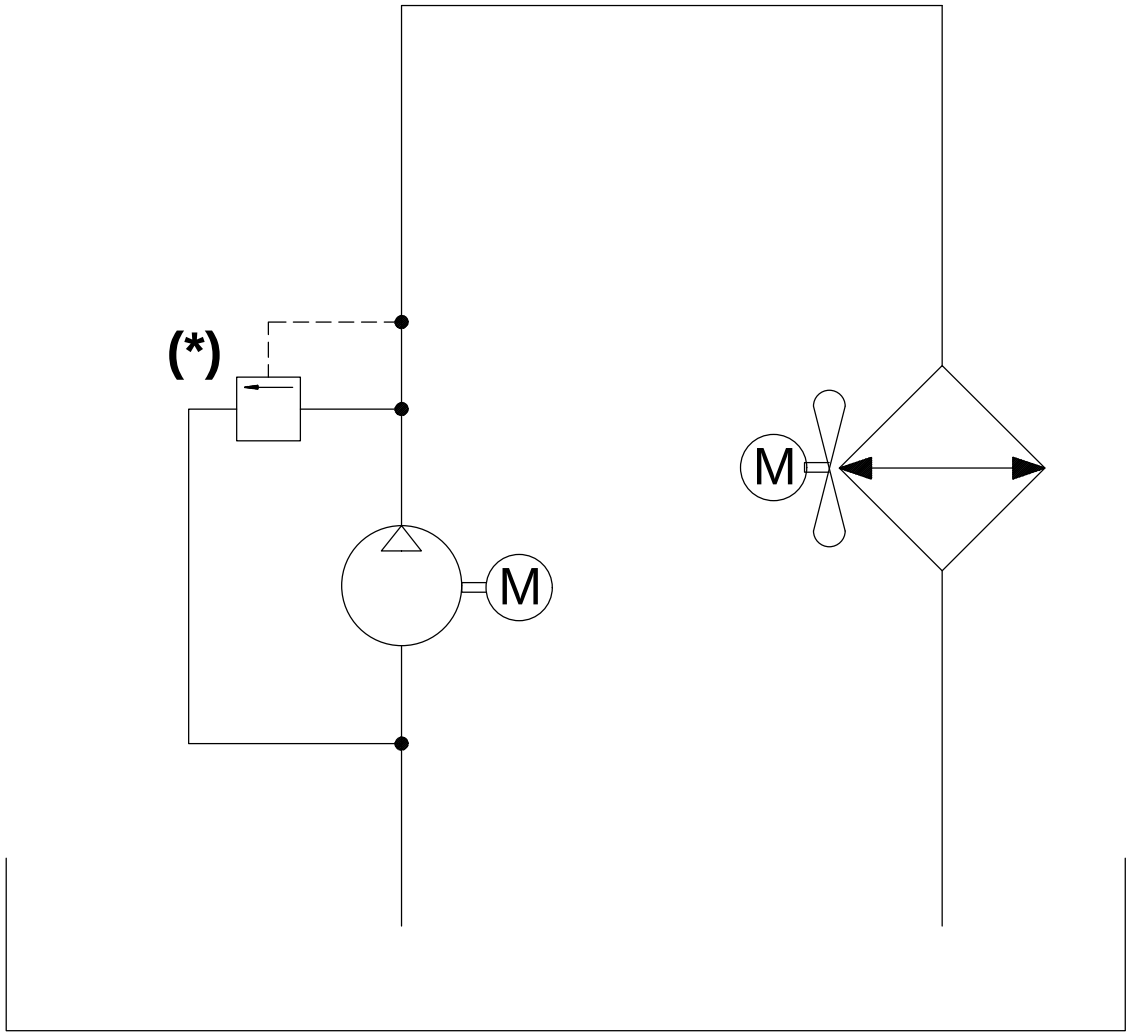
(*) OPTION



3.4 - Plumbing diagram

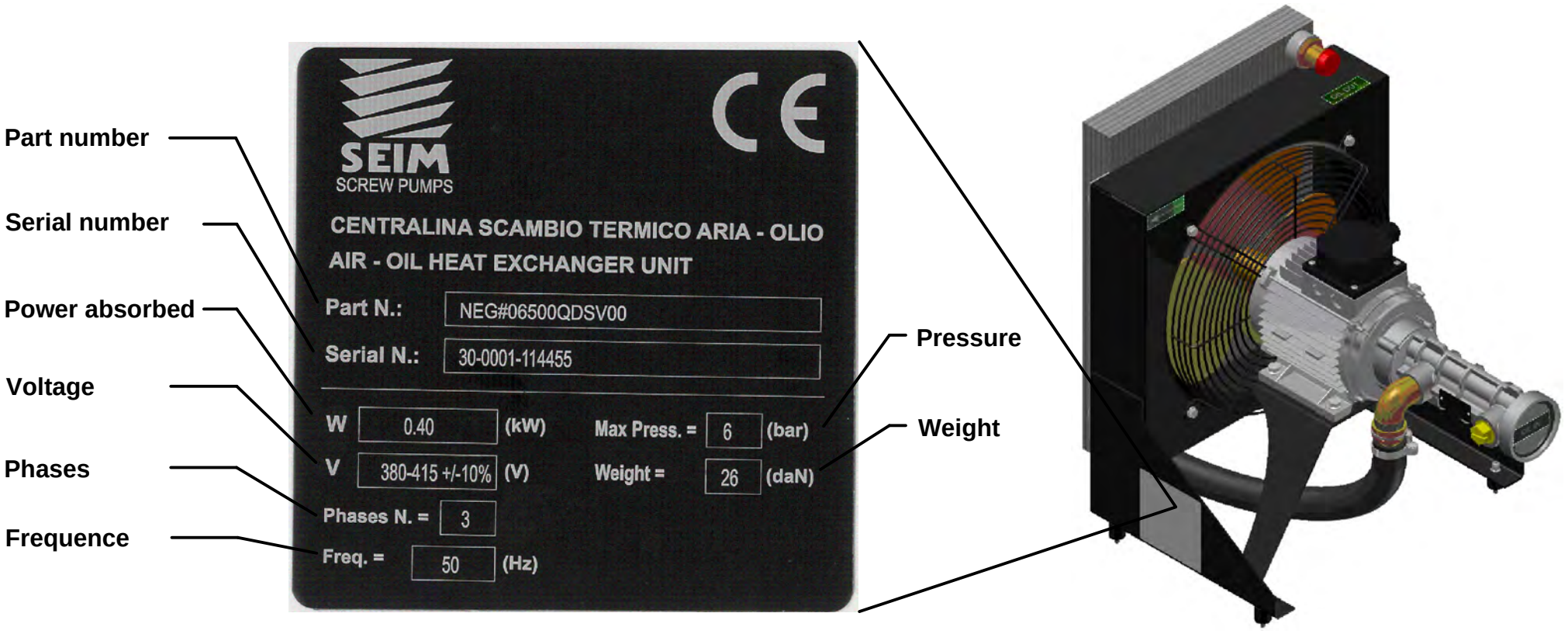
SPLIT VERSION

(*) OPTION

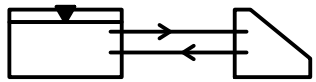
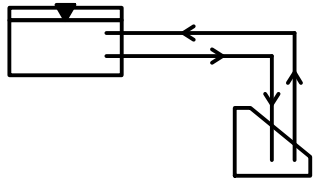
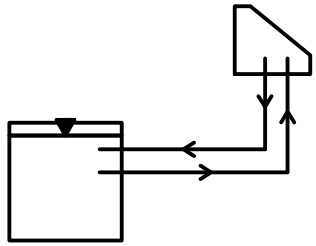


4 - Identification plate

Plate A - Dimension 100 x 100 mm



5 - Length (m) and diameter of pipes (inches)

		Ø pipe					
		3/4"	1"	1 1/4"	1 1/2"	2"	
A	**NEG#03 NEG#04**	3	5	10	(*)	(*)	
	NEG#06 NEG#10	-					
	NEG#14	-	2.5	5	10	(*)	
	NEG#20	-	2.5	5	10	(*)	
B	**NEG#03 NEG#04**	7	9	13	(*)	(*)	
	NEG#06 NEG#10	-					
	NEG#14	-	6.5	9	(*)	(*)	
	NEG#20	-	6.5	9	(*)	(*)	
C	**NEG#03 NEG#04**	-	-	6	(*)	(*)	
	NEG#06 NEG#10	-					
	NEG#14	-	-	-	6	(*)	
	NEG#20	-	-	-	6	(*)	

