Библиотека СОК

Installation and maintenance manual
Manuel d'installation et de maintenance
Installations- und Wartungshandbuch
Manuale di installazione e di manutenzione
Manual de instalación y de mantenimiento

ROOFTECH
100 ÷ 160

English | Français | Deutsch | Italiano | Español

98.5
↕
158.1

97.4
↕
155.3

HFC 410A

ROOF-MOUNTED AIR CONDITIONING UNIT
UNITE MONOBLOC DE TOITURE
DACHKLIMAGERÄT
UNITÀ D'ARIA CONDIZIONATA DA TETTO
UNIDAD DE AIRE ACONDICIONADO DE TEJADO

IOM RT 02-N-7ALL
Part number / Code / Teil Nummer / Codice / Código : **3990426**
Supersedes / Annule et remplace / Annulliert und ersetzt /
Annulla e sostituisce / Anula y sustituye : **IOM RT 02-N-6ALL**

CE

INSTALLATION INSTRUCTION English

NOTICE D'INSTALLATION Français

INSTALLATIONSHANDBUCH Deutsch

ISTRUZIONI INSTALLAZIONE Italiano

INSTRUCCIONES DE INSTALACIÓN Español

English

CONTENTS

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOX

GENERAL RECOMMENDATIONS

Please read the following safety precautions very carefully before installing the unit.

SAFETY DIRECTIONS

Follow the safety rules in forces when you are working on your appliance.

The installation, commissioning and maintenance of these units should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

Given the requirements of pressurising the system and the high current draws involved, this roof-mounted air conditioning should only be installed by qualified personnel.

The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

Given the high refrigerant temperatures present at certain points in the cooling circuit, access to the area protected by the panels is strictly reserved for qualified personnel only. These panels are easily opened with a special tool. This tool should be kept by the installers or by the maintenance company.

Any wiring produced on site must comply with the corresponding national electrical regulations.

Make sure that the power supply and its frequency are adapted to the required electric current of operation, taking into account specific conditions of the location and the current required for any other appliance connected with the same circuit.

The unit must be EARTHED to avoid any risks caused by insulation defects.

It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

WARNING

Cutoff power supply before starting to work on the appliance.

When making the hydraulic connections, ensure that no impurities are introduced into the pipe work.

The manufacturer declines any responsibility and the warranty becomes void if these instructions are not respected.

If you meet a problem, please call the Technical Department of your area.

If possible, assemble the compulsory or optional accessories before placing the appliance on its final location. (see instructions provided with each accessory).

In order to become fully familiar with the appliance, we suggest to read also our Technical Instructions.

-The informations contained in these Instructions are subject to modification without advance notice.

EQUIPMENT SAFETY DATA

Safety Data	R410A
Toxicity	Low
In contact with skin	Skin contact with the rapidly evaporating liquid may cause tissue chilblains. In case of skin contact with the liquid, warm the frozen tissue with water and call a doctor. Remove contaminated clothing and footwear. Wash the clothing prior to re-use.
In contact with eyes	Vapours have no effect. Liquid splashes or sprays may cause freeze burns. In these cases rinse your eyes with running water or with a solution for eye lavages for at least 10 minutes. Immediately contact a doctor.
Ingestion	In this case, burns may result. Do not attempt to make the patient vomit. If the patient is conscious, rinse the mouth with water. Call a doctor immediately.
Inhalation	In case of inhalation, move the patient to an area with fresh air and provide oxygen if necessary. Perform artificial respiration if the patient has stopped breathing or lacks air. In case of cardiac arrest, perform external cardiac massage. Call a doctor immediately.
Further Medical Advice	Exposure to high concentrations can be dangerous for individuals with cardiac problems, as the presence of catecholamines such as adrenalin in the bloodstream may lead to increased arrhythmia and possible cardiac arrest.
Occupational exposure limits	R410A: Recommended limits: 1,000 ppm v/v 8 hours TWA.
Stability	Stable product
Conditions to avoid	Increased pressure due to high temperatures may cause the container to explode. Keep out of the sun and do not expose to a temperature >50°C.
Hazardous reactions	Possibility of dangerous reactions in case of fire due to the presence of F and/or Cl radicals
General precautions	Avoid the inhalation of high concentrations of vapours. The concentration in the atmosphere shall be kept at the minimum value and anyway below the occupational limits. Since vapours are heavier than air and they tend to stagnate and to build up in closed areas, any opening for ventilation shall be made at the lowest level.
Breathing protection	In case of doubt about the actual concentration, wear breathing apparatus. It should be self-contained and approved by the bodies for safety protection.
Storage Preservation	Refrigerant containers shall be stored in a cool place, away from fire risk, direct sunlight and all heat sources, such as radiators. The maximum temperature shall never exceed 50°C in the storage place.
Protection clothes	Wear boots, safety gloves and glasses or masks for facial protection.
Behaviour in case of leaks or escapes	Never forget to wear protection clothes and brething apparatus. Isolate the source of the leakage, provided that this operation may be performed in safety conditions. Any small quantity of refrigerant which may have escaped in its liquid state may evaporate provided that the room is well ventilated. In case of a large leakage, ventilate the room immediately. Stop the leakage with sand, earth or any suitable absorbing material. Prevent the liquid refrigerant from flowing into drains, sewers, foundations or absorbing wells since its vapours may create an asphyxiating atmosphere.
Disposal	The best procedure involves recovery and recycle. If this is not possible, the refrigerant shall be given to a plant which is well equipped to destroy and neutralise any acid and toxic by-product which may derive from its disposal.
Combustibility features	R410A: Non-inflammable at ambient temperatures and atmospheric pressures.
Containers	If they are exposed to the fire, they shall be constantly cooled down by water sprays. Containers may explode if they are overheated.
Behaviour in case of fire	In case of fire wear protection clothes and self-contained breathing apparatus.

INSPECTION AND STORAGE

At the time of receiving the equipment carefully cross check all the elements against the shipping documents in order to ensure that all the crates and boxes have been received. Confirmation of the type of unit ordered can be obtained by reading the maker's plate (capacity, type and air blowing configuration).

Inspect the units for any visible or hidden damage.

In the event of shipping damage, write precise details of the damage on the shipper's delivery note and send immediately a registered letter to the shipper within 48 hours, clearly stating the damage caused. Forward a copy of this letter to the manufacturer or their representative.

Never store or transport the unit upside down. Protect unit at the job side from domages made by others. When unit is stored on the ground, avoid mud store unit leveled.

WARRANTY

The appliances are delivered fully assembled, factory tested and ready to operate.

Any modification to the units without the manufacturer's prior approval, shall automatically render the warranty null and void.

The following conditions must be respected in order to maintain the validity of the warranty:

- Commissioning shall be performed by specialised technicians from technical services approved by the manufacturer.
- Maintenance shall be performed by technicians trained for this purpose.
- Only Original Equipment spare parts shall be used.
- All the operations listed in the present manual shall be performed within the prescribed schedule.

INSTRUCTIONS FOR FILLING IN THE "1st START-UP FORM"

(SEE APPENDIX)

It is the responsibility of the OWNER to make sure that the "1st Start-up Form" is fully filled in by the authorized Service Centre and sent by registered mail - notified in advance by fax - to the After-Sales Service of the constructor within 8 days of the initial start-up.

Failure to receive the form on the part of the constructor will render the guarantee null and void.

The OWNER must then keep the logbook for at least the duration of the guarantee.

The constructor reserves the right to request a copy of the "Machine Logbook" at any moment whatsoever. Failure to fill in the logbook may render the guarantee null and void.

THE WARRANTY SHALL BE NULL AND VOID IN THE EVENT OF NON-COMPLIANCE WITH ANY OF THE ABOVE CONDITIONS.

CONTENTS OF PACKAGE

1 **ROOFTECH**

1 Installation and maintenance manual

1 Control manual

PRESENTATION

The machine has been designed for an outdoor mounted application, ensuring perfectly weatherproof circulation of the air within the compartments.

Packaged ROOFTECH units are designed to safeguard to environment and reduce building energy consumption by the use of R410A as a refrigerant and double skin 50 mm panels for greater thermal insulation.

All the units are factory charged and tested, and ready to install to guarantee quick and efficient commissioning.

A modular design enables the system to be adapted perfectly to the client's configuration. The present manual defines the characteristics of the base module.

TECHNICAL SPECIFICATIONS

Models		100	120	140	160
Compressor type		Scroll Tandem	Scroll Tandem	Scroll Tandem	Scroll Tandem
Compressor quantity		4	4	4	4
Number of circuit		2	2	2	2
Refrigerant		R-410A			
Charge of circuit	kg	SEE NAME PLATE			
Number of blower		1	1	1	1
Type		Centrifugal			
Nominal indoor airflow	m^3/h	20 000	22 500	27 500	30 000
Pressure available	Pa	350	350	350	350
Number of outdoor fans		2	2	2	2
Type		Helicoid			
Total nominal external airflow	m^3/h	41 000	41 000	41 000	41 000

You can adjust the available static pressure and flow by adjusting the variable motor pulley fitted to the blower (SEE AIR BALANCING).

OPERATING LIMITS

Cooling mode * : +20°C/+43°C

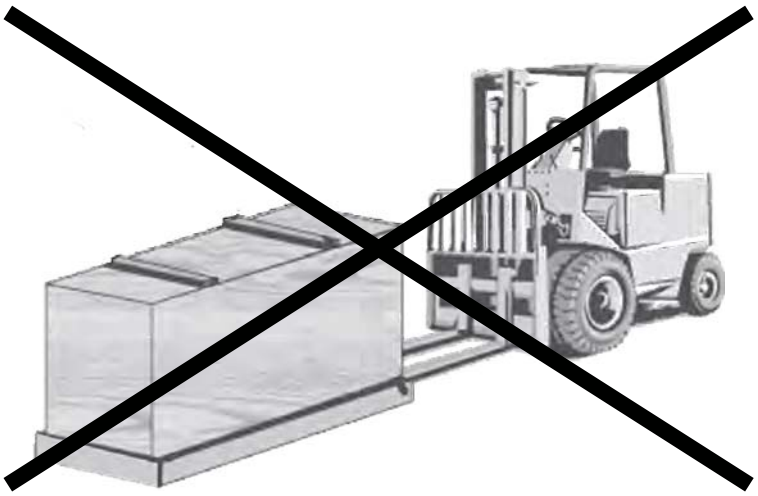
Heating mode : -7°C/+21°C

* without all seasons kit

DIMENSIONS

SEE APPENDIX

HANDLING

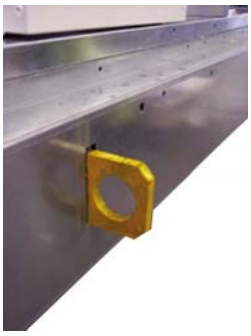


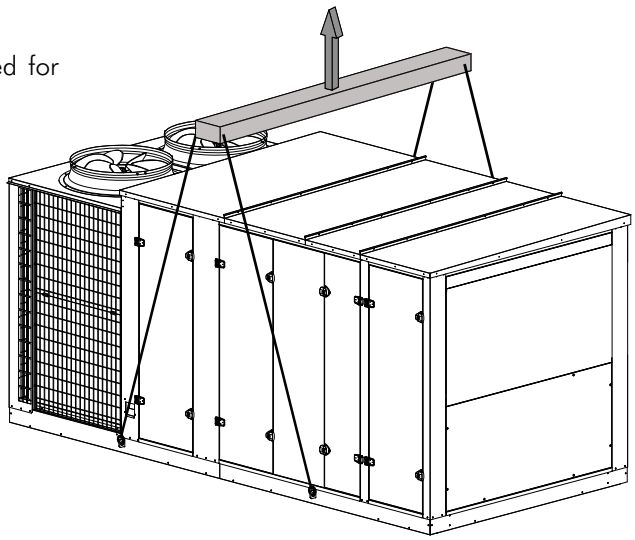
HANDLING WITH A FORKLIFT TRUCK PROHIBITED

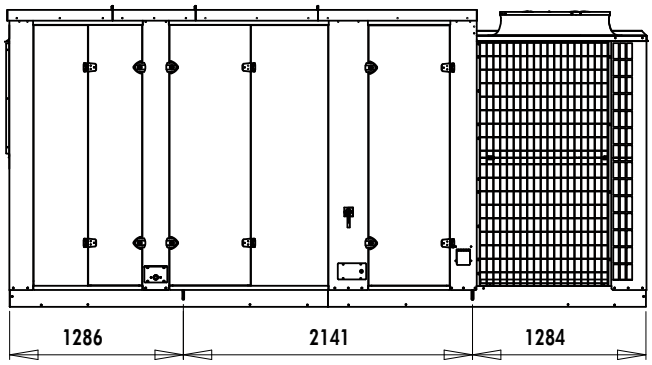
Four sling attachment points are provided for lifting.

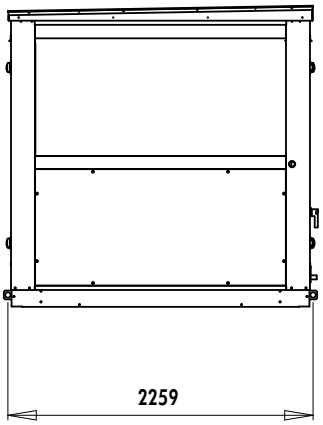
Rings attached rigidly to the unit structure are intended for completely safe handling.

A sling spreader is required to avoid damaging the edges of the unit. (mini: 2300mm)









NET WEIGHT

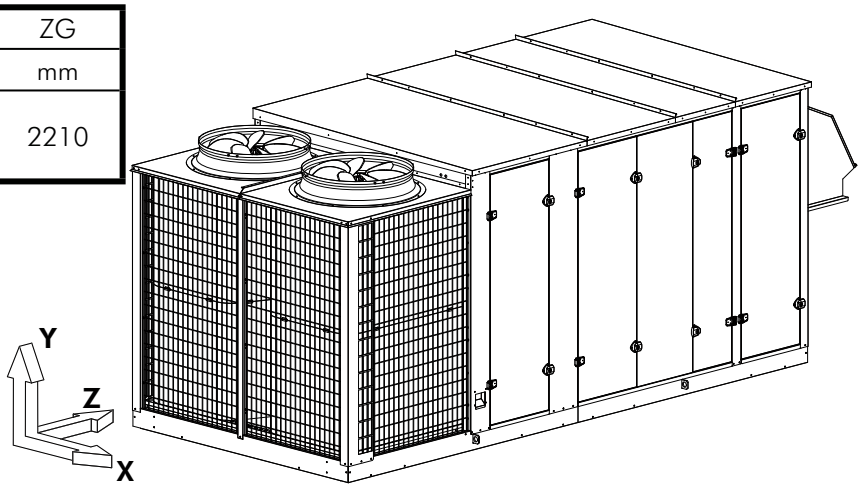
Models		Base module				option		
		100	120	140	160	Burner gas	filter EU7	3 flaps
Weight	Kg	1815		1950		387	188	365

THE LIFTING POINT MUST SUIT THE UNIT'S CENTRE OF GRAVITY (SEE CHART BELOW).

POSITION OF CENTRE OF GRAVITY FOR THE BASE MODULE

Models	XG	YG	ZG
	mm	mm	mm
base module	1104.5	1340	2210

Approximative length



ELECTRICAL SPECIFICATIONS

UNIT WITHOUT HEATING

Models		100		120		140		160	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Maximum current	A	123	136	127	140	139	152	167	180
Total starting current	A	209.6	223	231.6	245	228.6	242	289.6	303
Fuse rating aM	A	160	160	160	160	160	160	200	200

UNIT WITH HEATING TYPE CH1

Models		100		120		140		160	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3 /400 /50Hz							
Capacities **	KW	63							
Maximum current	A	233	246	237	250	249	262	277	290
Total starting current	A	319.6	333	341.6	355	338.6	352	399.6	413
Fuse rating aM	A	250	250	250	250	250	315	315	315

UNIT WITH HEATING TYPE CH2

Models		100		120		140		160	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3 /400 /50Hz							
Capacities **	KW	105							
Maximum current	A	306	319	310	323	322	335	350	363
Total starting current	A	392.6	406	414.6	428	411.6	425	472.6	486
Fuse rating aM	A	315	315	315	400	400	400	400	400

IMPORTANT

** for all other capacities, please consult us.

A main fuse must mandatorily be provided on the power supply.

- ➢ Fuses not supplied
- ➢ Cables not supplied

INSTALLATION

The unit is not designed to withstand weights or stresses from adjacent equipment, pipe work or constructions. Any foreign weight or stress on the unit structure could lead to a malfunction or a collapse with dangerous consequences for personnel and property. In such an event, the warranty shall be null and avoid.

PLACE OF INSTALLATION AND REQUIREMENTS

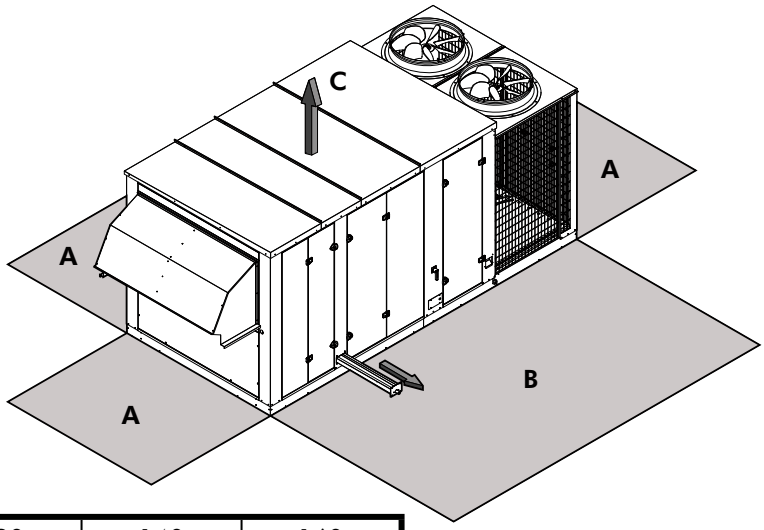
- ➢ The building structure must be capable of carrying the weight of the unit during operation.
- ➢ The place of installation must not be subject to flooding.
- ➢ The ROOFTECH should be installed on a flat, clean surface without any obstacles. The surface area must be sufficient to spread the weight of the unit over the building structure.
- ➢ Ensure that the recommended free clearances around the unit are maintained to avoid any risk of malfunctions.
- ➢ The installer is responsible for providing the weaterproof seal between the building and the ROOFTECH. The installer must be fully versed in the practice of roof mounted equipments and must comply with the recommendations and rules detailed in the Technical Directives.
- ➢ In order to avoid risk of condensation and energy losses, all outdoor ducting and piping must be insulated.
- ➢ The unit's tightness must not be deteriorated by power supply connections.

The unit supporting base shall be supplied as indicated in the manual. There could be a risk of personal injury or damage to property in the event of the unit being incorrectly supported.

CLEARANCE

The drawing below illustrates the minimum service clearances to be provided around the unit to guarantee access and proper operation. Take particular care not to obstruct the outdoor coil in order to ensure proper air circulation through the appliance.

In addition to the service clearances stated on the dimensions sheet, it is imperative that safe and appropriate access to the unit is provided for repairs and servicing.



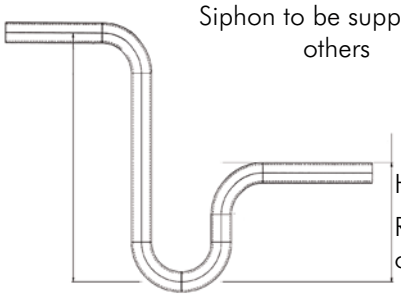
Models		100	120	140	160
A	mm	1500	1500	1500	1500
B*	mm	1800	1800	1800	1800
C	mm	3000	3000	3000	3000

* Removable condensates tray.

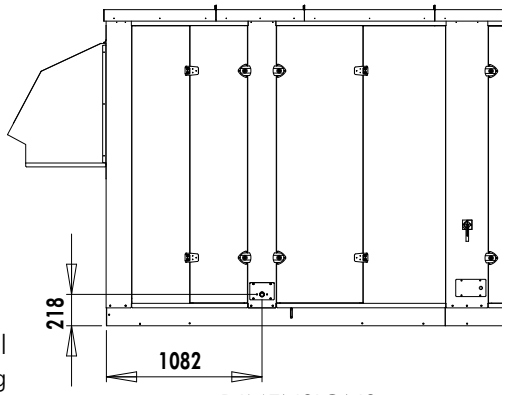
UNIT LOCATION

1. It must be high enough above the roof or ground to permit snow allowance and good drainage of water with siphon
2. Keep duct connections outside the building to a minimum to reduce energy losses.
3. In addition to the service clearances noted above it is essential that provision is made for adequate and safe service access to the appliance.

CONDENSATE DRAIN PAN



The installer must imperatively supply a siphon.



DIMENSIONS
FOR THE BASE MODULE

CAUTION

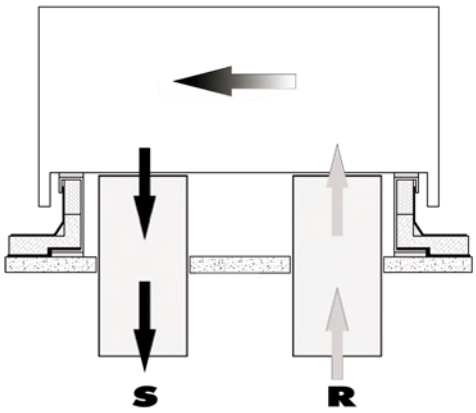
For Heatpump models, where the outdoor temperature is likely to fall below +1°C, provide a system to prevent the siphon from freezing (e.g. heating cord).

ROOF CURB

The main purpose of the roof curb is to provide weatherproof passage, supply and return air down to the building from the ROOFTECH.

In this way, all connections (air, electricity) to the building are not free above the roof. The curb provides a perfect roofing thermal insulation and weight distribution between the ROOFTECH and the building.

The roof curb should be used for a downward configuration at supply and return air. The roof curb guarantees the perfect weathertight sealing between the building structure and the appliance.



Two versions are available:

- ➢ Assembled and non-adjustable version
- ➢ Non-assembled and non-adjustable version

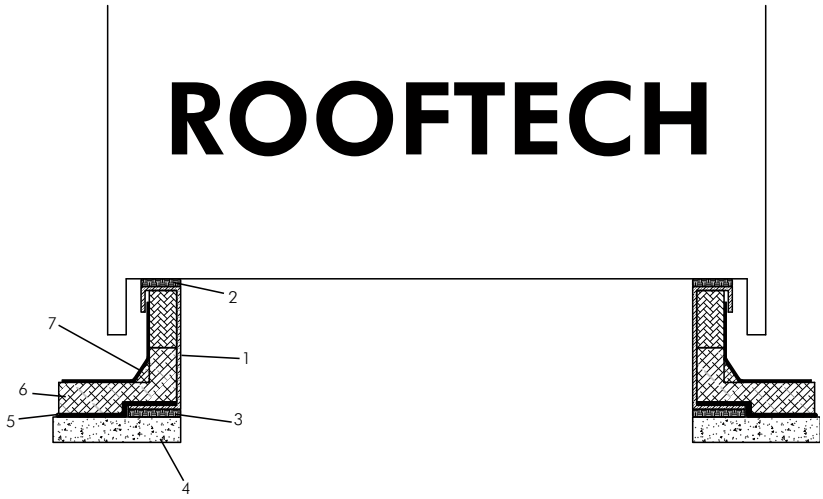
DIMENSIONS

SEE APPENDIX

The frame of the curb receiving the unit must be leveled. The unit must slot perfectly into the roof curb.

POSITIONING OF THE ROOF CURB ON THE ROOF (CUTAWAY VIEW)

1	Roof curb
2	Rubber seal (supplied with the roof curb)
3	Hard vibration-absorbent rubber (option)
4	Concrete beam or slab
5	Vapour sealing film (supplied by the roofer)
6	Roof insulation (supplied by the roofer)
7	Sealant roofskin (supplied by the roofer)



In order to break a thermal bridge between the roof curb and the unit, a seal (N°2) (50 X 5 mm) is supplied with the roof curb. This seal must be glued by the installer on the roof curb to avoid metal to metal contact and reduce eventual vibration transfer.

Once installed and fastened to the roof structure, the outside wall of the curb must be fully integrated in the roof insulation.

The minimum insulation thickness required is 25 mm and the surface must be protected by a bituminous coating (or any other equivalent material) to ensure a perfect weatherproof seal.

CONFIGURATION OF THE UNIT

GENERALITIES

The unit is designed to be connected to a duct work. The duct network pressure loss must be related to available outdoor pressure. Should it not be the case, a discharge protection grille and a device creating sufficient pressure drop must be supplied by the installer to avoid excess current draw generated at the motor (see blower curves in the appendix)

4 discharges and 5 intakes air configurations are available.

For each configuration, note the dimensions of the discharge air duct to be provided before the unit arrives on site. Make sure that it is fireproof and that it does produce toxic smoke in the event of a fire in the building. The interior surfaces must be smooth and cleanable to avoid contamination of the circulated air.

To ensure itself of a good air tightness and to water enters the machine and the air duct.

NEVER DRILL ANY HOLES IN THE AIR TREATMENT ZONE OF THE UNIT. THE MANUFACTURER'S WARRANTY WILL BE CANCELLED IN THE EVENT OF ANY WATER LEAKS RESULTING FROM THE DRILLING OF HOLES IN THE CASING.

SUPPLY AIR

- Downward discharge: S1
- Sideway discharge: S2L or S2R
- Top discharge: S4

AIR INTAKE

- Return air from below: R1
- Return air from the side: R2L or R2R
- Return air from the rear: R3
- Return air from the top: R4

Lower blowing (S1) or lower air intake (R1) require the presence of a roof curb. For other versions, given the unit's weight, analyse the installation to avoid any risk of damage to the bracket on which the unit will be placed.

DUCT OUTLET DIMENSIONS

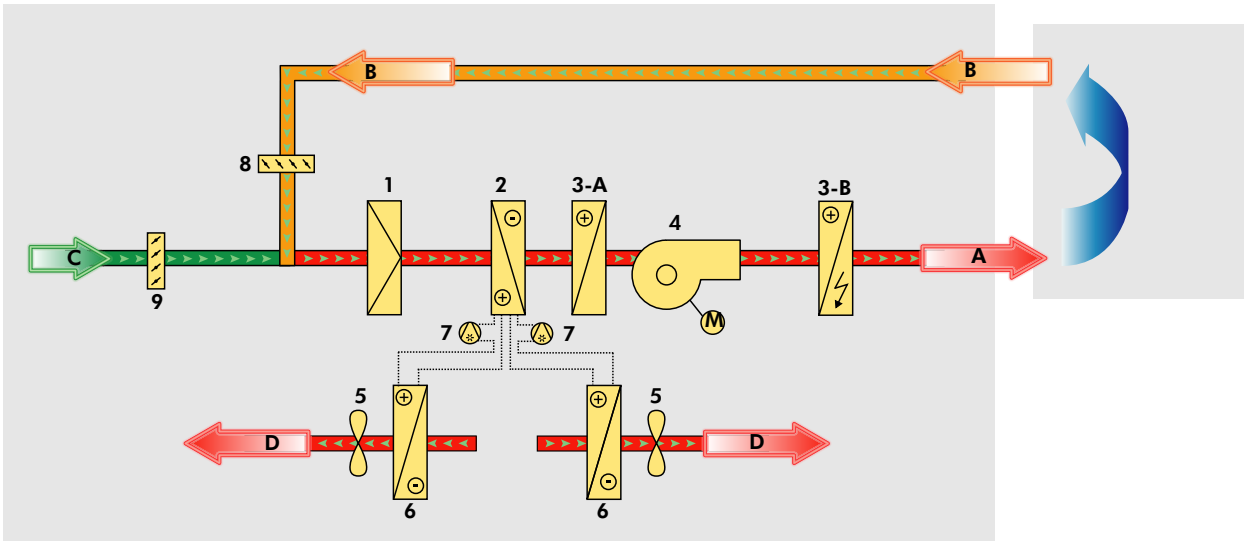
SEE APPENDIX

ECONOMISER

ECONOMISER - 2 FLAPS

The economiser is a set of two dampers driven by one actuator. The quantity of outdoor air introduced into the building varies according to the room set point and provides energy savings in both modes. Economiser is used to modulate the return and outdoor air volumes. It also provides an antifreeze protection during OFF period by closing the outdoor air dampers

1 Filter
2 Indoor coil
3 Heating
3-A Hot water or Gas
3-B Additional heating
4 Centrifugal fan
5 Axial fan
6 Outdoor coil
7 Compressor with reversal cycle valve
8 Return air dampers
9 Outdoor air dampers

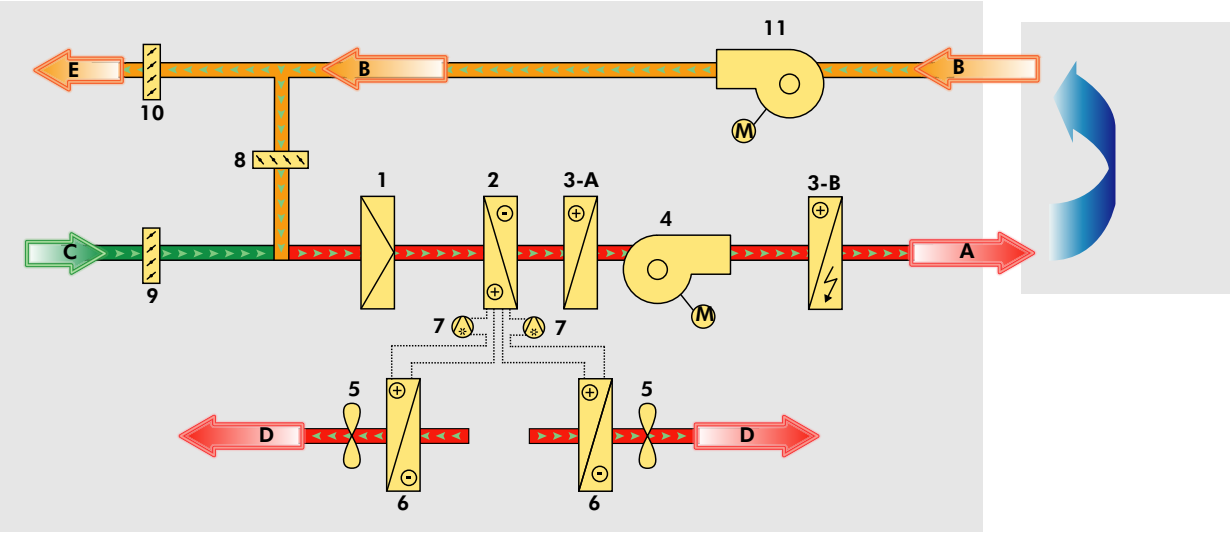


A	Supply air	C	outdoor air
B	Return air	D	Outdoor air to outdoor coil

ECONOMISER - 3 FLAPS

It comprises of a set of 3 dampers with an intake fan that enables on the one hand, to combat the pressure loss from the return ducts and on the other hand, to extract vitiated air from the building in order to avoid excessive pressure build ups when operating in "Free Cooling" mode.

1	Filter	6	Outdoor coil
2	Indoor coil	7	Compressor with reversal cycle valve
3	Heating	8	Return air dampers
	3-A Hot water or Gas	9	Outdoor air dampers
	3-B Additional heating	10	Vitiated air dampers
4	Centrifugal fan	11	Extractor fan
5	Axial fan		



A	Supply air	D	Outdoor air to outdoor coil
B	Return air	E	Vitiated air extracted
C	outdoor air		

ELECTRIC HEAT

The electric coil is located directly at the blower outlet. It is not available in the case of a top discharge version (S4). Air deflector are supplied to guide the stream around the heating elements.

Safety devices (thermostats and pressostats) protect the machine from possible risks of overheating due to insufficient flow around the shielded elements.

WIRING DIAGRAM AND LEGEND

WIRING DIAGRAM

SEE APPENDIX

LEGEND

N 760

		ROOFTECH 100-120-140-160			
		RTCH	RTCL	RTCH + BURNER	RTCL + BURNER
Control	230V 50Hz +/- 10%	SE3455	SE3541	SE3543	SE3544
Power Tri	400V+N 50Hz +/- 10%	SE34561	SE3542	SE34561	SE3542
		SE34562	SE34562	SE34562	SE34562
		SE34563	SE34563	SE34563	SE34563
		SE34564	SE34564	SE34564	SE34564

POWER SUPPLY

This supply is protected upstream by an FFG general supply fuse holder, to be provided by the installer, in accordance with "ELECTRICAL SPECIFICATIONS". The fuse holder shall be mounted close to the unit.

The electrical installation and the wiring of this unit shall comply with local electrical installation standards.

➢ Thee phase 400 V~ + Neutral + Ground:

On terminals L1 ; L2 ; L3 ; N on the QO mains supply circuit switch.

On the ground screw for the earth cable.

WIRING DIAGRAM KEY DESCRIPTIONS

POWER SUPPLY DIAGRAMS:

FFG:	Protective fuses (not supplied)
XO:	Phase distributor
QO:	Mains supply circuit switch
KA1:	Three-phase network control relay (phase sequence and cut-out)
Q1/2/3/4:	C1/2/3/4 compressors magneto-thermal circuit breaker
KM1/2/3/4:	C1/2/3/4 compressors power circuit contactor
C1/2/3/4:	Compressors
R1/2/3/4:	C1/2/3/4 compressors crankcase heater
FT1 :	Control circuit magneto-thermal circuit breaker
F2/4:	Fuse-terminal + fuse
FF14:	Fuse-carrier
K14:	Pump relay (heat recovery pump option)
F3:	Differential circuit breaker, power socket and interior lighting
PO:	230V power socket
LS:	ON/OFF switch, ROOFTECH interior lighting
L:	Technical compartment interior lighting
T1/2:	230V24V AC transformer (25VA)
FF5:	Blower fan fuse-carrier
FF6/7:	Outdoor fans fuse-carrier
FF8:	Intake air fan fuse-carrier
Q5:	Blower fan magneto-thermal circuit breaker
Q6/7:	Outdoor fans magneto-thermal circuit breaker
Q8:	Intake air fan magneto-thermal circuit breaker
Q9:	Extractor fan magneto-thermal or magnetic circuit breaker
KM5/6/7/8/9:	Fan power contactors
ACS 5/8:	Blower and intake air fan three-phase frequency regulator with RFI filter
ACS 6/7:	Outdoor fans three-phase frequency regulator with RFI filter
M5:	Indoor fan motor
M6/7:	Outdoor fan motor

M8: Intake fan motor

M9: Extractor fan motor

AS5: Motor M5 "Soft start"

AS8: Motor M8 "Soft start"

Q10/11/12/13: Heating elements magnetic circuit breakers

KM10/11/12/13: Heating elements power contactors

CH.1: Small capacity heating option

CH.2: Large capacity hearting option

BURNER: Option burner gas

CONTROL AND REGULATION DIAGRAMS

pCO1: CAREL regulation

pCOe: Additional CAREL regulation board(Economiser option)

PC1/2: Converter

CONV 1/2: Circuits 1 and 2 electronic regulator converters

EEV1/2: Electronic regulator

EP1/2: Circuits 1 and 2 low pressure sensors

Q1/2/3/4: C1/2/3/4 compressors additional magneto-thermal circuit breaker

Q5: Blower fan additional magneto-thermal circuit breaker

Q10/11/12/13: Heating elements additional magnetic circuit breaker

OF1/OF2: MO1/MO2 motors internal protection

FM: Heating manual reset safety thermostat

FA: Heating automatic reset safety thermostat

KA1: Three-phase network control relay (phase sequence and cut-out) contact

HP1/2: Circuits 1 and 2 automatic reset high-pressure pressostats

LP1/2: Circuits 1 and 2 automatic reset low-pressure pressostats

OCT1/2: Circuits 1 and 2 condenser temperature sensor

RAT: Intake air temperature sensor

CST1/2: Circuits 1 and 2 compressor air intake temperature sensor

OAT: Outdoor air temperature sensor (option)

SAT: Blown air temperature sensor (option)

RAH: Intake air hygrometry sensor (option)

IAQ: Intake air quality sensor (option)

OAH: Outdoor air hygrometry sensor (option)

SD: Smoke detector (option)

ECM: Economiser dampers motor (option)

HWV: Hot water battery valve (option)

CONV 3: Hot water battery valve converter (option)

CONV 4: Variators ACS5/8 order 0-10V converter

HWC: Anti-freezing, hot water battery warning

DFA1: Clogged filter warning ($\Delta P > 250Pa$)

DFA2: Clogged bag filter warning ($\Delta P > 500Pa$)

AF: Air pressostat ($\Delta P < 50Pa$)

ON/OFF: ON/OFF switch (not supplied)

SWS: Winter/Summer switch

KM1/2/3/4: C1/2/3/4 compressors power contactor

KM5/6/7/8/9: Fan power contactors

KM10/11/12/13: Heating elements power contactors

EV1/2: Circuits 1 and 2 cycle inversion valve

KA6/7: Circuits 1 and 2 heating demand auxiliary relays

RANGE AND SETTINGS OF THEMAL PROTECTION / NOMINAL INTENSITY OF THE CONTACTORS (CLASSE AC3)

Model		100		120		140		160	
		PE	GE	PE	GE	PE	GE	PE	GE
Q1	Range	20-25A		20-25A		20-25A		24-32A	
	Adjustment	21A		22A		23A		32A	
Q2	Range	20-25A		20-25A		20-25A		24-32A	
	Adjustment	21A		22A		23A		32A	
Q3	Range	20-25A		20-25A		20-25A		24-32A	
	Adjustment	21A		22A		23A		32A	
Q4	Range	20-25A		20-25A		20-25A		24-32A	
	Adjustment	21A		22A		23A		32A	
Q5	Range	13-18A		13-18A		13-18A		13-18A	
	Adjustment	15A		15A		15A		15A	
Q6	Range	2.5-4A		2.5-4A		2.5-4A		2.5-4A	
	Adjustment	3.5A		3.5A		3.5A		3.5A	
Q7	Range	2.5-4A		2.5-4A		2.5-4A		2.5-4A	
	Adjustment	3.5A		3.5A		3.5A		3.5A	
Q8	Range	13-18A		13-18A		13-18A		13-18A	
	Adjustment	15A		15A		15A		15A	
Q9	Range	4-6.3A		4-6.3A		4-6.3A		4-6.3A	
	Adjustment	6A		6A		6A		6A	
Contactor AC3									
K1		25A		25A		25A		32A	
K2		25A		25A		25A		32A	
K3		25A		25A		25A		32A	
K4		25A		25A		25A		32A	
K5		18A		18A		18A		18A	
K6		6A		6A		6A		6A	
K7		6A		6A		6A		6A	
K8		18A		18A		18A		18A	
K9		9A		9A		9A		9A	

COMPRESSORS CRANKCASE HEATER

Models		100	120	140	160
Power	W	90	65	90	65

PRESSOSTATS SETTING

Factory high pressure adjustment 42bars (609.17PSI)

Clogged filter ΔP warning (upstream/downstream filters) > 250 Pa

Airflow detector ΔP warning (upstream/downstream blower)< 50 Pa

ELECTRICAL CONNECTIONS

WARNING

BEFORE CARRYING OUT ANY WORK ON THE EQUIPMENT, MAKE SURE THAT THE ELECTRICAL POWER SUPPLY IS DISCONNECTED AND THAT THERE IS NO POSSIBILITY OF THE UNIT BEING STARTED INADVERTENTLY.

NON-COMPLIANCE WITH THE ABOVE INSTRUCTIONS CAN LEAD TO INJURY OR DEATH BY ELECTROCUTION.

The electrical installation must be performed by a fully qualified electrician, and in accordance with local electrical standards and the wiring diagram corresponding to the unit model.

Any modification performed without our prior authorisation may result in the unit's warranty being declared null and void.

The power supply cable section must be sufficient to provide the appropriate amperage to the unit's main power terminals, at start-up and under full load operating conditions.

The power supply cable shall be selected in accordance with the following criteria:

- 1. Power supply cable length.
- 2. Maximum unit starting current draw – the cables shall supply the appropriate amperage to the unit terminals for starting.
- 3. Power supply cables' installation mode. (do not leave cable weight hang on connecting lugs)
- 4. Cables' capacity to transport the total system current draw.

Starting current and total current draw are indicated on the unit's wiring diagram.

Short circuit protection shall be provided by others. This protection shall comprise fuses or circuit breakers with high breaking capacity, mounted on the distribution board.

If the remote controls include an ambient temperature sensor and/or a room stat with temperature setting, these shall be connected with shielded cable and shall not installed in the same conduit as the power supply cable to avoid induced voltages and create faults in the unit's operation.

VERY IMPORTANT:

3N~400V-50HZ

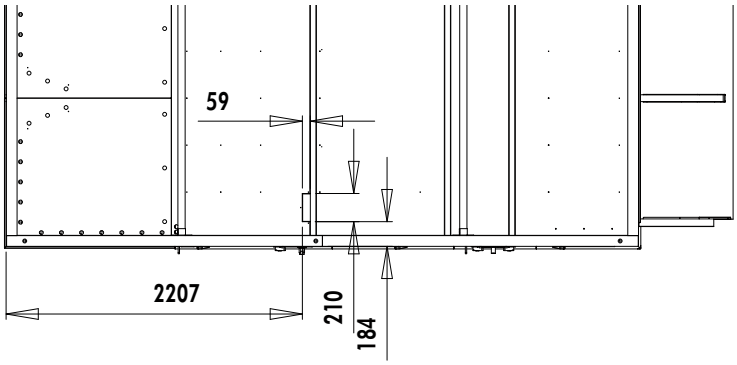
The outdoor unit is equipped as standard with a phase sequence and cut-out controller located in the electrical box.

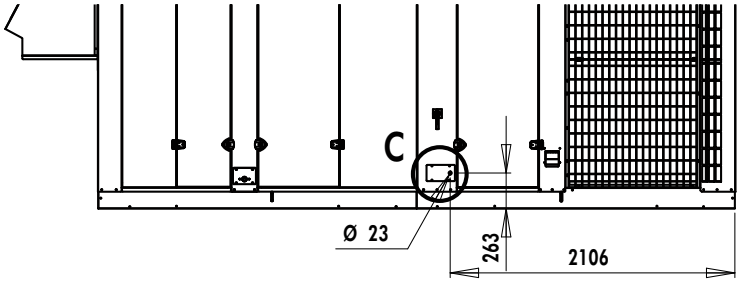
THIS PRODUCT IS EQUIPPED WITH A PHASE SEQUENCE CONTROLLER. THE LED's INDICATE THE FOLLOWING CONDITIONS:

Green LED = 1	**Green LED = 1**	**Green LED = 0**
Yellow LED =1	**Yellow LED =0**	**Yellow LED =0**
Low voltage supply The compressor rotation direction is correct	Phase inversion or phase absent (L1) The compressor and the fans do not start.	Phase absent (L2 or L3) the compressor and the fans do not start.

The electric connection of range RT is done in a single point on the level of the principal circuit breaker.

Electrical power supply cable should be inserted by the base or on the side of the unit.



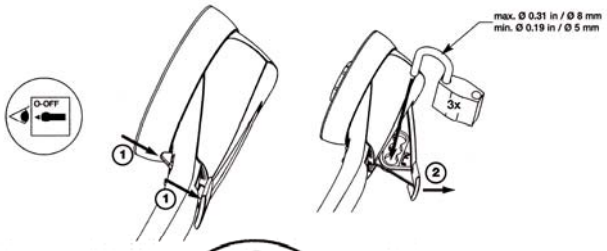


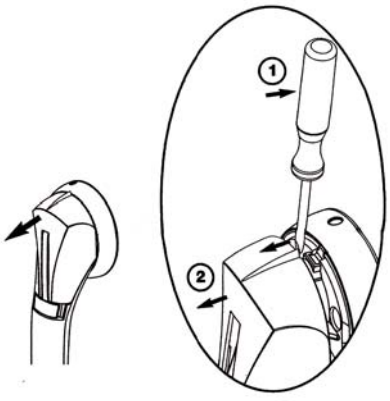
In this case, cable holes need to be drilled in the panel located under the proximity switch in relation to the thickness of the power cables. This panel is equipped with a grommet intended for the interconnecting cables between the different units on a same installation.

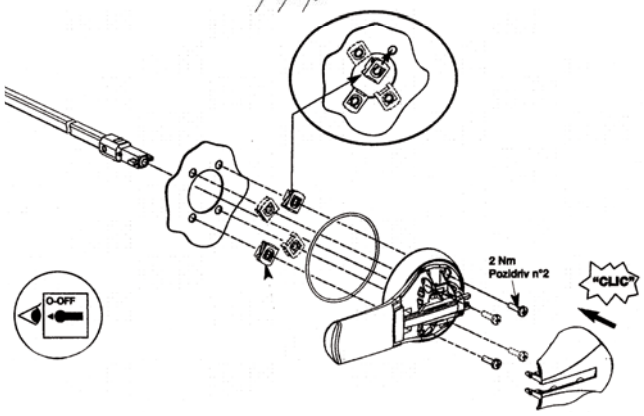

DÉTAIL C

These units are equipped with a local switch used as general terminal board.

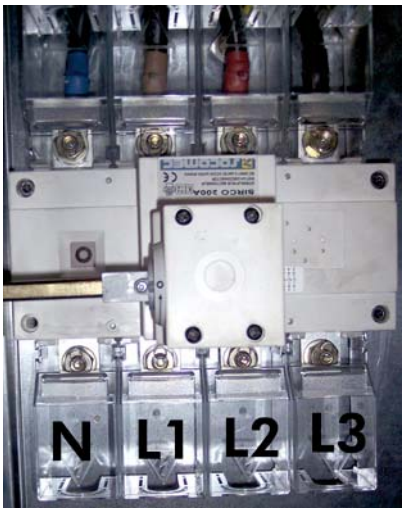
The switch can be padlocked.







A circuit breaker or fuse holder (not supplied) must be installed on the main power supply of the unit in accordance with the circuit diagram; for the raitings, refer to the electrical specifications.