10 - 50 m : contact SEIM

A - Power pack and cooler almost at the same level

B - Power pack at 1 floor above (4 meters approx) the cooler

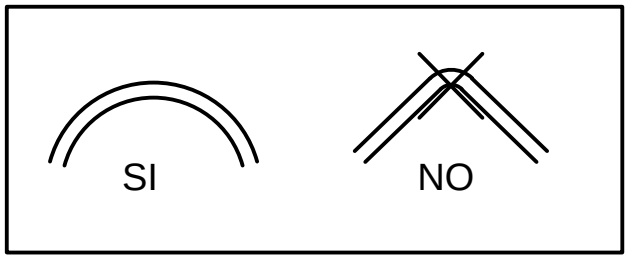
C - Power pack at floor below (4 meters approx) the cooler

SUCTION LINE DEVELOPMENT LENGHT:
Calculated for a typical viscosity of 75 cSt
For every wide elbow take away 2 meters of pipe
For every close elbow take away 3 meters of pipe

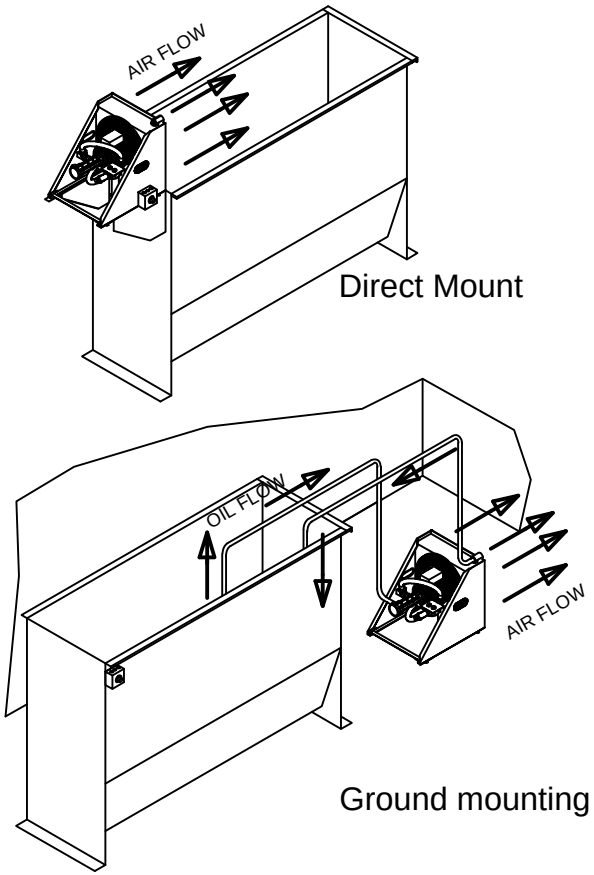
(*) 10 - 50 m : contact SEIM

Do not start the cooler during low winter temperature when the oil viscosity might be higher then the above indicated. Long suction pipe lines need to be filled in with oil (priming) prior to first start up of the pump.

. Be careful to bend or throttle the pipe.