Maximum electric power supply cable section:
240mm^2
Copper wire cable only

COMMISSIONING

PRE-START CHECK LIST

ELECTRICAL CHECK

1. Electrical installation has been carried out according to unit wiring diagram and the Supply Authority Regulations.
2. size fuses or circuit breaker has been installed at the main switchboard.
3. Supply voltages as specified on unit wiring diagram.
4. All cables are properly identified and tight connected at the unit and check the tightness of all cable connections.
5. the cables and wires are clear of or protected from pipework and sharp edges.

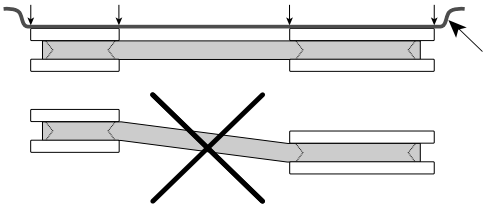
VISUAL CHECK

1. Clearances around unit including outdoor air entry and discharge openings and service accesses.
2. Unit mounted as specified.
3. For loose or missing bolts or screws.
4. For refrigerant leaks in connections and components.

DUCTING

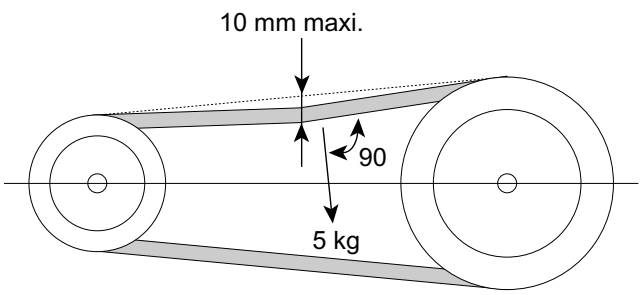
1. Connections flexible type, secure and detachable for service access.
2. Blower drive
   - ➢ Pulley adjustment correct for expected air quantity and static pressure.
   - ➢ Belt tension correct.
3. Check that the Biloc Sheaves on both the blower shaft and the motor schaft are correctly fitted to the bush and rotate without wobbling.
4. Ensure that the motor is securely bolted to the mounting plate parallel to the blower shaft.
5. Using a string line or straight edge ensure that both pulley grooves are correctly aligned.
6. Improper alignment of the pulleys and belt may cause vibration in the blower drive and result in premature wear and noise.

Belt alignment



For a quick check, make sure that the small rope touch each end of the pulleys as shown on drawing opposite.

Belt tensioning



AIR BALANCING

A variable pulley is fitted to the motor shaft in order adjust to the blower performance to the pressure drop at the duct work. The pulley must be adjusted when the measured external static pressure and air volume (motor current draw) at the exit of the unit differ from the nominal values at the unit.

CASE N°1:

There is less pressure drop in the ductwork than planned, i.e. motor current draw is higher than nominal and the external pressure is lower than nominal. The slower speed must be reduced to lower the treated airflow and re-establish the air balance point. It is imperative to adjust the pulley, otherwise the motor's internal protection will trigger because of overheating taking the entire unit out of operation.

CASE N°2:

In the opposite case, i.e. the motor current draw is lower and the external pressure measured is higher, this means that the ductwork pressure drop is too high. Enlarge the diameter the motor pulley. This will increase the speed of the blower and the air volume. The replacement with a larger motor may be necessary.

RT 100 - RT 120 -RT 140 - RT 160

OPERATING CHECK LIST

GENERAL

Cheek for any unusual noises or vibration in the running components, particularly at the main blower.

PHASE ROTATION PROTECTION

If the phase at the power supply are not correct, the phase rotation protection device will prevent the machine from starting.

ELECTRICAL

SET POINTS

1. Set point of compressor current overload relay.
2. Set point of indoor blower motor current overload relay.

NOTE : The outdoor blower motor is equiped with an internal current overload safety device with automatic reset.

OPERATING VOLTAGE:

Recheck voltage at unit supply terminals.

CONTROL

1. Operate system and thermostat switches.
2. Check unit is wired for correct control of blower, cooling and heating modes.
3. Verify all sensor signal, using the controller display.

BLOWER & DRIVE

1. Check that the pulleys on both blower shaft and motor are correctly fastened to the bush and rotate without wobbling.
2. Check the alignment of the pulleys.
3. Cheek externaly the rotation direction of the blower.
4. Static Pressure and Air volum in the supply and return air ducts.
5. The indoor air quantity must be within the application limits of the main blower (see performances curves). The associated static pressure must be such that the motor is operating within its normal amper rating. With all panels in place measure current on each phase of the indoor blower motor using clip-on type ammeter. Compare the amperage to the nameplate full load current.

COMPRESSOR AND REFRIGERATION SYSTEM

1. If outdoor air temperature is below 0°C make sure that the compressor crankcase heater has been on for at least one hour before starting compressor.
2. Running check: Start the compressor. Check for any unusual noise or vibration.
3. Operating Pressures: Operate the unit for at last 20 minutes and ensure that the refrigerant pressures are stabilised, and cheek that they are within the normal operating ranges.
4. Operating Temperature: Check discharge, suction and liquid temperatures.
5. Discharge temperature on cooling cycle should normally not exceed 105°C.
6. Suction superheat should between 5K and 12K.

FINAL CHECK

1.All panels and fan guards are in place and secured.

2.Unit clean and free of remainder installation material.

FINAL TASKS

Place the plugs back on the valves and check that they are properly tightened.

If needed, fix the cables and the pipes on the wall with clamping collars.

Operate the air conditioner in the presence of the user and explain all functions.

Show him how to remove, clean and place back the filters.

IN CASE OF WARRANTY - MATERIAL RETURN PROCEDURE

Material must not be returned without permission of our After Sales Department.

To return the material, contact your nearest sales office and ask for a "return voucher". The return voucher shall be sent with the returned material and shall contain all necessary information concerning the problem encountered.

The return of the part is not an order for replacement. Therefore, a purchase order must be entered through your nearest distributor or regional sales office. The order should include part name, part number, model number and serial number of the unit involved.

Following our personal inspection of the returned part, and if it is determined that the failure is due to faulty material or workmanship, and in warranty, credit will be issued on customer's purchase order. All parts shall be returned to our factory, transportation charges prepaid.

ORDERING SERVICE AND SPARE PARTS ORDER

The part number, the order confirmation and the unit serial number indicated on the name plate must be provided whenever service works or spare parts are ordered.

For any spare part order, indicate the date of unit installation and date of failure. Use the part number provided by our service spare parts, if it not available, provide full description of the part required.

MAINTENANCE

The user is responsible for ensuring that it is in a proper working condition and that technical installation as well as the regular maintenance operations are performed by properly trained technicians and in accordance with the instructions contained in this manual.

REGULAR MAINTENANCE

These units have been designed to require only minimal servicing, thanks to the use of a maximum number of lubricated-for-life components. Nevertheless, certain regular servicing operations are necessary to guarantee optimal system operation.

Servicing must be performed by experienced and qualified personnel only.

WARNING : Isolate unit from main power supply before working on unit.

GENERAL INSPECTION

Carry out a visual inspection of the complete installation in service.

Check the general cleanness of the installation, and check if the condensate evacuations is not blocked, specialy on the indoor coil, before the cooling season.

Check the condition of the condesate tray by pulling it out of the casing.

ACCESS PANELS

All the access panels are equipped with progressive tightening handles.

BLOWER DRIVE SYSTEM

blower shaft and motor bearings are of permanently lubricated, sealed type and require no regular maintenance other than a check on their general condition. The blower belt tension should be checked regularly and belt surfaces inspected for cracks or excessive wear.

COILS

The refrigeration system is hermetically sealed and should require no regular maintenance. However, it is recommended to leak test the refrigerant system and check the general operating conditions and control devices on a regular basis. The operating pressures should be checked particularly as they are an excellent guide for maintenance. After any intervention requiring the opening of the refrigerant circuit, the system must be completely vacuum drained by using the 3 take-offs (VP) installed for this purpose (VP) (Refer to the appended refrigerant circuit diagram).

Clean the heat exchanger using a special product for aluminium-copper heat exchangers, and rinse with water. Do not use hot water or steam, as this could cause the pressure of the refrigerant to rise.

Check that the surface of the aluminium fins of the heat exchanger is not damaged by impacts or scratches, and clean with an appropriate tool if necessary.

The air filter located on the air intake must be cleaned or replaced at regular intervals to ensure that unit operate properly,.

A clogged filter causes a reduction in the airflow across the heat exchanger and this reduces the performance output.

The filters located on slide rails upstream of the evaporator enable the filters to be removed from the outside of the unit housing.

ELECTRICAL SECTION

Check that the main power supply cable is not damaged or altered in such a way as to affect the insulation

Check that the interconnecting cables between the two units are not damaged or altered, and that they are correctly connected.

The contact surfaces of relays and contactors should be inspected regularly by an electrician and replaced as judged necessary. On these occasions the control box should be blown out with compressed air to remove any gathwing of dust.

Check the earth grounding connection.

CAUTION

BEFORE CARRYING OUT ANY OPERATION ON THE EQUIPMENT, CHECK THAT THE ELECTRICAL POWER SUPPLY IS SWITCHED OFF AND THAT IT CANNOT BE SWITCHED ON INADVERTENTLY.

IT IS RECOMMENDED THAT THE DISCONNECT SWITCH BE PADLOCKED

SERVICING CHECKLIST

CASING

1. Clean the outer panels.

When cleaning aluminium, follow the same requirements as for other metallic surfaces:

- ➢ Remove any dirt of mineral or organic origin.
- ➢ Do not attack the surface of the metal.

Cleaning and maintenance products must be:

- ➢ Compatible with aluminium and its alloys.
- ➢ Non toxic for users.
- ➢ Non polluting or, failing this, treated prior to disposal to comply with current environmental regulations.

CONDENSATE DRAIN PAN

1. Check that the drainage orifices, conduits and siphon are not blocked.
2. Eliminate all accumulated dirt.
3. Check that no traces of rust are present.

REFRIGERATION CIRCUIT

1. Check the presence of gas leaks.
2. Check that the copper tube or the capillary tube do not rub against any metal or vibrate.
3. Check that the compressors do not generate any abnormal noises or vibrations.
4. Check the compressor discharge temperature.
5. Check that the crankcase heater is energised during the OFF cycle.

INDOOR COILS

1. Clean the fin surfaces as required.
2. Observe the condition of the blower and motors.
3. Clean or replace the filters.

OUTDOOR COIL

1. Check the cleanliness of the fin surfaces.
2. Check the condition of the fan and the fan motor.

PROTECTION DEVICES

Check the proper operation of the high pressure protection devices.

ELECTRICAL EQUIPMENT

1. Check nominal current draw and the condition of the fuses.
2. Check the tightness of the screw terminals.
3. Perform a visual check of the condition of the contacts.
4. Check the tightness of all cable connections.

Replace the panels and add any missing screws.

TROUBLE SHOOTING

Problem	Probable cause	Solution
Unit operates continuously but without performing	Insufficient refrigerant charge.	Top up the refrigerant fluid charge.
	Clogged filter dryer.	Replace the filter.
	Reduced output from one or both circuits	Check the 4-ways valves and change them if necessary.
Frozen suction line	The overheating setting on the thermostatic expansion valve is too low.	Increase the setting.
	refrigerant charge too low	Check the refrigerant fluid charge
Evaporator freezing	Filters clogged	Replace filters
	Insufficient charge	Check the refrigerant fluid charge
	Evaporator air intake temperature too low	Check the economiser setting.
Excessive noise	Vibrating pipe work	Attach the pipe work correctly.
		Check the pipe work attachments.
	Whistling noise from the thermostatic expansion valve	Add the refrigerant charge.
		Check and replace the filter dryer if necessary.
	Noisy compressor	Check the pressure difference of the 4-ways valves.
	No pressure increase	Seized bearings. Replace the compressor
		Check the tightness of the compressor attachment nuts.
Low oil level in the compressor	Presence of one or several oil or gas leaks in the circuit	Locate and repair the leaks and add oil
	Mechanical compressor damage.	Contact an approved Service Centre.
	Crankcase oil heater resistance fault.	Check the electrical circuit and the condition of the resistance. Replace defective parts if necessary.
One or both compressors do not operate.	No power at compressor	Check the electrical circuit and seek out any grounding and/or short- -circuits. Check the fuses.
	High pressure pressostat activated.	Reset the pressostat from the control panel and restart the unit. Check for dirty condenser coil or defective fan
	Control circuit fuse blown.	Check the control circuit and look for any grounding and/or short-circuits. Replace the fuses.
	Connection problem	Check the tightness of all the electrical connection terminals.
	Electrical circuits thermal protection cuts in.	Check the operation of the control and safety devices. Check amperage of compressor and discharge pressure
	Incorrect wiring.	Check the wiring of the control and safety devices.
	Mains voltage too low.	Check the power line.If the problem is due to the network, inform the Electricity Company.
	Compressor motor short–circuited.	Check the continuity of the motor winding.
	Compressor seized	Replace the compressor.
Low pressure pressostat being activated.	Presence of a leak.	Identify and repair the leak.
	Insufficient refrigerant fluid charge.	Add refrigerant charge.
	Low air volume on evaporator	check the blower and duct
High pressure pressostat being activated.	Incorrect operation of the high pressure pressostat.	Check the operation of the pressostat. Replace it if required.
	Outlet valve partially closed.	Open the valve. Replace it if required.
	Non-condensable particles in the circuit.	Bleed the circuit
	Condenser fan(s) not operating.	Check the wiring and the motors. Repair and replace if required.
Liquid line too hot	Insufficient refrigerant charge.	Locate and eliminate the causes of charge losses and top up the refrigerant fluid charge.
Liquid line frozen	Clogged filter dryer.	Replace the filter cartridge.

Problem	Probable cause	Solution
Fans do not operate.	Electrical circuit problems.	Check the connections.
	Internal circuit thermal cut-out activated.	Contact an approved Service Centre.
Fan surging	Duct network pressure too low.	Generate an additional pressure loss (refer to aeraulic curves)
Reduced output in both Heating and Cooling mode	Compressor operating fault	Contact an approved Service Centre.
	Low indoor air volume	Check filter, blower and duct.
	Outdoor coil dirty	Clean the coil.
	Insufficient refrigerant charge.	Add refrigerant charge.
Electric heater is not operating.	No power supply.	Check the main fuse and the auxiliary fuses.
	Heater circuit open (overheat)	Check the air volume or filter

APPENDIX
ANNEXE
ANLAGE
ALLEGATO
ANEXO

APPENDIX

ANNEXE

ANLAGE

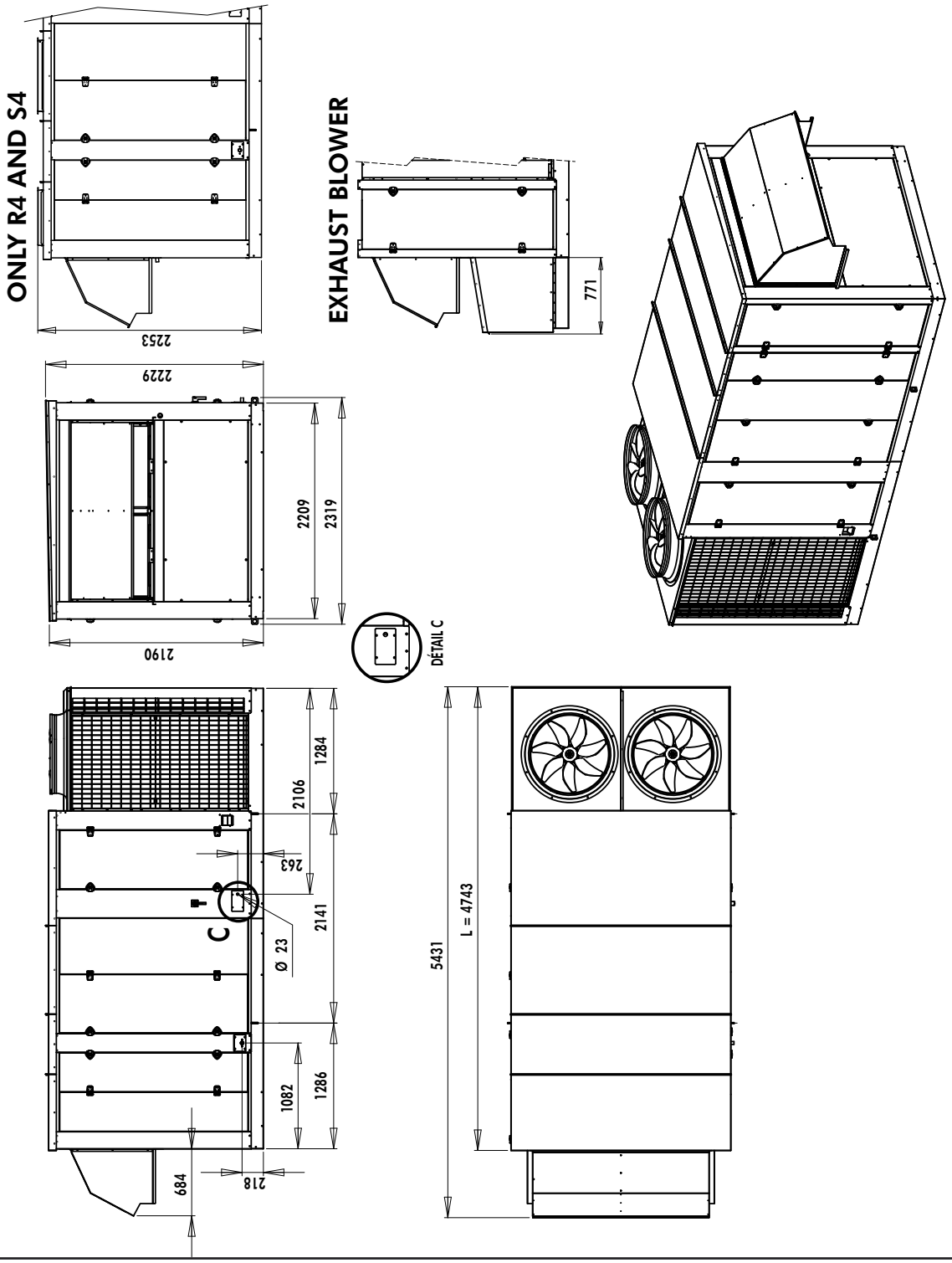
ALLEGATO

ANEXO

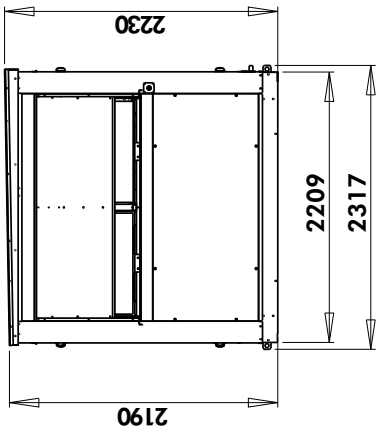
DIMENSIONS
DIMENSIONS
ABMESSUNGEN
DIMENSIONI
DIMENSIONES

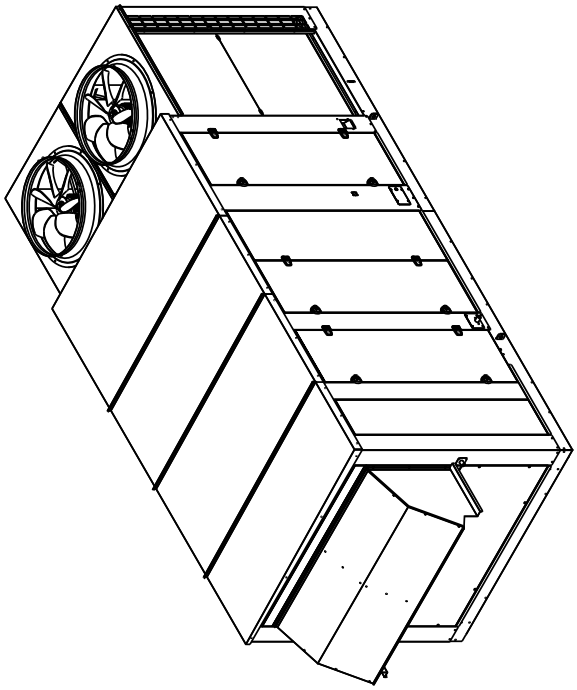
RT100 - RT120 - RT140 - RT160

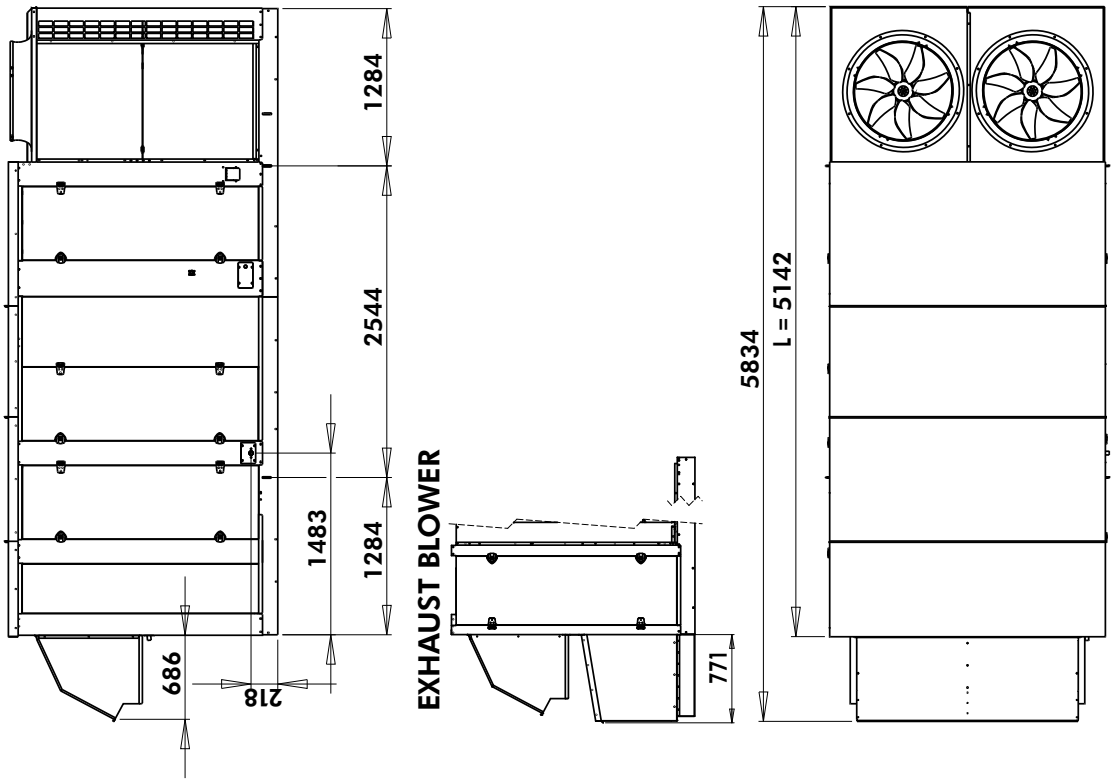
BASE MODULE
MODULE DE BASE
GRUNDMODUL
MODULO DI BASE
MÓDULO BÁSICO



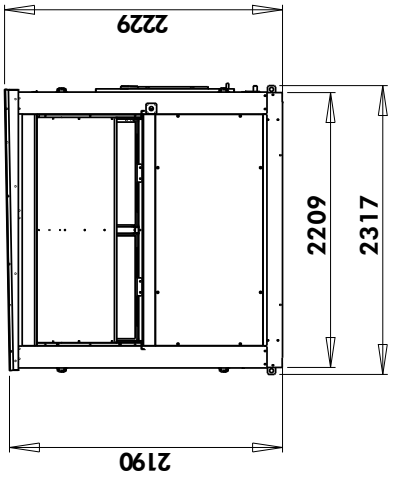
BASE MODULE WITH EU7 FILTER
MODULE DE BASE AVEC FILTRE EU7
GRUNDMODUL MIT FILTER EU7
MODULO DI BASE CON FILTRO EU7
MÓDULO BÁSICO CON FILTRO EU7

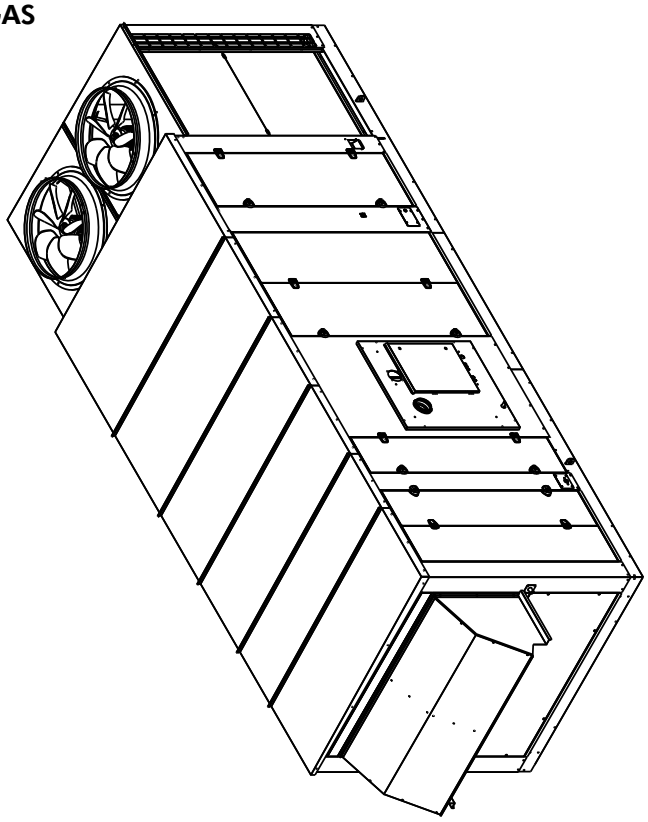


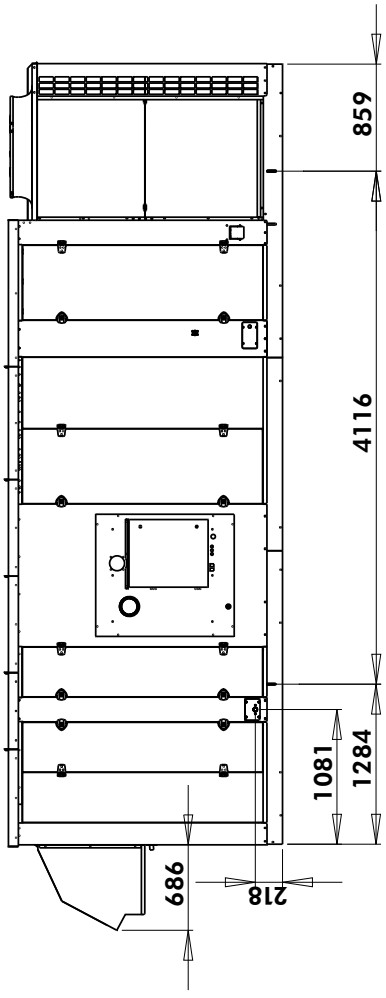


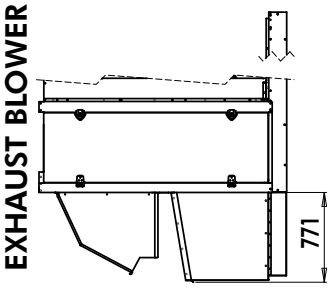


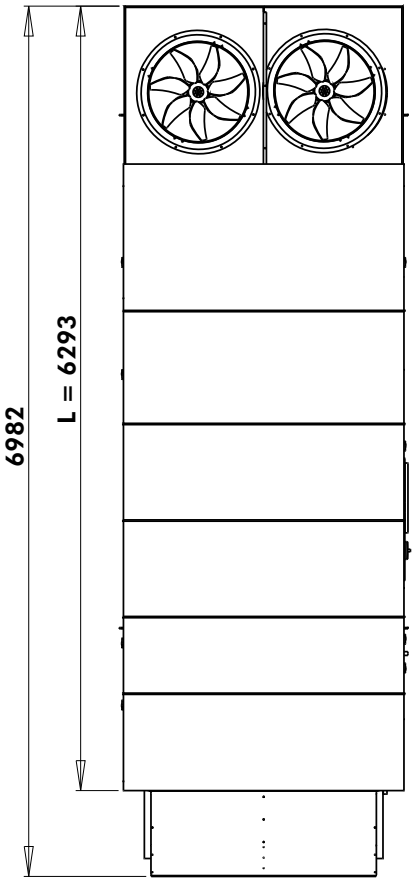
BASE MODULE WITH BURNER GAS
MODULE DE BASE AVEC BRULEUR GAZ
GRUNDMODUL MIT GASBRENNER
MODULO DI BASE CON BRUCIATORE GAS
MÓDULO BÁSICO CON QUEMADOR GAS



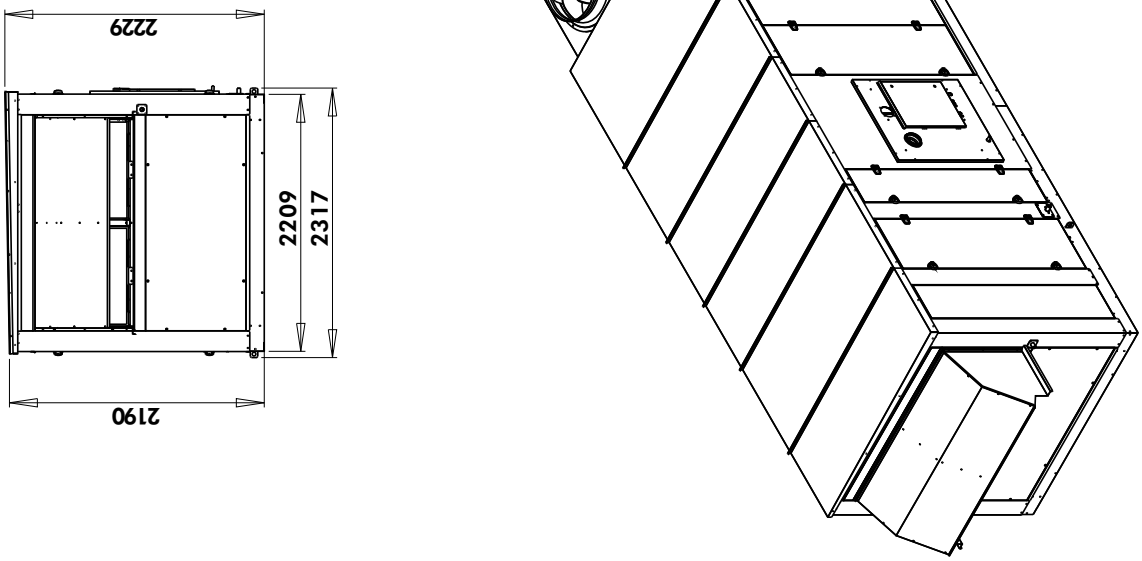


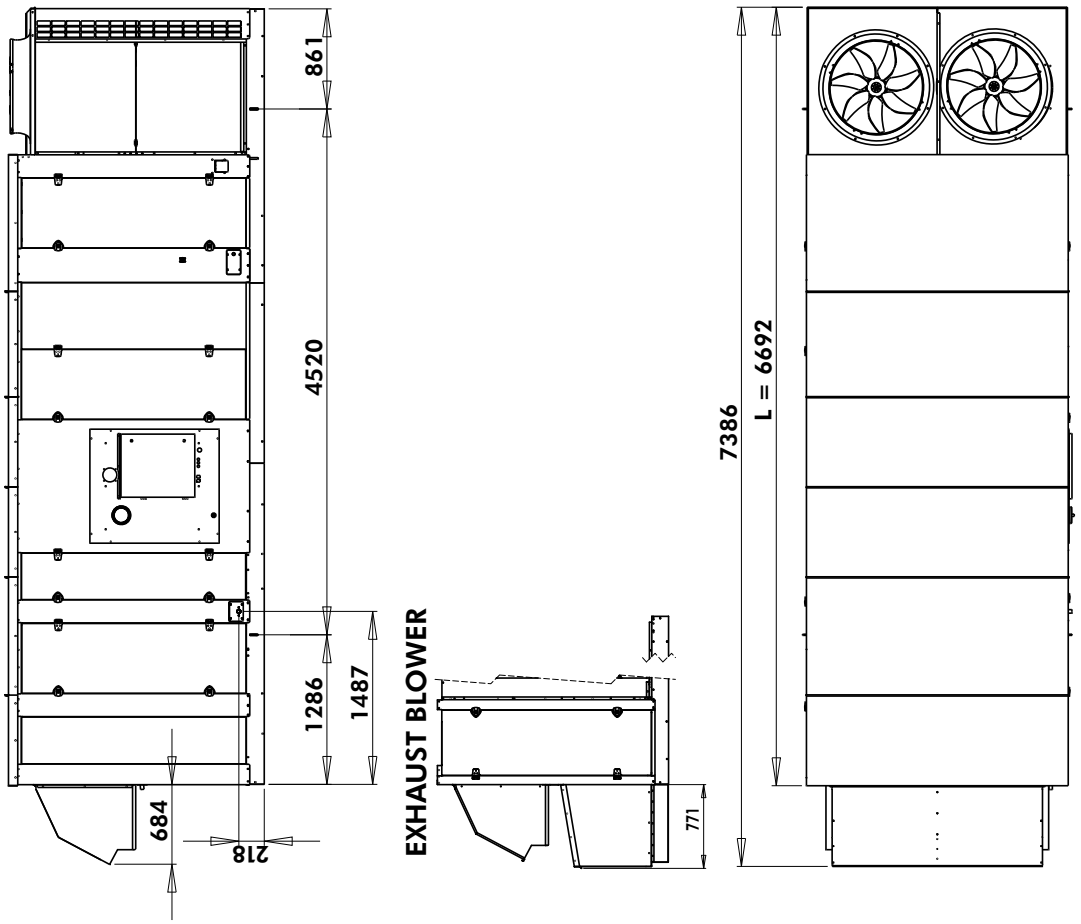




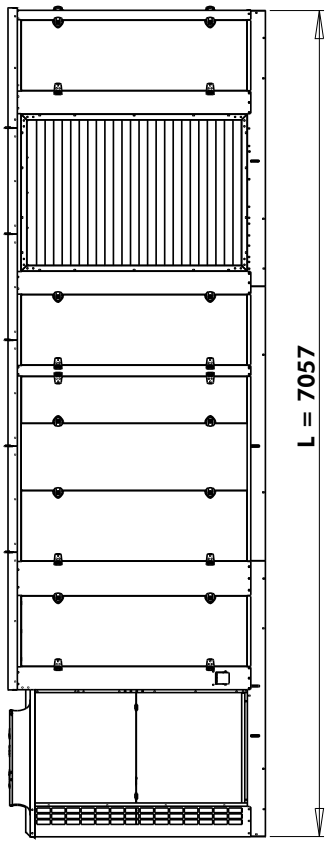


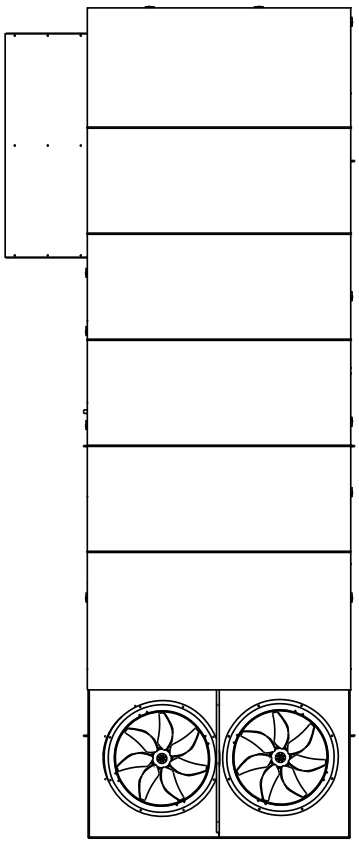
BASE MODULE WITH EU7 FILTER AND BURNER GAS
MODULE DE BASE AVEC FILTRE EU7 ET BRULEUR GAZ
GRUNDMODUL MIT FILTER EU7 UND GASBRENNER
MODULO DI BASE CON FILTRO EU7 E BRUCIATORE GAS
MÓDULO BÁSICO CON FILTRO EU7 Y QUEMADOR GAS

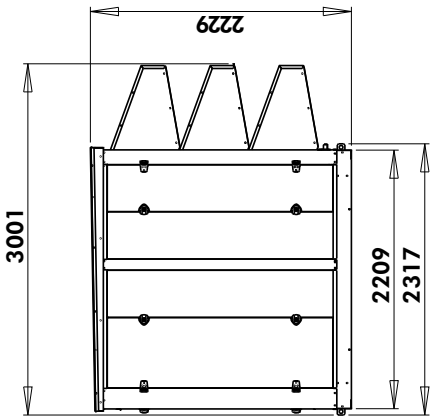


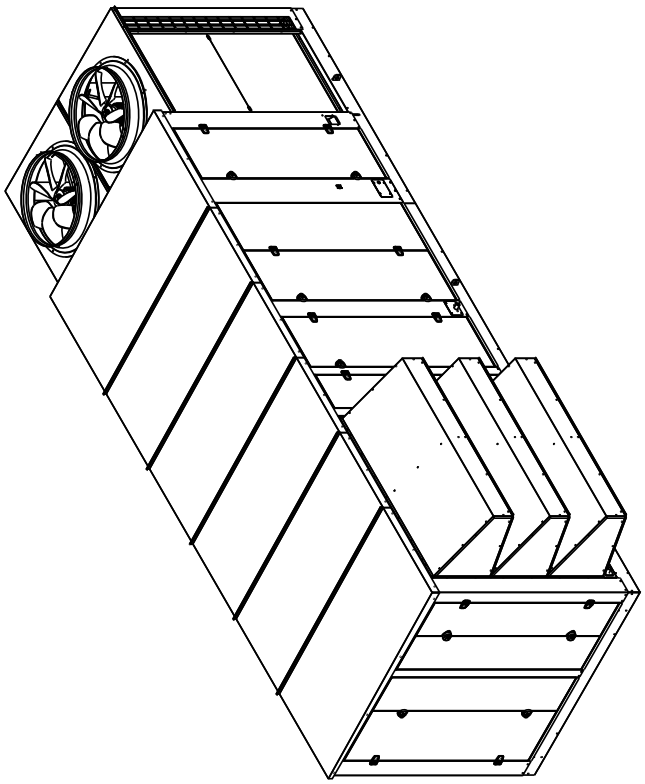


BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER
MODULE DE BASE 3 VOLETS AVEC OU SANS FILTRE EU7
GRUNDMODUL 3 SCHIEBER MIT ODER OHNE FILTER EU7
MODULO DI BASE 3 SPORTELLI CON O SENZA FILTRO EU7
MÓDULO BÁSICO 3 LAMAS CON O SIN FILTRO EU7

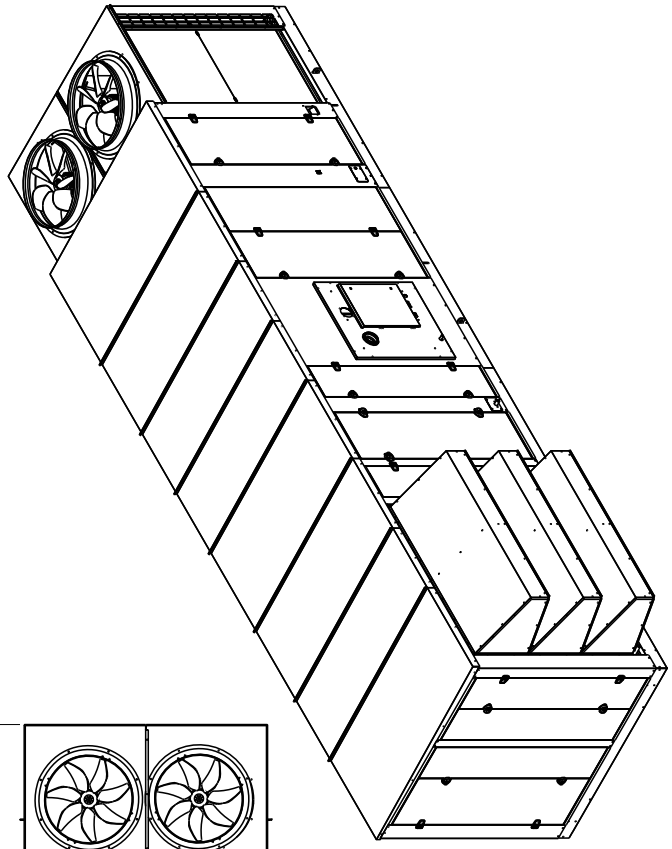


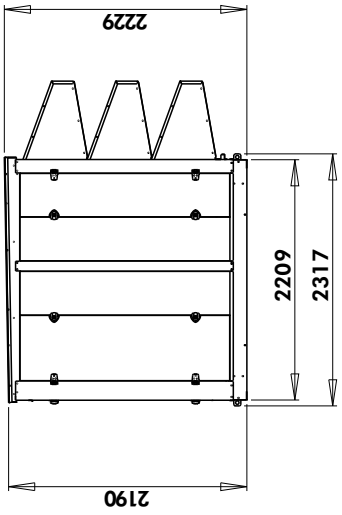


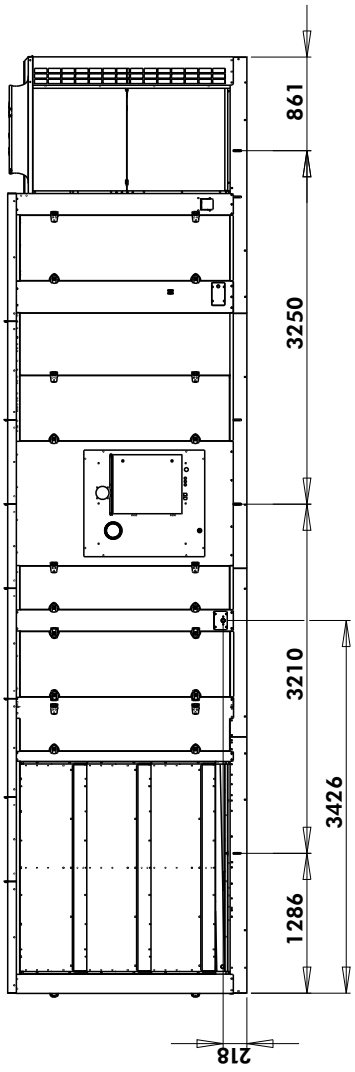


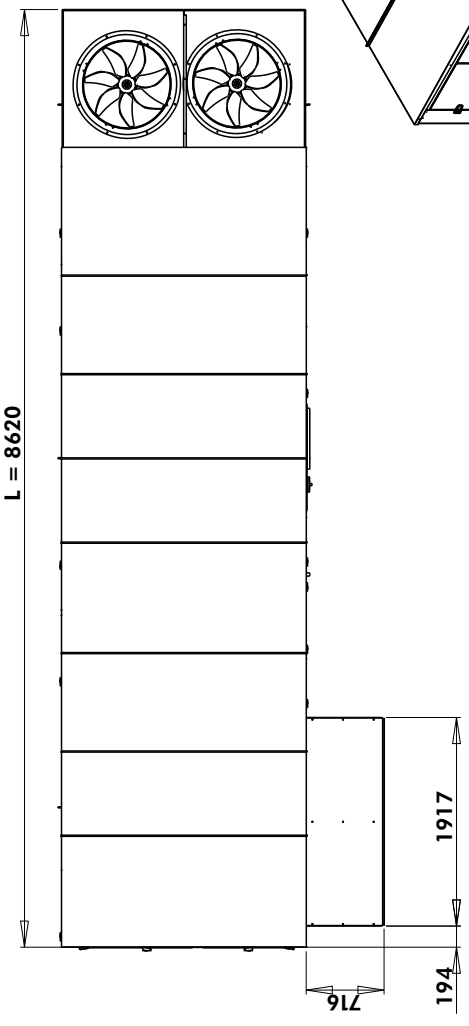


BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER AND BURNER GAS
MODULE DE BASE 3 VOLETS AVEC OU SANS FILTRE EU7 ET BRULEUR GAZ
GRUNDMODUL 3 SCHIEBER MIT ODER OHNE FILTER EU7 UND GASBRENNER
MODULO DI BASE 3 SPORTELLI CON O SENZA FILTRO EU7 E BRUCIATORE GAS
MÓDULO BÁSICO 3 LAMAS CON O SIN FILTRO EU7 Y QUEMADOR GAS