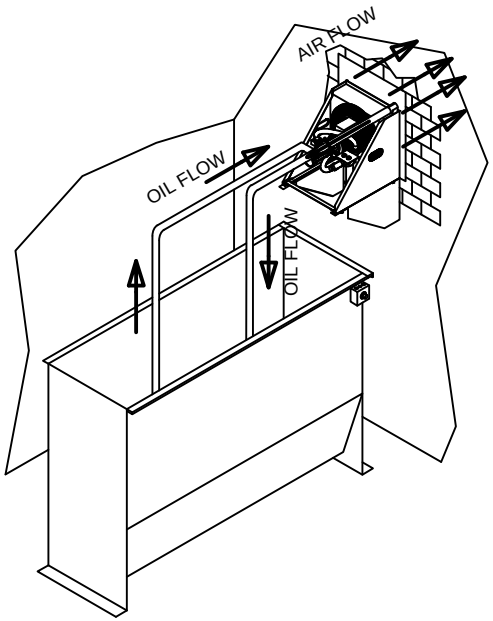
6 - Typical installation



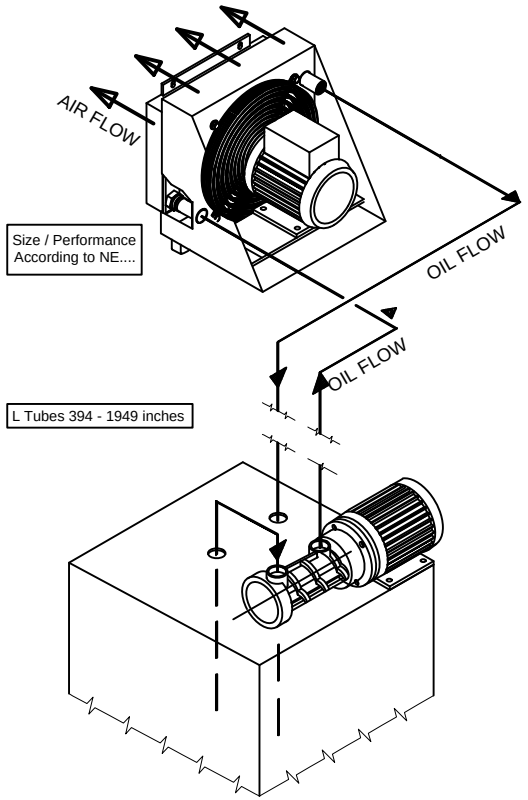
Direct Mount

Ground mounting

Remote Mount



Heat Exchangers
Split Version



7 - General information

7.1 - Introduction

This manual is intended for use by operators of air-oil heat exchanger units of the NEG series.
Although this document contains all the indications and warnings necessary for the correct use of the machine, it is assumed that current safety regulations are complied to in the plants where the machine is installed.
The instruction manual is not an accessory, but an integlal part of the heat exchanger. It should be kept in good conditions, near the power pack, and should ne handled over to any user or final user of the heat exchanger. The manual should not be damaged, has to be kept integral (do no tear pages away) and kept safe from umidity and oil, without deteriorating its readability.

7.2 - Symbols description

/ Important for CE certification

\+ Important notice

COMPULSORY operations which must necessarily be affected and information to which particular attention should be paid in order to avoid the possibility of risks.

7.3 - System description

The SEIM air-oil heat exchanger units are extremely carrying out intended task of cooling the oil in the oleodynamic circuits in which they are installed.
The heart of the circuit consists of a SEIM triple screw pump, highly reliable and silent.
In order to the unit consists of a SEIM unit is installed, the pump is equipped with a safety valve option set a 6 bars, the aim of which is to avoid overpressure of the circuit.
The oil is cooled using air produced by a helical fan mounted coaxially with the screw pump.

/ SEIM units are equipped with fans the blade inclinations of which is adapted to the running frequency of the motor in order to keep noise level down to a minimum.

/ The SEIM heat exchangers are foreseen in 6 power classes: 3.5, 3.8, 7, 10, 16, 21 kW of heat exchanged.

8 - Operating information

8.1 - Operating standard

In roder to ensure the best functioning of the SEIM heat exchanger, the unit should be installed in a clean environment where suitable climatic conditions can be guaranteed (5-40°C).
Installation and maintenance staff should be trained and qualified;
SEIM declines all responsibility for damage or risk occurring due to the incorrect use of the unit.
Particular attention should be paid to ensure a minimum distance of 30 cm between the radiator side of the unit and the wall of the room where the heat exchanger is installed. the fan side should be kept clear and should be at a distance of the least 1 m from the nearest wall.

It is important thet the cooling oil has the required chemical characteristics and density, i.e. hydraulic oil only with a viscosity of between 10-100 cSt should be used; suspended polluttants should be non-abrasive and have a max. diameter of 300 microns. The cooling oil should maintain its kinelatic viscosity characteristics even at high temperatures up to at least 90 °C.

Do not cover the fan protection grate as this would result in the system overheating causing considerable damage.

+ Avoid cleaning with water.

8.2 - Use

SEIM thermal plants been specifically designed for cooling the oil present in oleodynamic circuits.

+ The use of the machine for any other purpose may cause damage to persons or the machine itself.

+ The manufacturer declines any responsibility whatsoever related to the use of oils different viscosity and temperature characteristics than those indicated in the pharagraph 8.1.

8.3 - Motor shutdown

The motor must be turned off before effecting routine cleaning operations and before any eventual repair works is carried out.
In order to ensure maximum safety conditions, the following provisions must be applied:

a) When the machine is running, ensure that the plan it serves is not in a critical phase whereby a temporary pause in the SEIM unit could cause damage.

b) If the above mentioned situations arises, disconnect the mais switch on the cover of the heat exchanger unit.

c) Allow a time lapse of at least two minutes after the mains switch has been turned off before beginning maintenance operations.

8.4 - Machine handling

/ In order to ensure the maximum safety of operators handling the SEIM unit during the transport and installation, or cacle a suitable for lifting loads of at least 80 kg is recommended.

+ Do not overturn the machine during transport; the warnings/ indications provided on the packgong should be followed scrupulously.