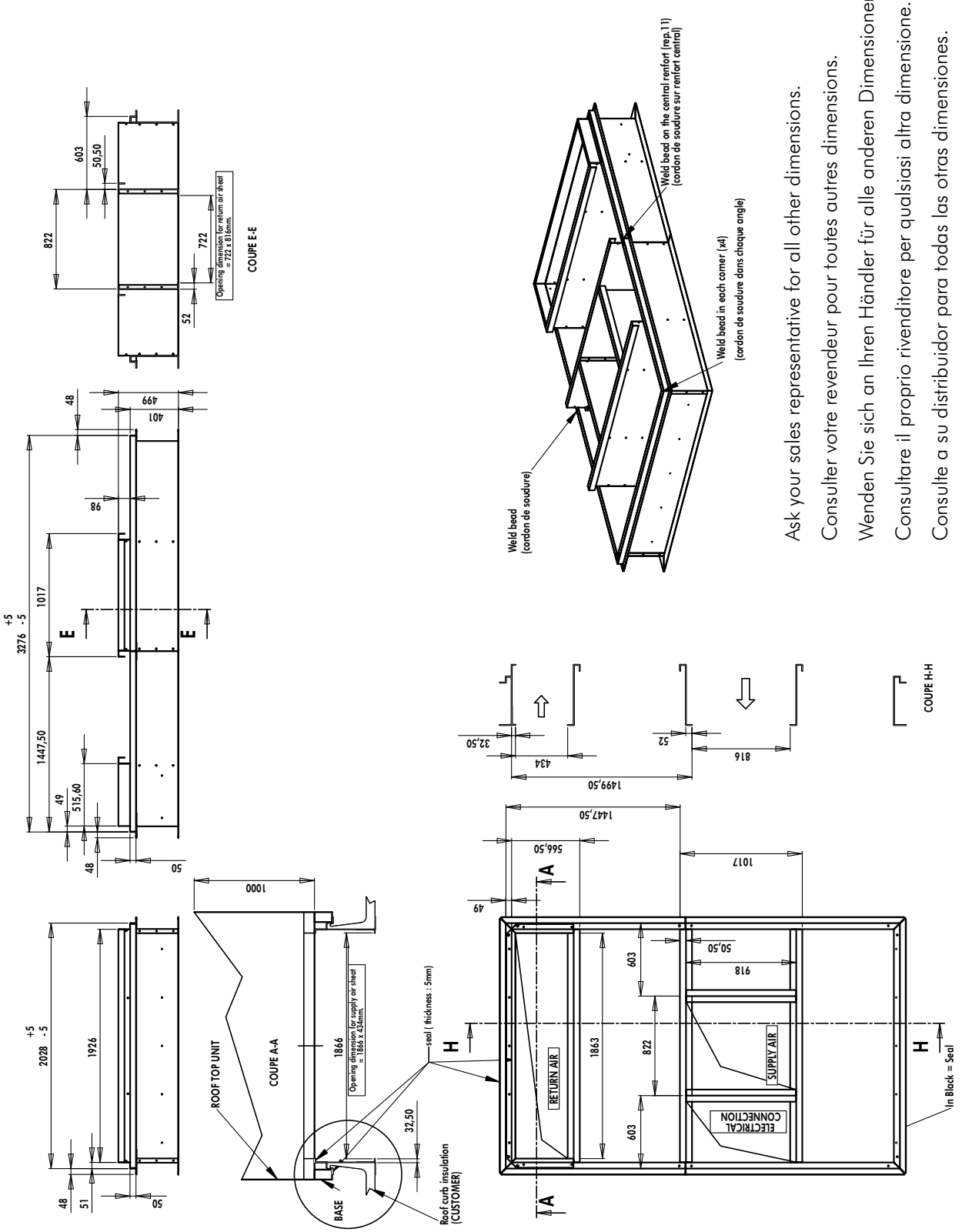








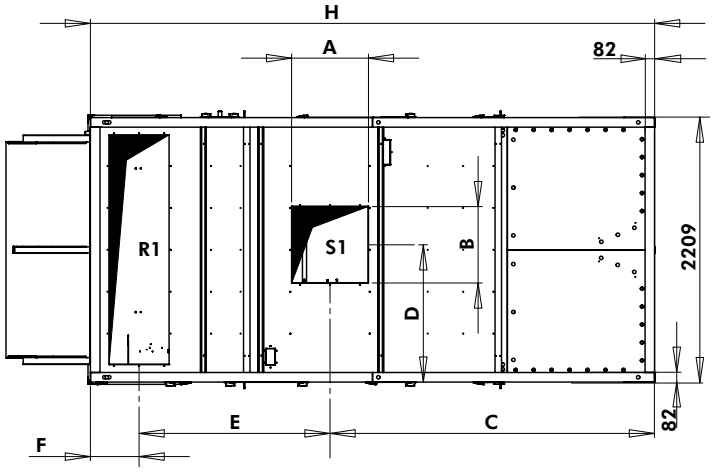
ROOFT CURB - BASE MODULE
COSTIERE - MODULE DE BASE
DACHRAHMEN - GRUNDMODUL
SCANALATURA PERIMETRALE - MODULO DI BASE
PETO - MÓDULO BÁSICO

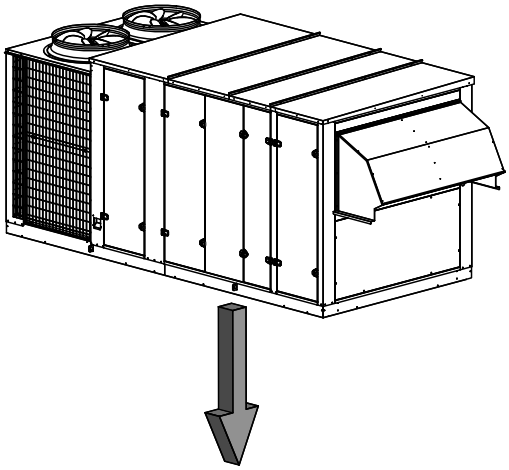


Ask your sales representative for all other dimensions.
Consulter votre revendeur pour toutes autres dimensions.
Wenden Sie sich an Ihren Händler für alle anderen Dimensionen.
Consultare il proprio rivenditore per qualsiasi altra dimensione.
Consulte a su distribuidor para todas las otras dimensiones.

DUCT OUTLET DIMENSIONS
DIMENSIONS DEPART DE GAINES
ABMESSUNGEN DER KANALABGÄNGE
DIMENSIONI TELLE USCITE DI CONDOTTA
DIMENSIONES DE LAS SALIDAS DE CONDUCTOS

S1

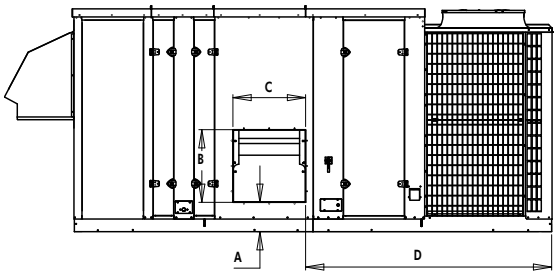




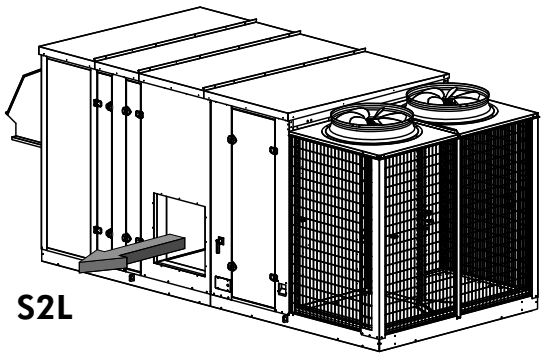
		A	B
100	mm	638	638
120 - 140 - 160	mm	726	726

		C	D	E	F	H
BASE MODULE	mm	2711	1104.5	1595	406.5	4712
BASE MODULE + EU7 FILTER	mm	2711	1104.5	2000	403.5	5115
BASE MODULE + BURNER GAS	mm	2711	1104.5	3145	406.5	6292
BASE MODULE + BURNER GAS + EU7 FILTER	mm	2711	1104.5	3552	403.5	6666
BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER	mm	2711	1104.5	3777	568.5	7057
BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER + BURNER GAS	mm	2711	1104.5	5327	568.5	8606

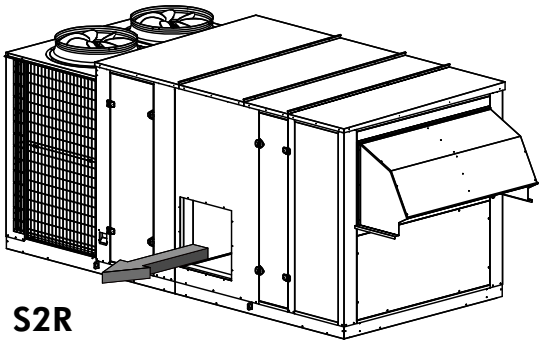
S2



		A	B	C	D
100	mm	548	641	641	2467
120 - 140 - 160	mm	289	717	717	2427

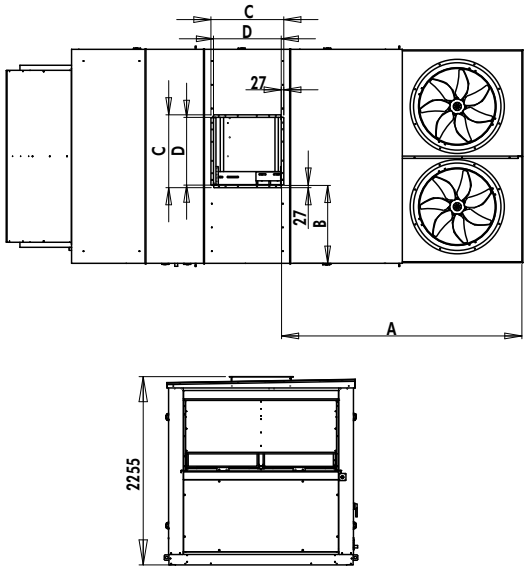


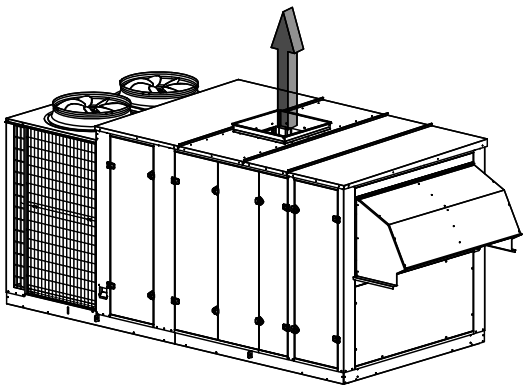
S2L



S2R

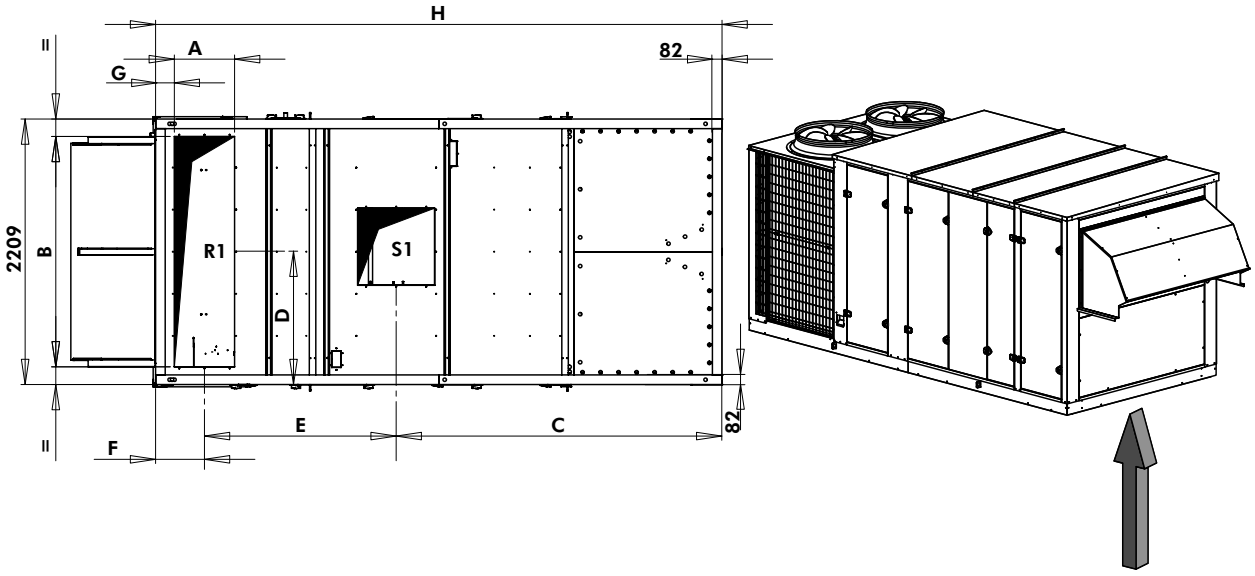
S4





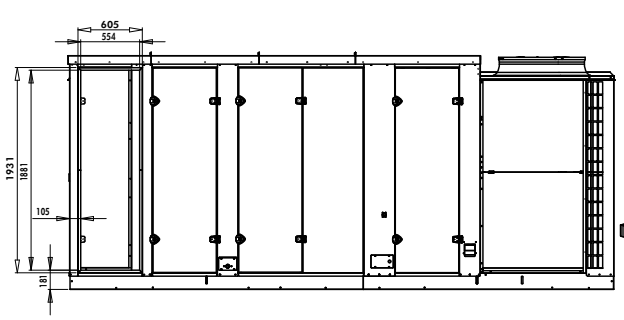
		A	B	C	D
100	mm	2590	760	700	646
120 - 140 - 160	mm	2527	818	766	712

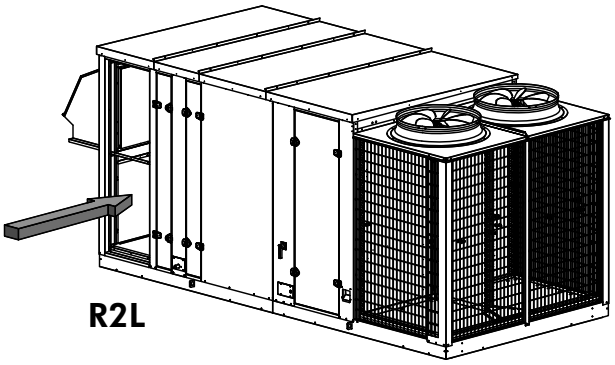
R1



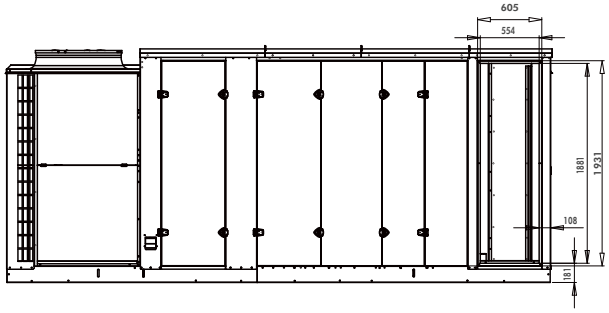
		A	B	C	D	E	F	G	H
BASE MODULE	mm	501	1917	2711	1104.5	1595	406.5	156	4712
BASE MODULE + EU7 FILTER	mm	501	1917	2711	1104.5	2000	403.5	153	5115
BASE MODULE + BURNER GAS	mm	501	1917	2711	1104.5	3145	406.5	156	6292
BASE MODULE + BURNER GAS + EU7 FILTER	mm	501	1917	2711	1104.5	3552	403.5	153	6666
BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER	mm	808	1318	2711	1104.5	3777	568.5	164.5	7057
BASE MODULE 3 FLAPS WITH OR WITHOUT EU7 FILTER + BURNER GAS	mm	808	1318	2711	1104.5	5327	568.5	166.5	8606

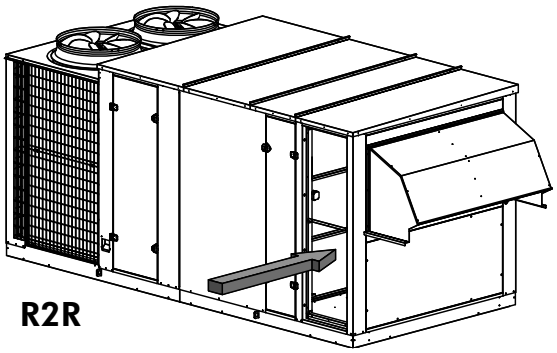
R2


605
554
1931
1881
105
181



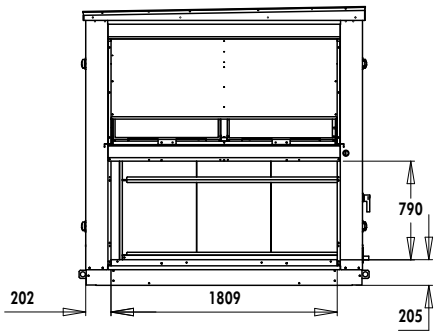
R2L

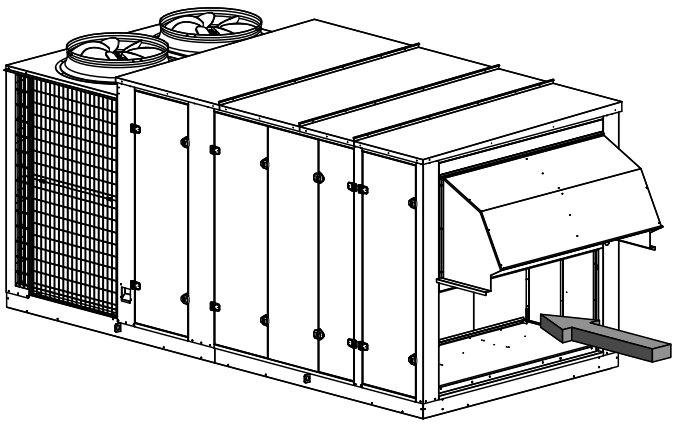

605
554
1881
1931
108
181



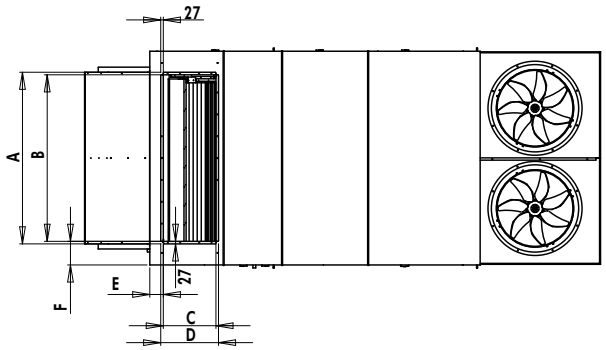
R2R

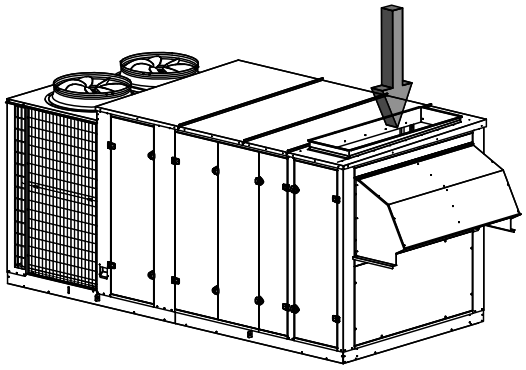
R3

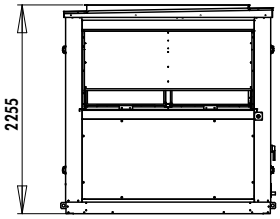

790
202
1809
205



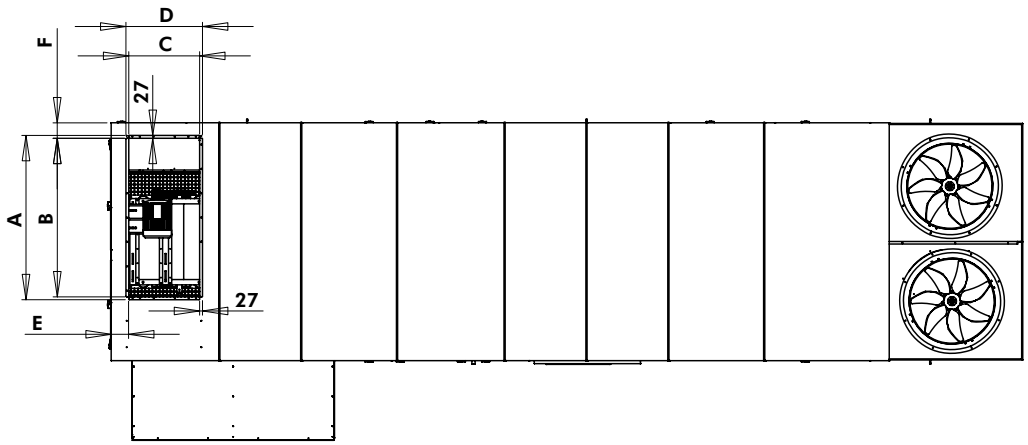
R4





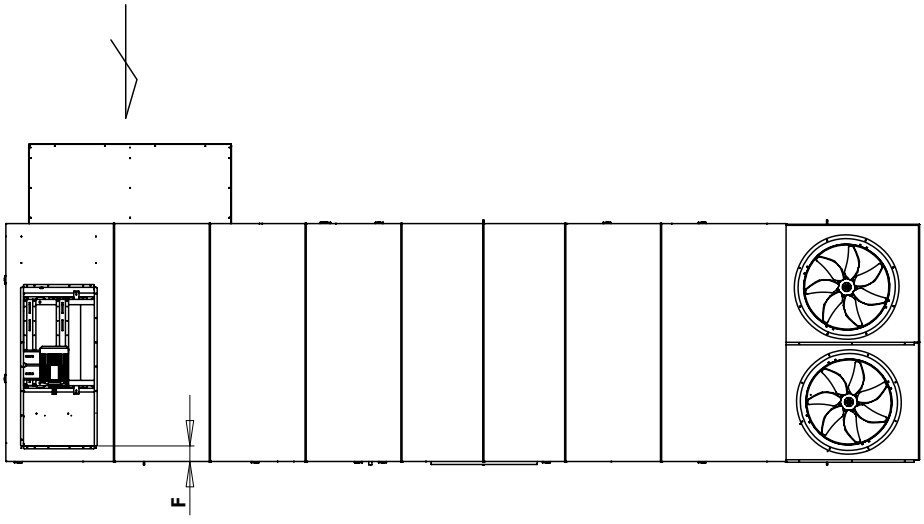


		A	B	C	D	E	H
BASE MODULE	mm	1807	1753	554	608	142	249
BASE MODULE 3 FLAPS	mm	1554	1500	670	724	165	147



FRESH AIR ON THE LEFT SIDE

FRESH AIR ON THE RIGHT SIDE



REFRIGERANT CIRCUIT DIAGRAM
SCHEMA DU CIRCUIT FRIGORIFIQUE
KÄLTEKREISLAUFDIAGRAMM
SCHEMA DEL CIRCUITO REFRIGERANTE
ESQUEMA DEL CIRCUITO FRIGORIFÍCO

C1 : Compressor 1
C2 : Compressor 2
CD1 : Condenser 1
CD2 : Condenser 2
EV1 : Evaporator 1
EV2 : Evaporator 2
FC1 : Propellor fan 1
FC2 : Propellor fan 2
FS : Centrifugal fan
HP1 : Condensing Pressure Tap 1
HP2 : Condensing Pressure Tap 2
DF1 : Drier Filter 1
DF2 : Drier Filter 2
B1 : Liquid Tank 1
B2 : Liquid Tank 2
M I1 : Moisture Indicator 1
M I2 : Moisture Indicator 2
EEV1 : Electronic Expansion Valve 1
EEV2 : Electronic Expansion Valve 2
V1 : 4 way valve 1
V2 : 4 way valve 2
VP : Vacuum draining take-off

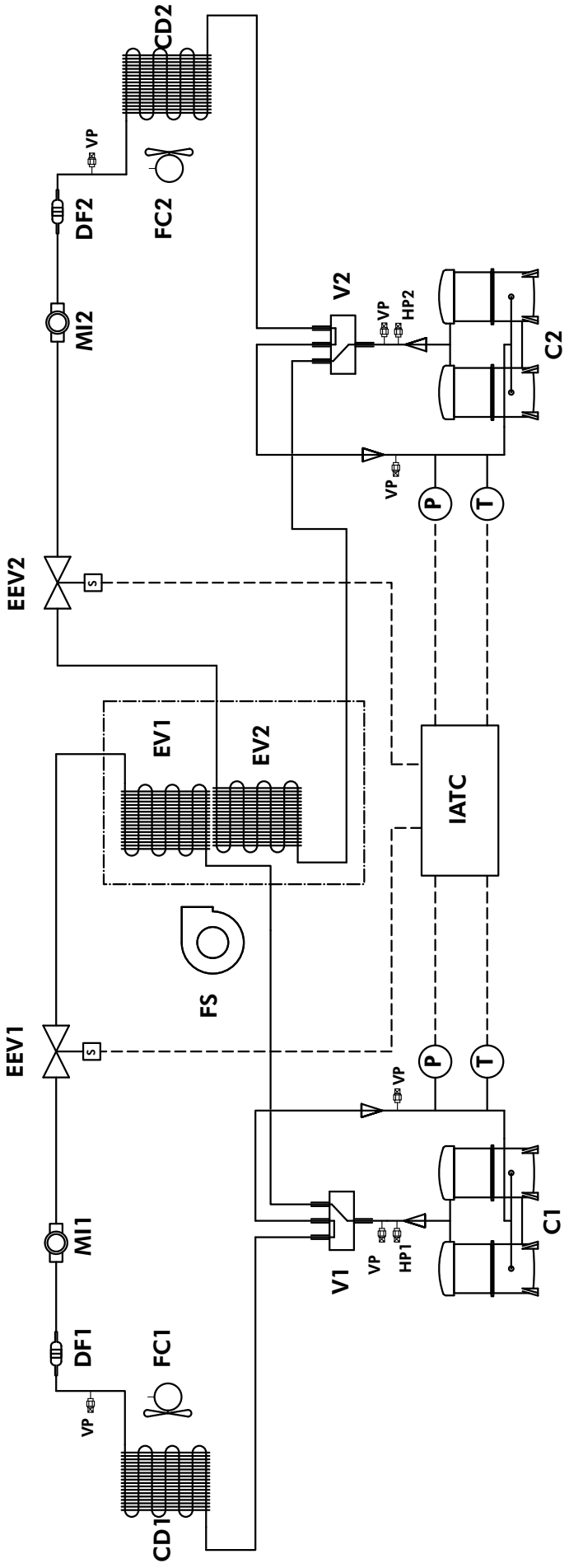
C1 : Compresseur 1
C2 : Compresseur 2
CD1 : Condenseur 1
CD2 : Condenseur 2
EV1 : Evaporateur 1
EV2 : Evaporateur 2
FC1 : Ventilateur hélicoïde 1
FC2 : Ventilateur hélicoïde 2
FS : Ventilateur centrifuge
HP1 : Prise de pression HP 1
HP2 : Prise de pression HP 2
DF1 : Filtre déshumidificateur 1
DF2 : Filtre déshumidificateur 2
B1 : Bouteille de réserve 1
B2 : Bouteille de réserve 2
M I1 : voyant liquide 1
M I2 : voyant liquide 2
EEV1 : Détendeur électronique 1
EEV2 : Détendeur électronique 2
V1 : Vanne d'inversion 1
V2 : Vanne d'inversion 2
VP : Prise de tirage au vide

C1 : Kompressor 1
C2 : Kompressor 2
CD1 : Verflüssiger 1
CD2 : Verflüssiger 2
EV1 : Verdampfer 1
EV2 : Verdampfer 2
FC1 : Axialventilator 1
FC2 : Axialventilator 2
FS : Zentrifugalventilator
HP1 : Druckanschlussstelle Hochdruck 1
HP2 : Druckanschlussstelle Hochdruck 2
DF1 : Wasserabscheidungsfilter 1
DF2 : Wasserabscheidungsfilter 2
B1 : Flasche mit Flüssigkeitsreserve 1
B2 : Flasche mit Flüssigkeitsreserve 2
M I1 : Flüssigkeitsschauglas 1
M I2 : Flüssigkeitsschauglas 2
EEV1 : Elektronisches Druckminderventil 1
EEV2 : Elektronisches Druckminderventil 2
V1 : Umkehrventil 1
V2 : Umkehrventil 2
VP : Anschluss zum Evakuieren

C1 : Compressore 1
C2 : Compressore 2
CD1 : Condensator 1
CD2 : Condensator 2
EV1 : Evaporatore 1
EV2 : Evaporatore 2
FC1 : Elicoidale ventilatore 1
FC2 : Elicoidale ventilatore 2
FS : Centrifugo ventilatore
HP1 : Presa di pressione HP 1
HP2 : Presa di pressione HP 2
DF1 : Filtro disidratatore 1
DF2 : Filtro disidratatore 2
B1 : Bombola di riserva 1
B2 : Bombola di riserva 2
M I1 : spia liquido 1
M I2 : spia liquido 2
EEV1 : Regolatore elettronico di pressione 1
EEV2 : Regolatore elettronico di pressione 2
V1 : Valvola di inversione 1
V2 : Valvola di inversione 2
VP : Presa di tiraggio a vuoto

C1 : Compresor 1
C2 : Compresor 2
CD1 : Condensador 1
CD2 : Condensador 2
EV1 : Evaporador 1
EV2 : Evaporador 2
FC1 : Helicoidal ventilator 1
FC2 : Helicoidal ventilator 2
FS : Centrifugo ventilator
HP1 : Toma de presión AP 1
HP2 : Toma de presión AP 2
DF1 : Filtro deshumidificador 1
DF2 : Filtro deshumidificador 2
B1 : Botella de reserva 1
B2 : Botella de reserva 2
M I1 : indicador luminoso líquido 1
M I2 : indicador luminoso líquido 2
EEV1 : Reductor electrónico de presión 1
EEV2 : Reductor electrónico de presión 2
V1 : Válvula de inversión 1
V2 : Válvula de inversión 2
VP : Toma de vacío

RT100 - RT120 - RT140 - RT160



WIRING DIAGRAM
SCHEMAS ELECTRIQUES
STROMLAUFPLANS
SCHEMA ELETRICO
ESQUEMA ELECTRICO

TAKE CARE!

These wiring diagrams are correct at the time of publication. Manufacturing changes can lead to modifications. Always refer to the diagram supplied with the product.

ATTENTION

Ces schémas sont corrects au moment de la publication. Les variantes en fabrication peuvent entraîner des modifications. Reportez-vous toujours au schéma livré avec le produit.

ACHTUNG!

Diese Stromlaufplans sind zum Zeitpunkt der Veröffentlichung gültig. In Herstellung befindliche Varianten können Änderungen mit sich bringen. In jedem Fall den mit dem Produkt gelieferten Stromlaufplan hinzuziehen.

ATTENZIONE !

Questi schemi sono corretti al momento della pubblicazione. Le varianti apportate nel corso della fabbricazione possono comportare modifiche. Far sempre riferimento allo schema fornito con il prodotto.

ATENCIÓN !

Esto esquemas son correctos en el momento de la publicación. Pero las variantes en la fabricación pueden ser motivo de modificaciones. Remítase siempre al esquema entregado con el producto.

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOXES!

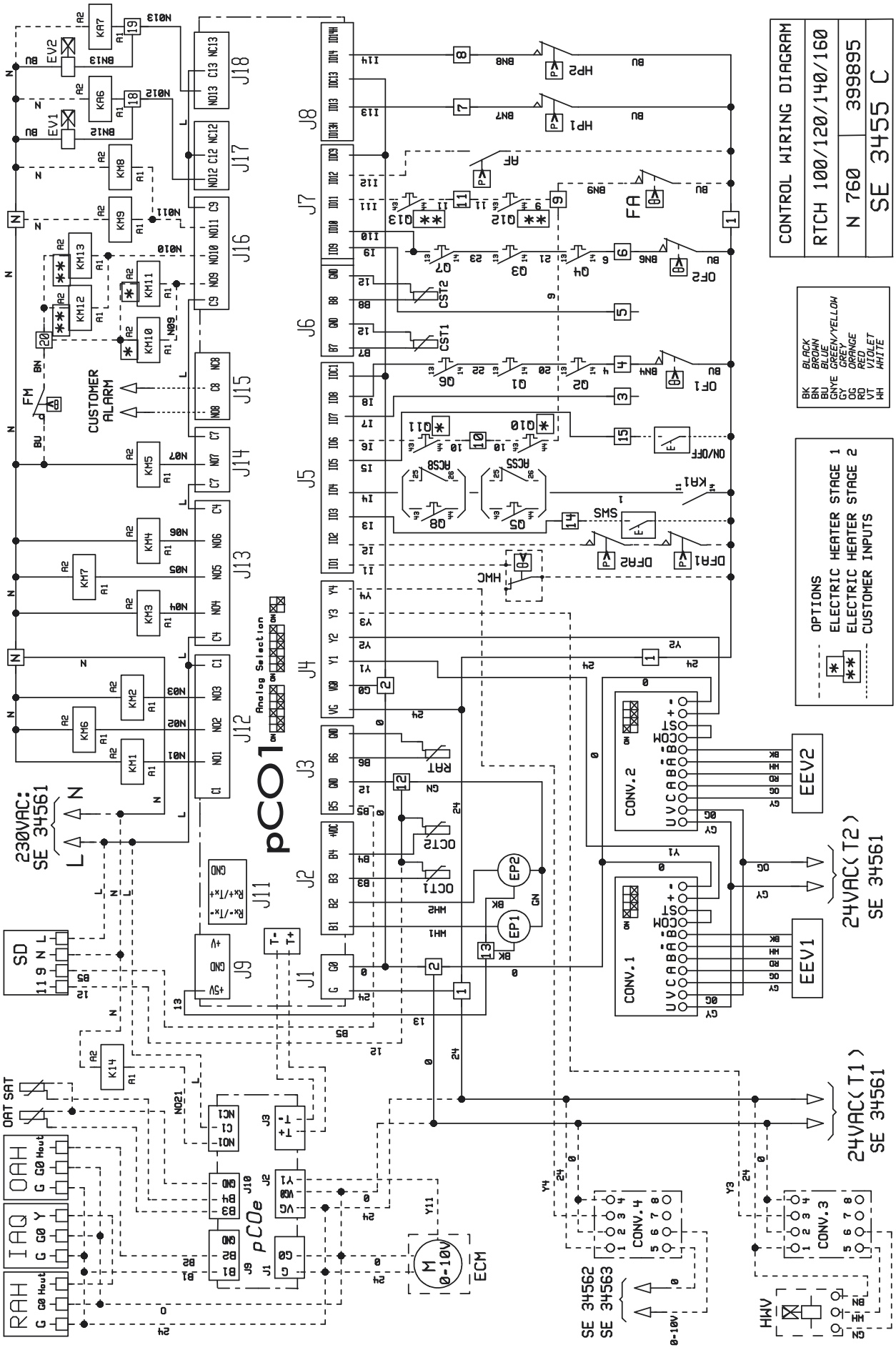
MISE HORS TENSION OBLIGATOIRE AVANT TOUTE INTERVENTION DANS LES BOITIERS ELECTRIQUES.

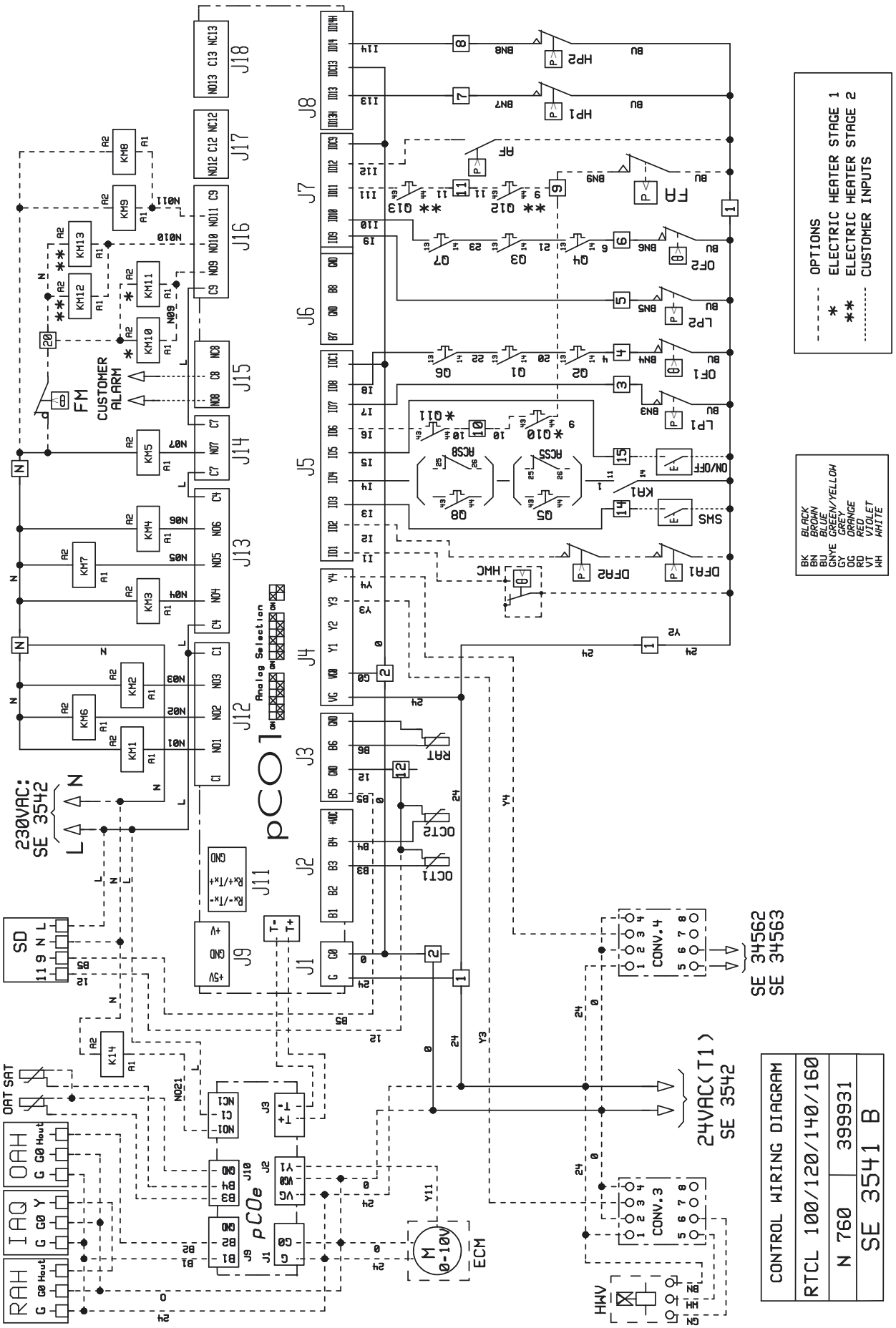
VOR JEDEM EINGRIFF AN DEN ANSCHLUßKÄSTEN UNBEDINGT DAS GERÄT ABSCHALTEN!

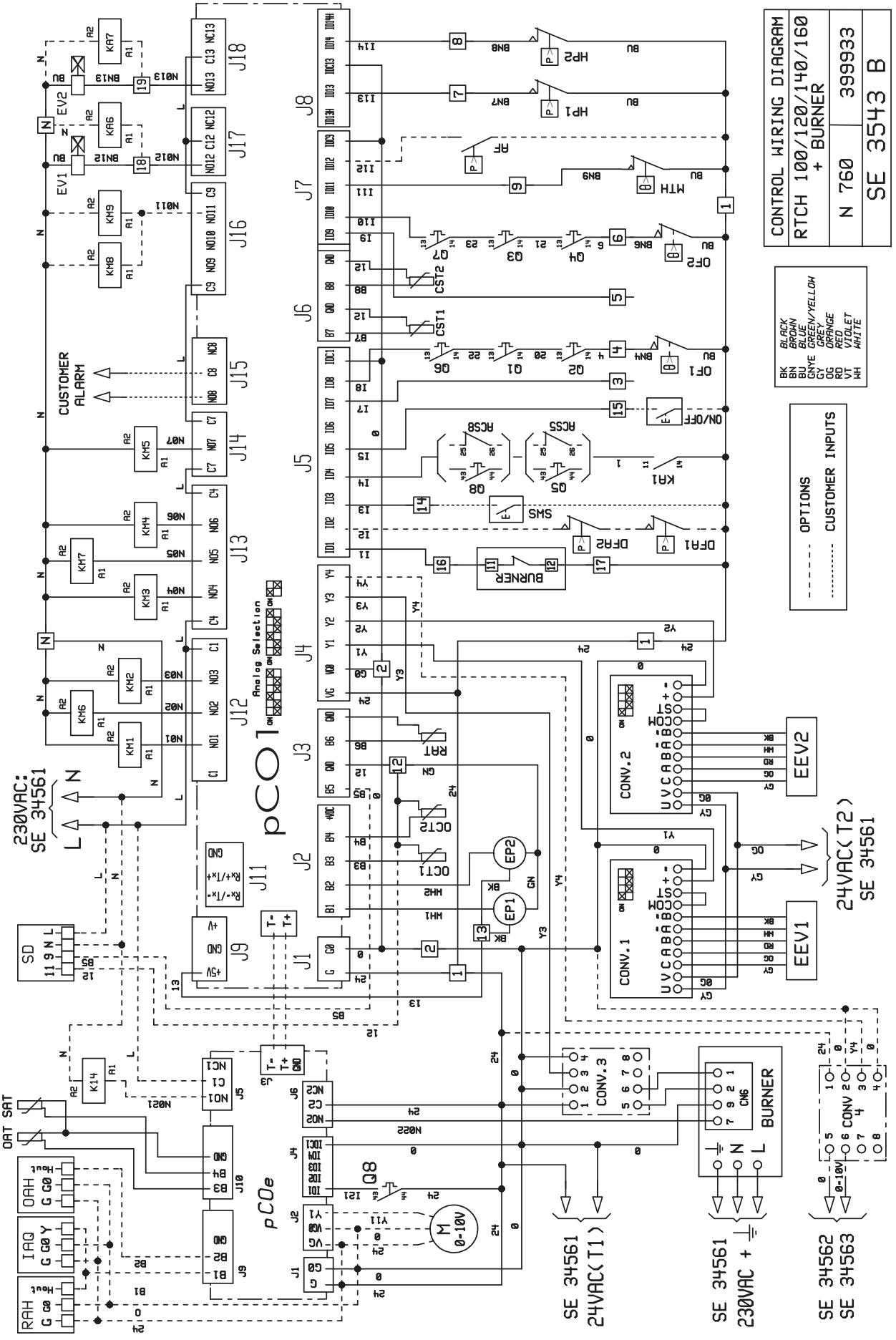
PRIMA DI OGNI INTERVENTO SULLE CASSETTE ELETTRICHE ESCLUDERE TASSATIVAMENTE L'ALIMENTAZIONE !

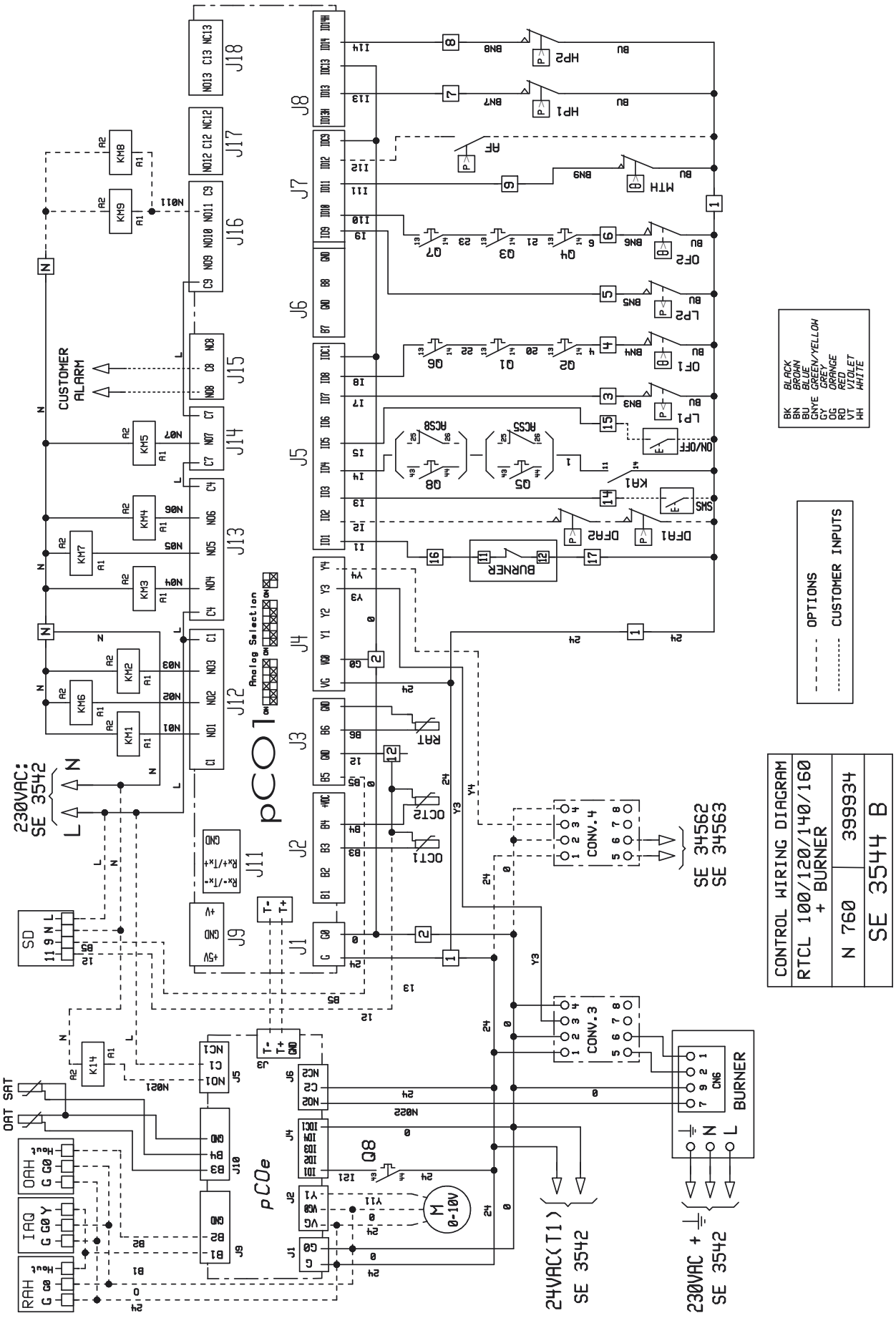
PUESTA FUERA DE TNESIÓN OBLIGATORIA ANTES DE CUALQUIER INTERVENCIÓN EN LAS CAJAS ELÉCTRICAS!