8.5 - Recommandations

+ At first motor start-up limit the operation to the short time necessary to check that the sense of rotation corresponds to the one show on the pump nemeplate, so to prevent partial or complete damage of the pump.

+ In case the line will not prime immediately stop the motor within 30 seconds and repete the operation at interval of few seconds. If the line will not prime at all verify the system conformity.

+ Protect the pump from foreign particles by a proper filtration system. Verify the recommended filtration level on the technical data sheet.

8.6 - Problems descriptions and solutions

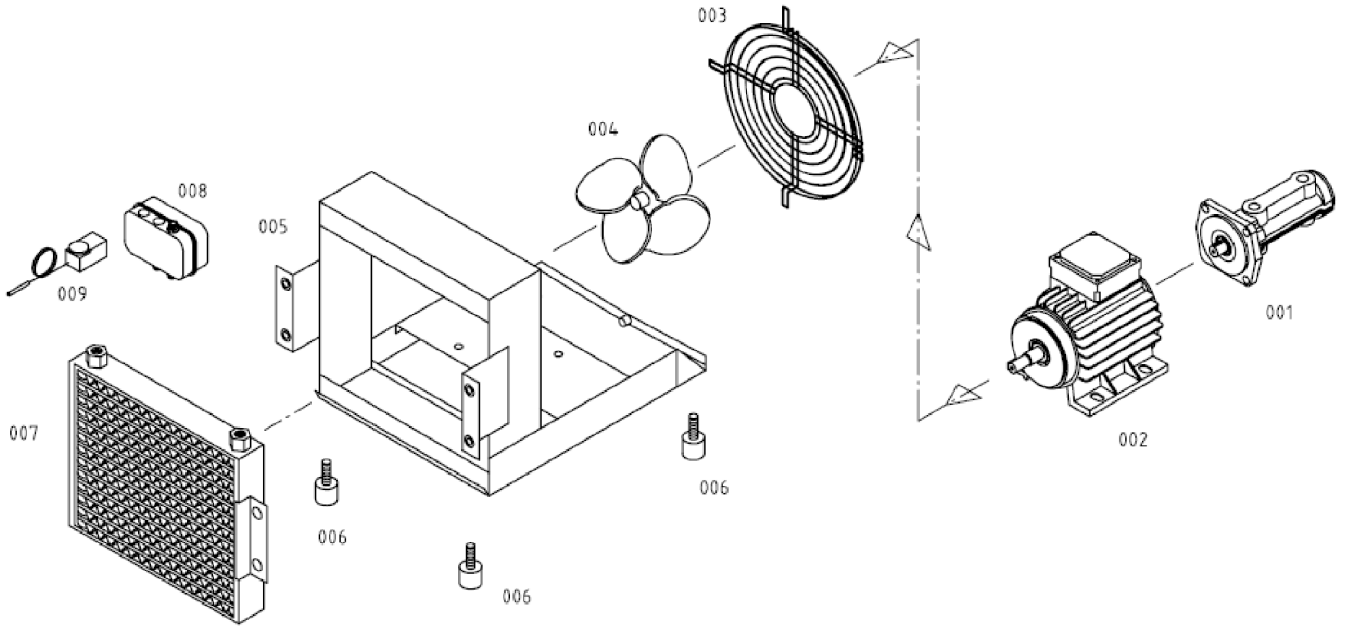
PROBLEM	DESCRIPTION	SOLUTION
Pump-motor wrong rotation sense	The motor turn opposite to the direction shown by the arrow on the label	On three phase motor the connecting cable should be switched
The heat exchanger does not run	When switch on, through electric board, it doesn't run	Change the electric board
	When switch on, without electric board, it doesn't run	Change the motor
Oil leakage	The sliding surfaces of the mechanical seal are damaged by impurity or dry start-up	Change the mechanical seal
	O-ring are worn out	Change the o-ring
	Radiator damaged	Change the radiator

9 - Spare parts

You can ask for spare parts for the heat exchanger series NEG, directly to the manufacturer, by giving the type of heat exchanger on which the component has to be substituted and the type of component itself.