CONTROL

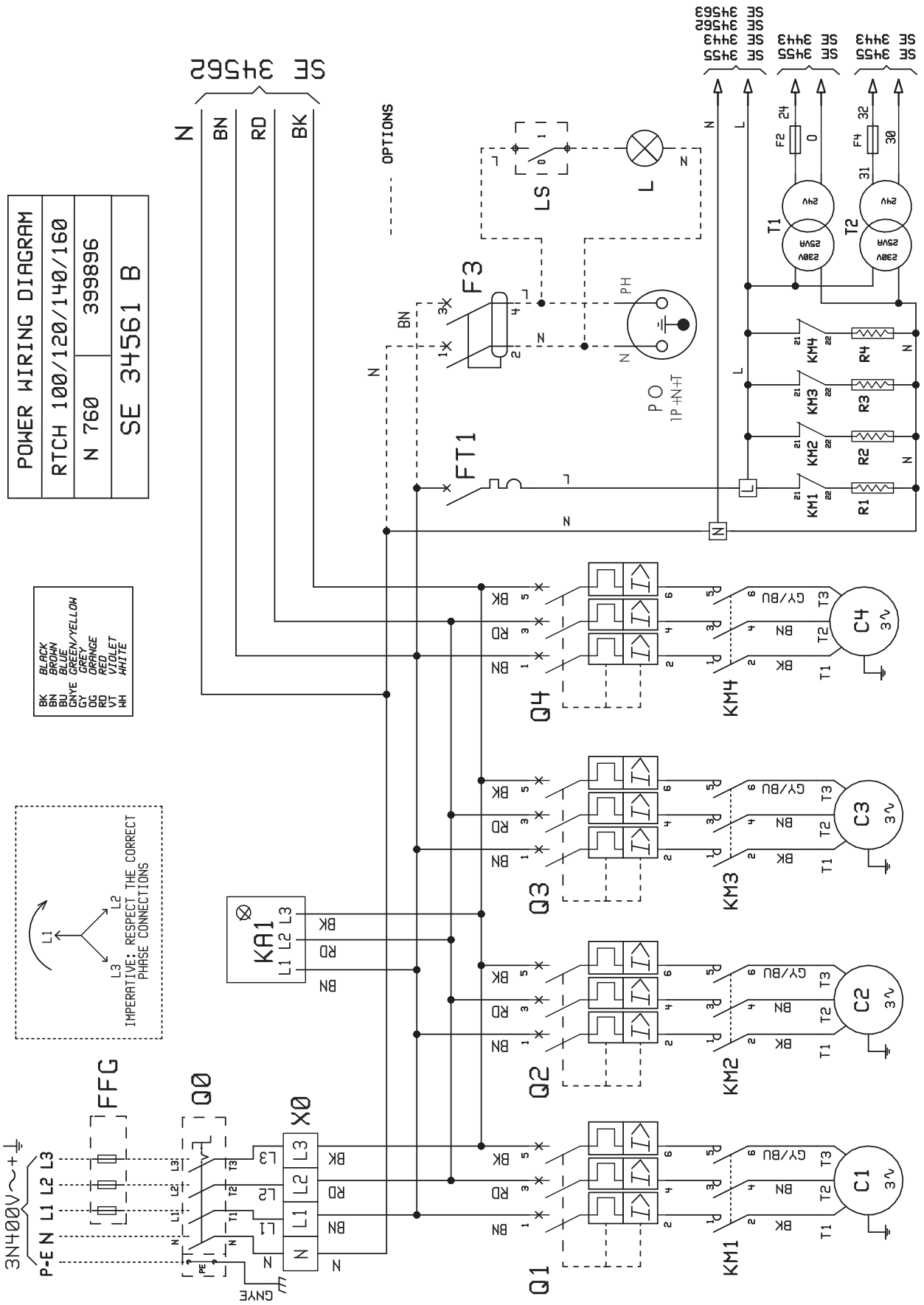

CONTROL WIRING DIAGRAM
RTCH 100/120/140/160
N 760
399895
SE 3455 C
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
OPTIONS
ELECTRIC HEATER STAGE 1
ELECTRIC HEATER STAGE 2
CUSTOMER INPUTS
230VAC: SE 34561
24VAC(T2) SE 34561
24VAC(T1) SE 34561
pCO1
pCOe
Analog Selection
CUSTOMER ALARM
FM
HP1
HP2
FA
OF1
OF2
DFA1
DFA2
SMS
ON/OFF
HWC
EV1
EV2
EEV1
EEV2
CONV.1
CONV.2
CONV.3
CONV.4
SE 34562
SE 34563
ECM
HWV
OAT SAT
RAT
OCT1
OCT2
CST1
CST2
SD
RAH
IAQ
OAH

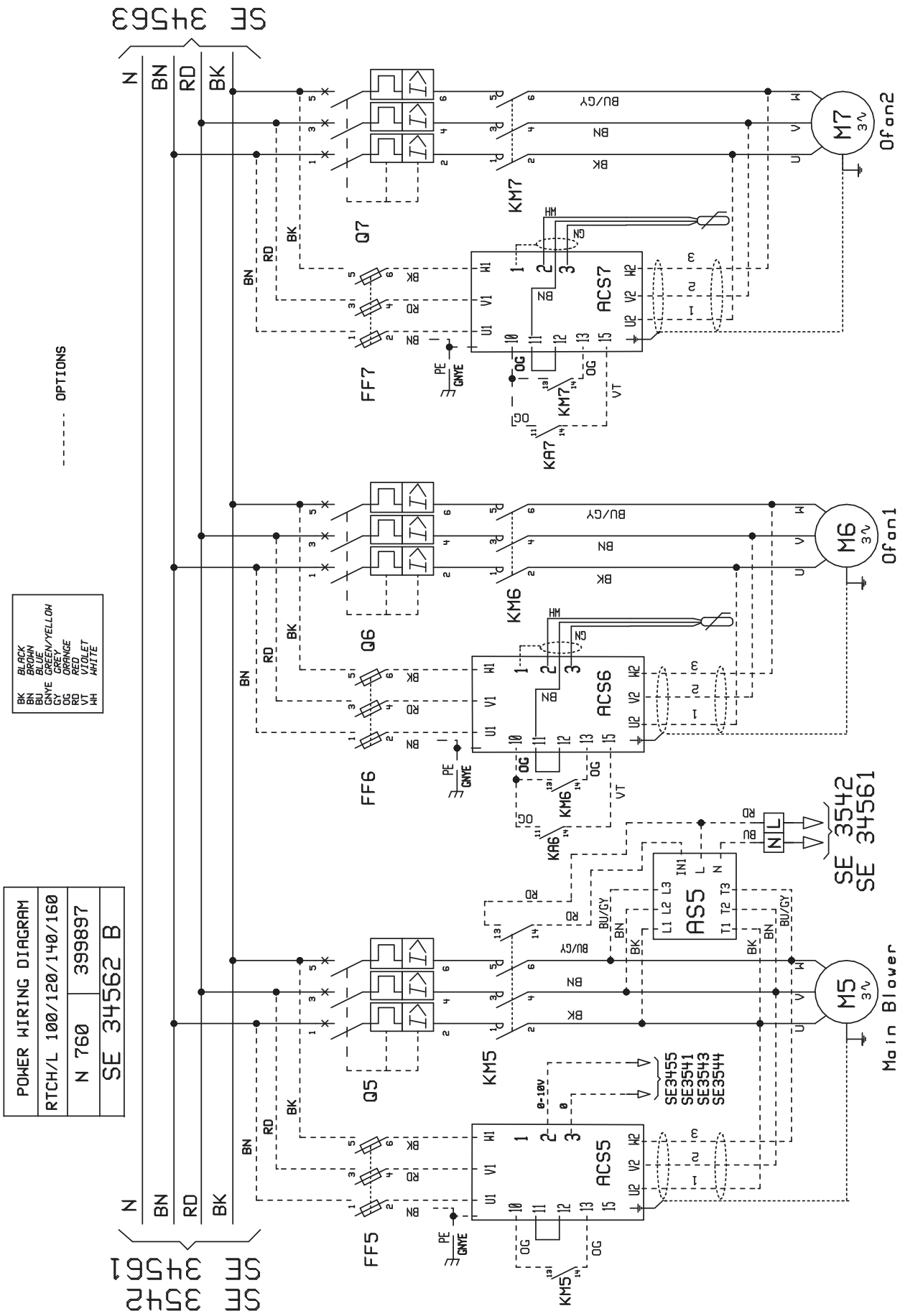

OPTIONS
* ELECTRIC HEATER STAGE 1
** ELECTRIC HEATER STAGE 2
CUSTOMER INPUTS
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
230VAC: SE 3542
24VAC(T1) SE 3542
SE 34562
SE 34563
pCO1
pCOe
Analog Selection
CONTROL WIRING DIAGRAM
RTCL 100/120/140/160
N 760
399931
SE 3541 B

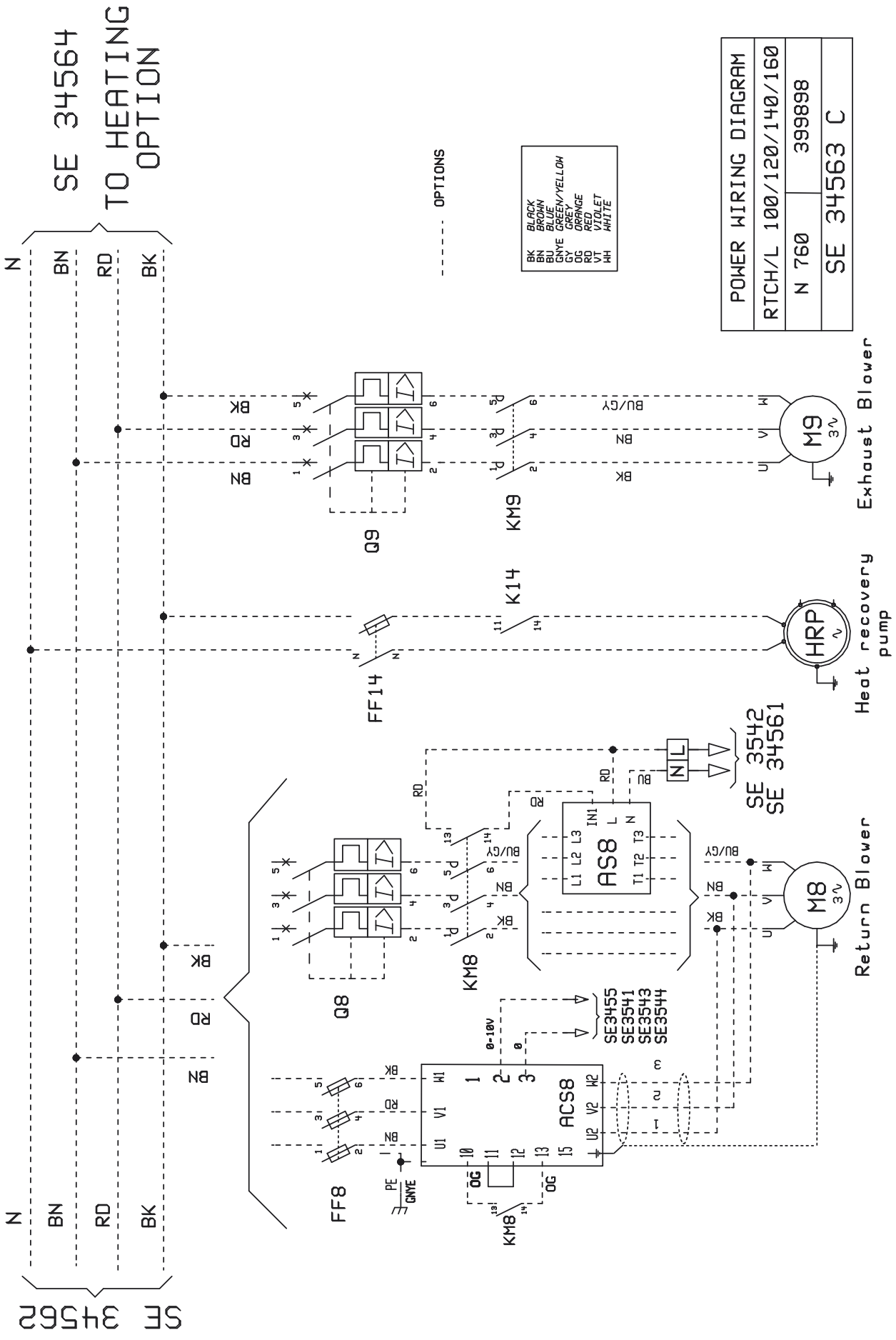

CONTROL WIRING DIAGRAM
RTCH 100/120/140/160 + BURNER
N 760
399933
SE 3543 B
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
OPTIONS
CUSTOMER INPUTS
pCO1
pCOe
CUSTOMER ALARM
230VAC: SE 34561
24VAC(T2) SE 34561
SE 34561 24VAC(T1)
SE 34561 230VAC + ⏚
SE 34562 SE 34563
BURNER
CONV.1
CONV.2
CONV.3
EEV1
EEV2
ON/OFF
SMS
BURNER
HP1
HP2
RF
MTH
OF1
OF2
DFA1
DFA2
KA1
OAT
SAT
OAH
IAQ
RAH

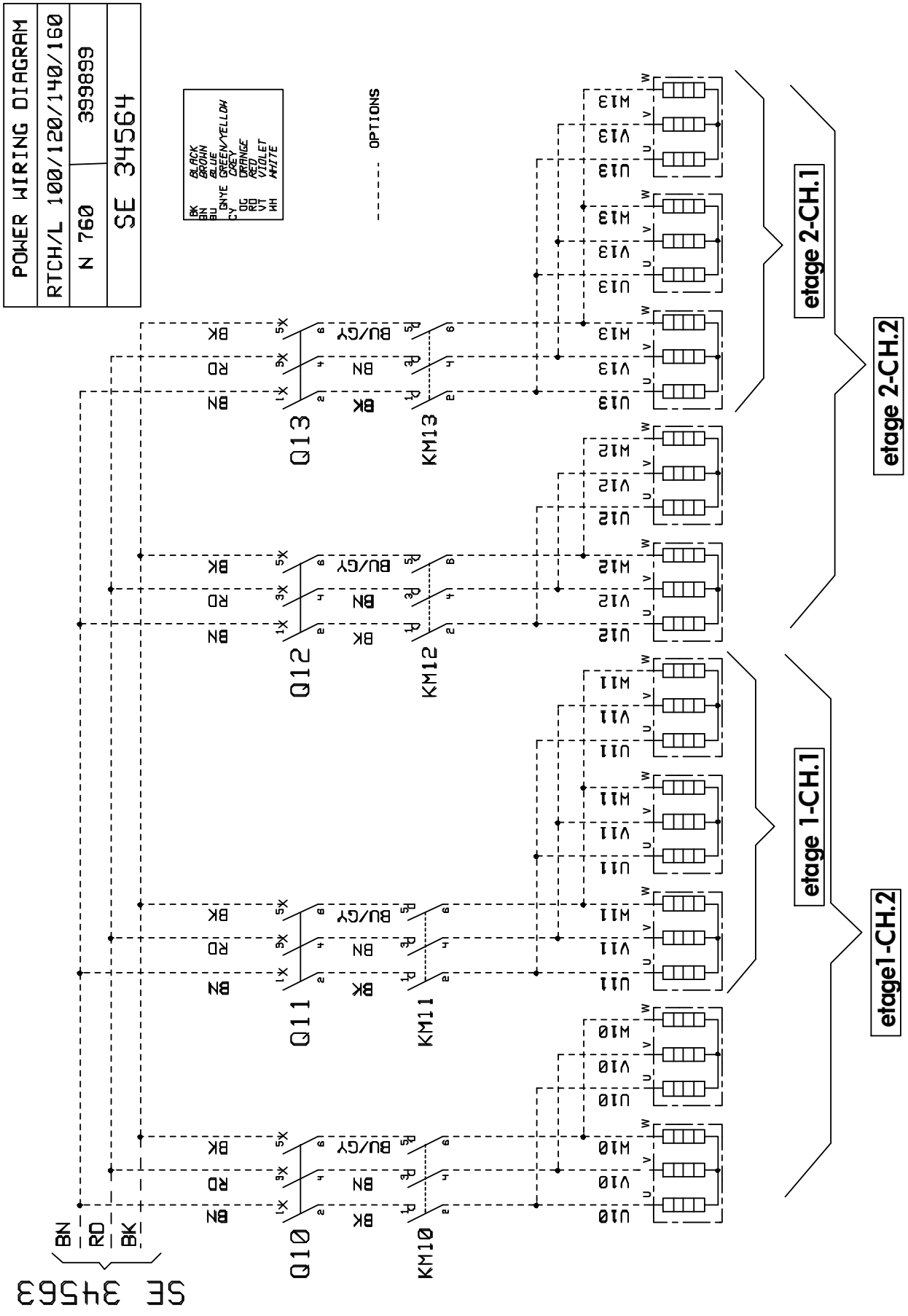

CONTROL WIRING DIAGRAM
RTCL 100/120/140/160
+ BURNER
N 760
399934
SE 3544 B
OPTIONS
CUSTOMER INPUTS
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
230VAC:
SE 3542
CUSTOMER ALARM
pCO1
Analog Selection
SE 34562
SE 34563
CONV.4
CONV.3
BURNER
24VAC(T1)
SE 3542
230VAC +
SE 3542
OAT SAT
pCOe
0-10V
HP2
HP1
AF
MTH
OF2
LP2
OF1
LP1
ON/OFF
SMS
KR1
DFR2
DFR1
BURNER
RAT
OCT2
OCT1

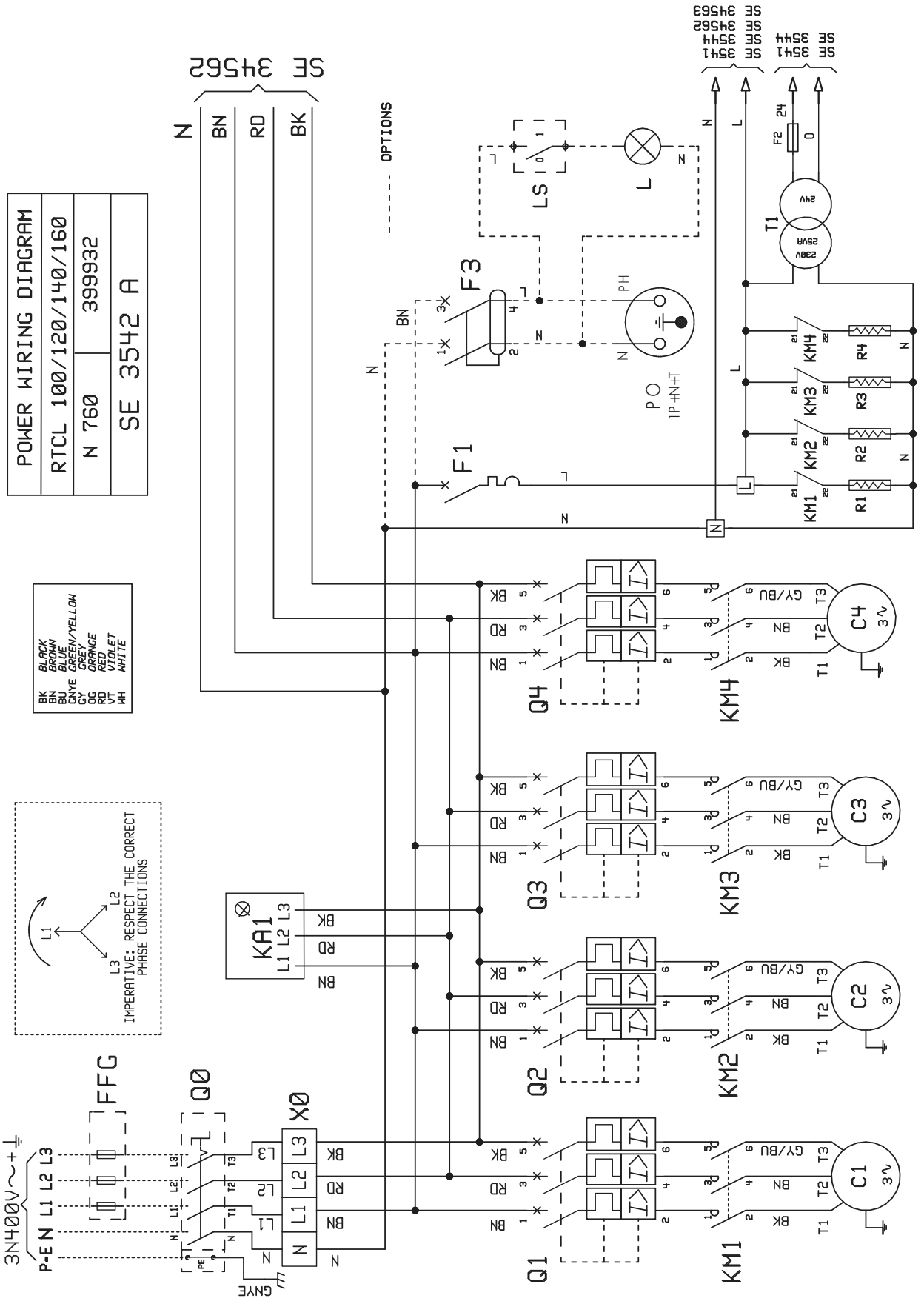
POWER


POWER WIRING DIAGRAM
RTCH 100/120/140/160
N 760
399896
SE 34561 B
SE 34562
N
BN
RD
BK
OPTIONS
LS
L
F3
FT1
PH
1P+N+T
T1
T2
F2
F4
24
0
32
30
31
230V
25VA
24V
KM1
KM2
KM3
KM4
R1
R2
R3
R4
Q1
Q2
Q3
Q4
C1
C2
C3
C4
KA1
L1 L2 L3
X0
Q0
FFG
3N400V~+⏚
P+E N L1 L2 L3
GNYE
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
IMPERATIVE: RESPECT THE CORRECT PHASE CONNECTIONS


POWER WIRING DIAGRAM
RTCH/L 100/120/140/160
N 760 | 399897
SE 34562 B
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
---- OPTIONS
SE 34563
SE 34561
SE 34562
N
BN
RD
BK
Q5
Q6
Q7
FF5
FF6
FF7
KM5
KM6
KM7
KA6
KA7
ACS5
ACS6
ACS7
AS5
M5
M6
M7
Main Blower
Ofan1
Ofan2
SE 3542
SE 34561
SE3455
SE3541
SE3543
SE3544
0-10V
PE
GNYE
BU/GY
BN
BK
RD
OG
VT


SE 34564
TO HEATING OPTION
OPTIONS
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
POWER WIRING DIAGRAM
RTCH/L 100/120/140/160
N 760 399898
SE 34563 C
N
BN
RD
BK
Q9
KM9
M9
Exhaust Blower
K14
FF14
HRP
Heat recovery pump
SE 3542
SE 34561
NL
Q8
KM8
AS8
M8
Return Blower
SE3455
SE3541
SE3543
SE3544
0-10V
ACS8
FF8
PE
GNYE
KM8


POWER WIRING DIAGRAM
RTCH/L 100/120/140/160
N 760
399899
SE 34564
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
---- OPTIONS
SE 34563
BN
RD
BK
Q10
KM10
Q11
KM11
Q12
KM12
Q13
KM13
BU/GY
U10
V10
W10
U11
V11
W11
U12
V12
W12
U13
V13
W13
etage1-CH.2
etage 1-CH.1
etage 2-CH.1
etage 2-CH.2