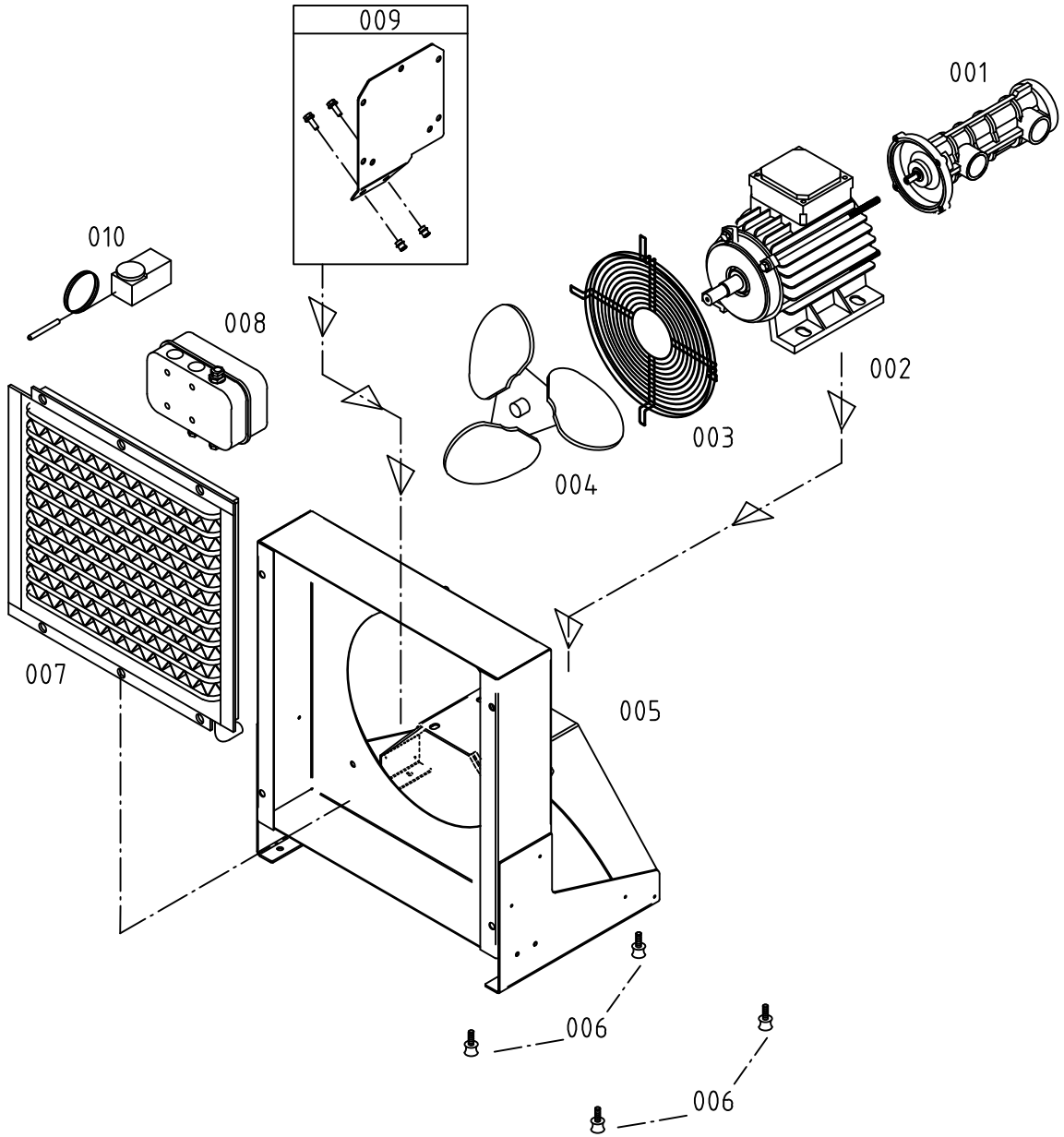
9.1 - Spare parts for NEG 03-04

Nº	Description
001	Three screw pump PQJ
002	Electric motor
003	Protection grid
004	Fan
005	Frame
006	Rubber feet
007	Radiator
008	Electric board (wall mounting)
009	Thermostat



9.2 - Spare parts for NEG 06-10-14

Nº	Description
001	Three screw pump PDA
002	Electric motor
003	Protection grid
004	Fan
005	Frame
006	Rubber feet
007	Radiator
008	Electric board (wall mounting)
009	Bracket
010	Thermostat



mount "008" to "009" or on the wall

9.3 - Spare parts for SPLIT 06-10-14

Nº	Description
001	Three screw pump PDA
002	Electric motor
003	Protection grid
004	Fan
005	Frame
006	Rubber feet
007	Radiator
008	Electric board (wall mounting)
009	Bracket
010	Thermostat