POWER WIRING DIAGRAM
RTCL 100/120/140/160
N 760
399932
SE 3542 A
SE 34562
N
BN
RD
BK
OPTIONS
SE 35441
SE 35442
SE 35443
SE 35444
LS
L
F2
24
0
T1
230V
25VA
24V
F3
F1
PO
1P+N+T
KM4
KM3
KM2
KM1
R4
R3
R2
R1
Q4
Q3
Q2
Q1
C4
C3
C2
C1
KA1
L1 L2 L3
BK
RD
BN
GY/BU
T1
T2
T3
IMPERATIVE: RESPECT THE CORRECT PHASE CONNECTIONS
L1
L2
L3
3N400V~+⏚
P-E N L1 L2 L3
FFG
Q0
X0
GNYE
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE

AERAULIC ADJUSTMENT (WITHOUT OPTION)

CARACTERITIQUES AERAULIQUES (SANS OPTION)

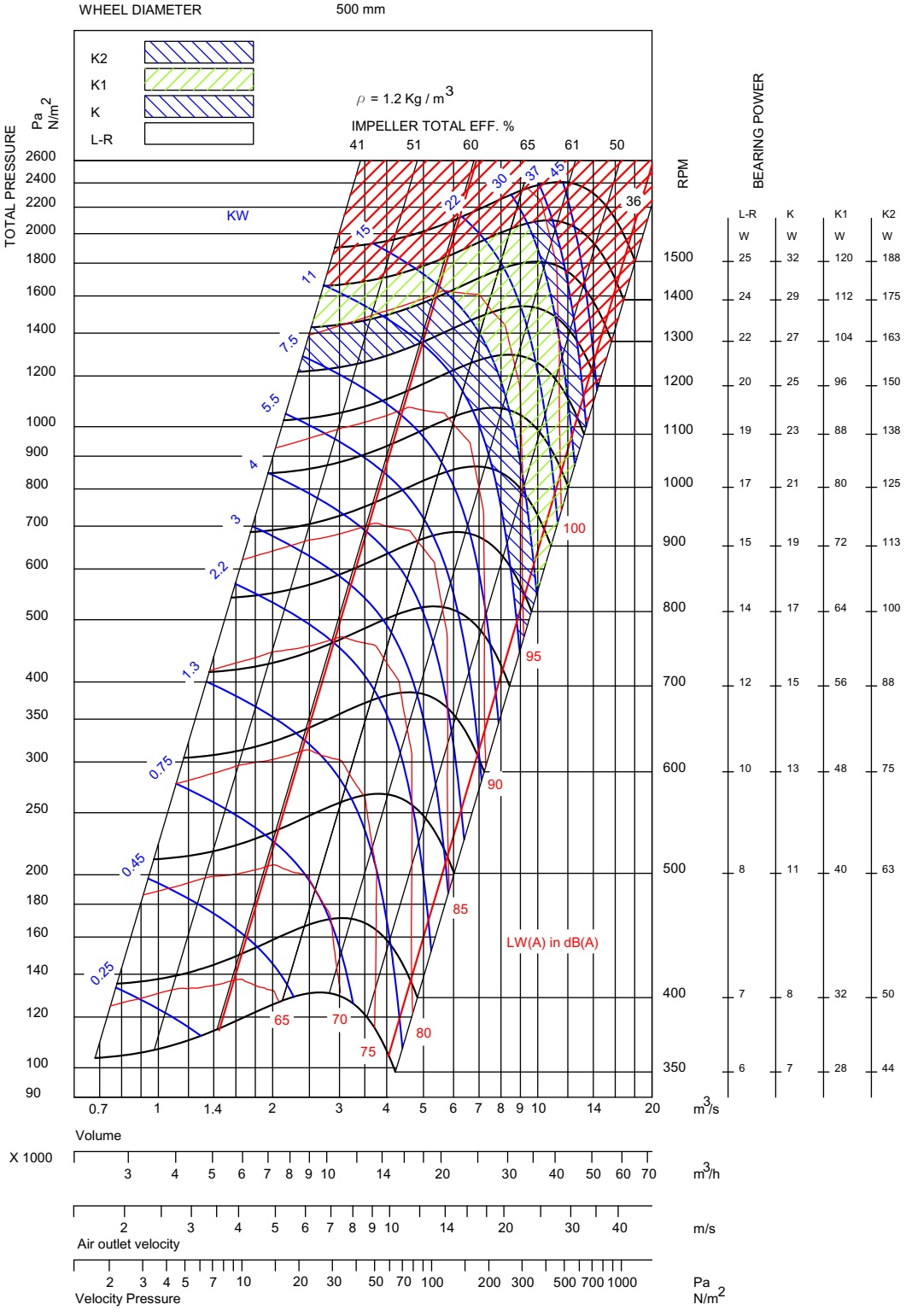
REGELUNG DES LÜFTERSYSTEMS (OHNE OPTION)

REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'AIRIA (SENZA OPZIONE)

AJUSTE DEL ISTEMA AEROLICO (SIN OPCIÓN)

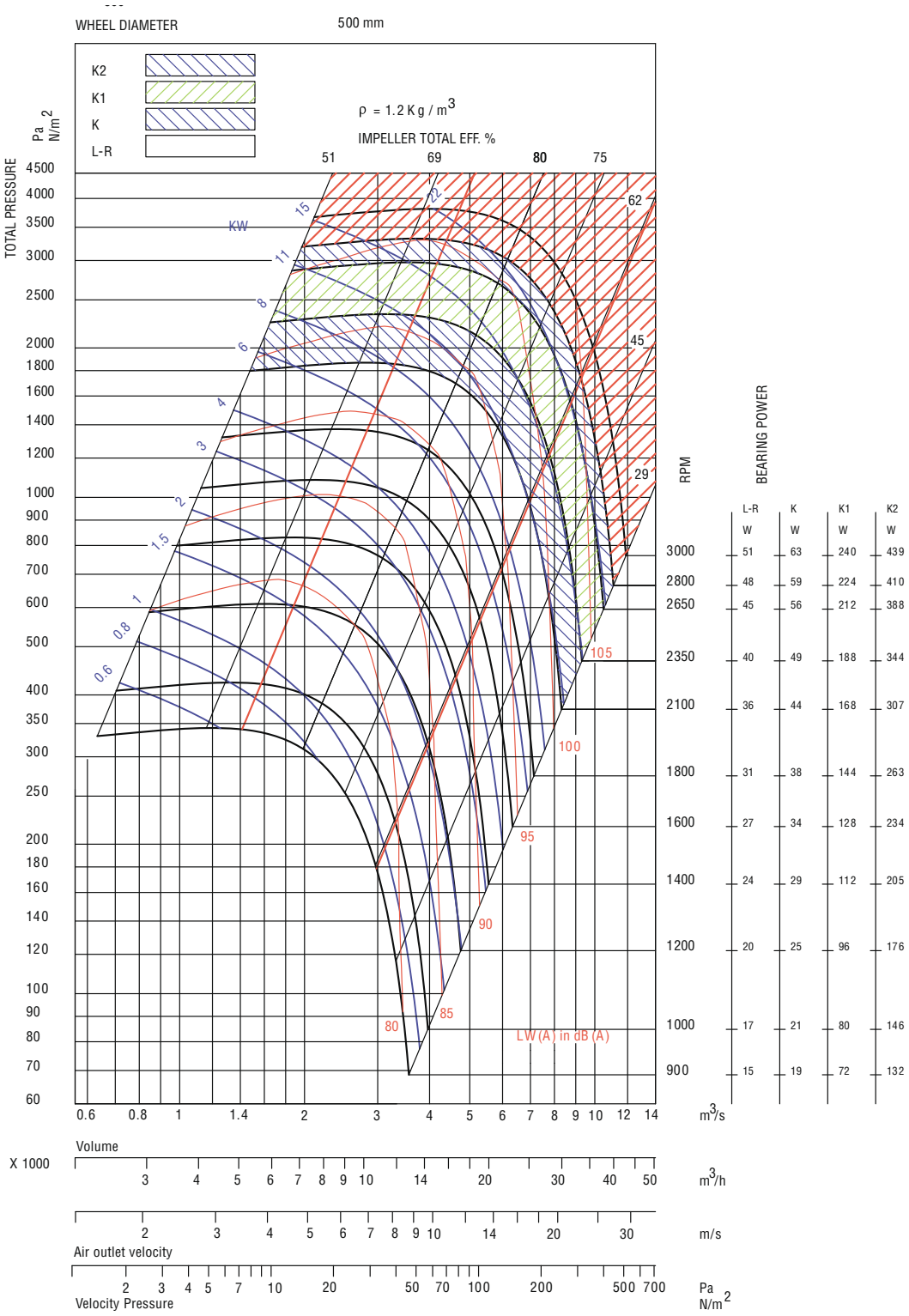
RT100

ADH500



Performance shown is for installation type B, free inlet - ducted outlet, and doesn't include the effects of appurtenances in the airstream.
Power rating kW doesn't include drive losses.
The AMCA Certified Ratings Seal applies to Air Performance only.

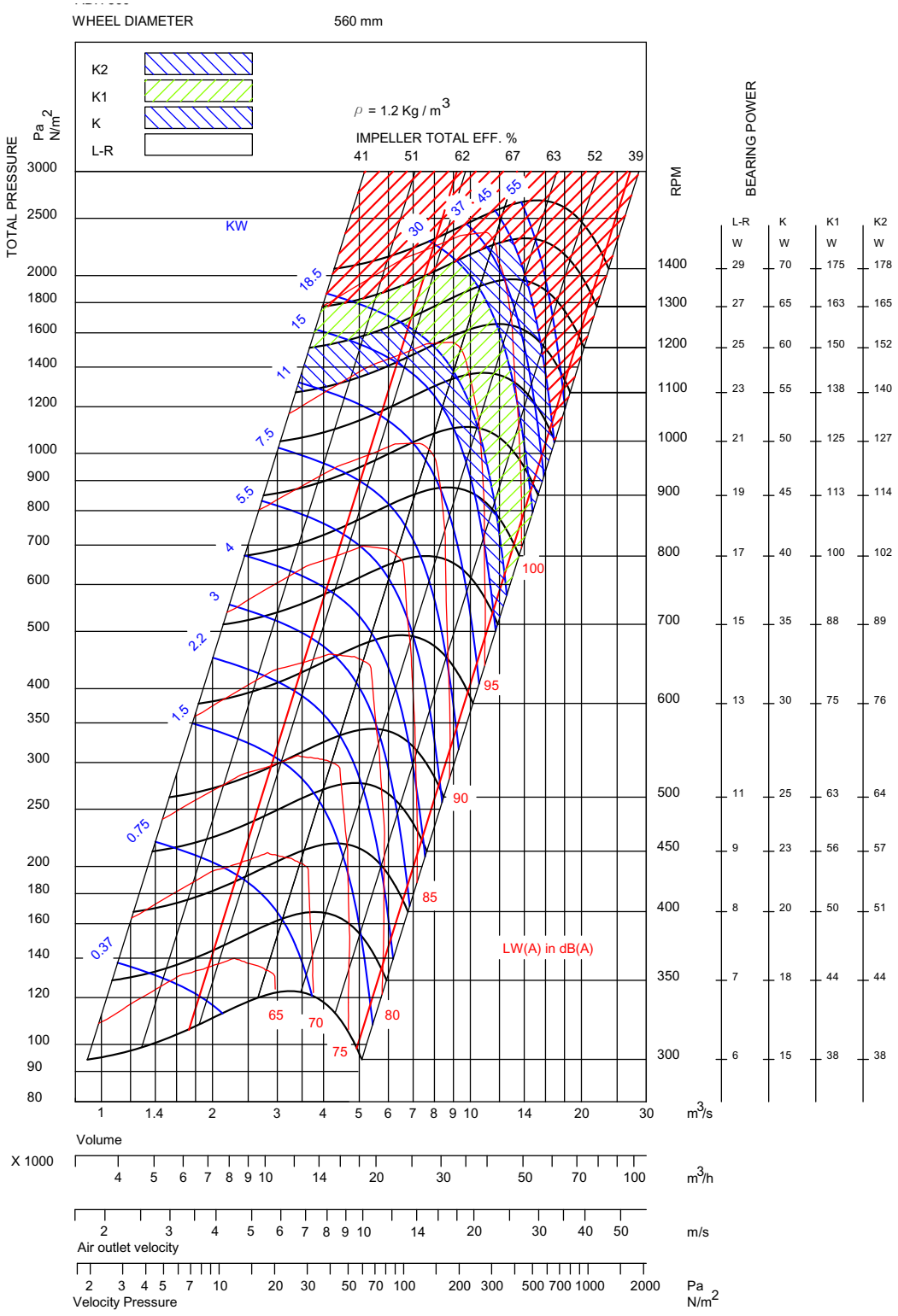
RDH500



Performance shown is for installation type B, free inlet- ducted outlet, and doesn't include the effect of appuntenances in the airstream.
Power rating kW doesn't include drive losses.
The AMCA Certified Ratings Seal applies to Air Performance only.

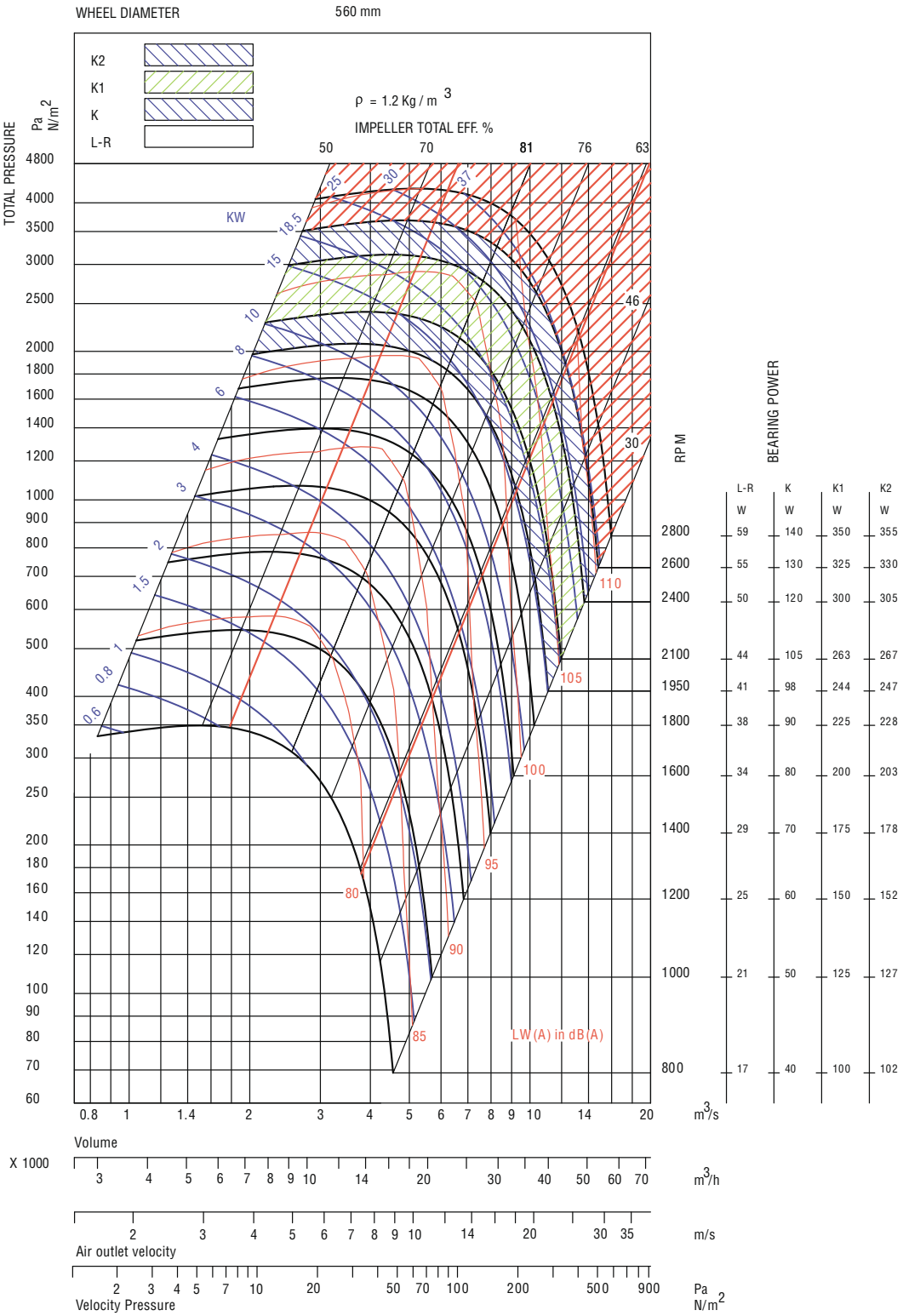
RT120-140-160

ADH560



Performance shown is for installation type B, free inlet - ducted outlet, and doesn't include the effects of appurtenances in the airstream.
Power rating kW doesn't include drive losses.
The AMCA Certified Ratings Seal applies to Air Performance only.

RDH560



Performance shown is for installation type B, free inlet- ducted outlet, and doesn t include the effect of appuntenances in the airstream.
Power rating kW doesn't include drive losses.
The AMCA Certified Ratings Seal applies to Air Performance only.

START UP FORM / FICHE DE DEMARRAGE

This Appliance has been handed-over .....

Site: ..... User: .....

by (Name of Technician): ..... Company: .....

Date: ..... Signature

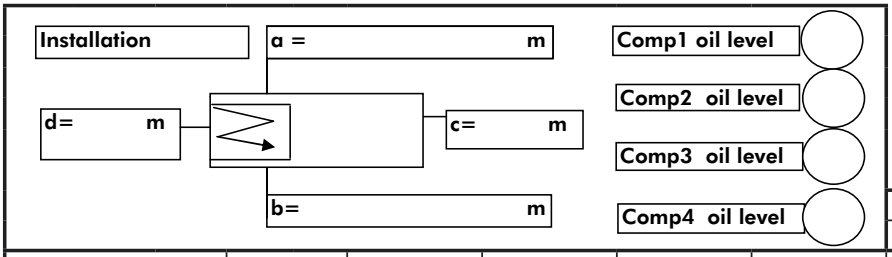
ALL OPERATIONS, SAFETY MAINTENANCE AND RECOMMANDATIONS HAVE BEEN EXPLAINED TO THE USER

Please, return one Copy of this Form to our ASTS department

THIS DOCUMENT IS MANDATORY TO START UNIT WARRANTY

SIZE RTL/RTCL		**Unit S/N**	
SIZE RTH/RTCH		Comp 1 S/N	
		Comp 2 S/N	
		Comp 3 S/N	
		Comp 4 S/N	

Options	Yes	No
Air filter		
Dirty filter switch		
Air flow switch		
Economiser		
Electric heat		
hot water coil		
All season kits		
Smoke detector		



R407C	R410

Software version

Unit installation	Floor		Roof		Roofcurb	
Rotation sens	Comp 1	Comp 2	Comp 3	Comp 4		
Rotation sens	Outdoor fan (OFAN)		Main blower (IFAN)		Exhaust blower	

Power supply	L1-L2	V	L1-L3	V	PC Board IATC	V
	L1-N	V	L2-L3	V		

IFAN - Indoor blower				
	OK	NON	Motor pulley type (reference)	
Motor fixation			Blower pulley type (reference)	
Blower fixation			Belt reference	
Pulley alignment			Int on motor plate / Overload setting	
Pulley fixation			Current (Ph1/Ph2/Ph3)	
Belt tensionning			Measured airflow	

Safety device check Circuit 1	OK	Value	**Safety device check Circuit 2**	OK	Value
Low pressure Switch (LP)					
High pressure Switch (HP)					

OFAN	1			2			3			4		
	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3
Absorbed current (A)												

COOLING MODE	Comp 1			Comp 2			Comp 3			Comp 4		
	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3
Absorbed current (A)												

COOLING MODE	Circuit 1	Circuit 2
RAT (Room T°)	°C	°C
OAT (Outdoor T°)	°C	°C
SAT (Supply T°)	°C	°C
OCT (Condensing T°)	°C	°C
RAH (Room humidity)	%rH	%rH
OAH (Outdoor humidity)	%rH	%rH
IAQ (Air quality sensor)	%	%
Enthal room	KJ/Kg	KJ/Kg
Enthal out	KJ/Kg	KJ/Kg
Cons Enthal	°C	°C
LP (Evaporating pressure)	Bar	Bar
T° (evap)	°C	°C
T° (asp/suction)	°C	°C
SH (Superheat)	°C	°C
LP (Condensing pressure)	Bar	Bar
T° (cond)	°C	°C
T° liquide	°C	°C
T° s/s refroid	°C	°C

HEATING MODE	Comp 1			Comp 2			Comp 3			Comp 4		
	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3	Ph1	Ph2	Ph3
Absorbed current (A)												

HEATING MODE	Circuit 1	Circuit 2
RAT (Room T°)	°C	°C
OAT (Outdoor T°)	°C	°C
SAT (Supply T°)	°C	°C
OCT (Condensing T°)	°C	°C
RAH (Room humidity)	%rH	%rH
OAH (Outdoor humidity)	%rH	%rH
IAQ (Air quality sensor)	%	%
Enthal room	KJ/Kg	KJ/Kg
Enthal out	KJ/Kg	KJ/Kg
Cons Enthal	°C	°C
LP (Evaporating pressure)	Bar	Bar
T° (evap)	°C	°C
T° (asp/suction)	°C	°C
SH (Superheat)	°C	°C
LP (Condensing pressure)	Bar	Bar
T° (cond)	°C	°C
T° liquide	°C	°C
T° s/s refroid	°C	°C

Comments / Others measurement if options mounted:

Signature

EC Compliance declaration

Under our own responsibility, we declare that the product designated in this manual comply with the provisions of the EEC directives listed hereafter and with the national legislation into which these directives have been transposed.

Déclaration CE de conformité

Nous déclarons sous notre responsabilité que les produits désignés dans la présente notice sont conformes aux dispositions des directives CEE énoncées ci- après et aux législations nationales les transposant.

EG-Konformitätserklärung

Wir erklarën in eigener Verantwortung, das die in der vorliegenden Beschreibung angegebenen Produkte den Bestimungen der nachstehend erwähnten EG-Richtlinien und den nationalen Gesetzesvorschriffen entsprechen, in denen diese Richtinien umgesetz sind.

Dichiarazione CE di conformità

Dichiariamo, assurmendone la responsasabilità, che i prodotti descritti nel presente manuale sono conformi alle disposizioni delle direttive CEE di cui sott e alle lagislazionni nazionali che li recepiscono

Declaración CE de conformidad

Declaramos, bajo nuestra responsabilidad, que los productos designados en este manual son conformes a las disposiciones de las directivas CEE enunuciadas a continuacion, asi como a las legislaciones nacionales que las contemplan.

RTL 100 - 120 - 140 - 160
RTH 100 - 120 - 140 - 160

MACHINERY DIRECTIVE 98 / 37 / EEC
LOW VOLTAGE DIRECTIVE (DBT) 73 / 23 / EEC
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004 / 108 / EEC
PRESSURISE EQUIPMENT DIRECTIVE (DESP) 97 / 23 / EEC
SUB-MODULE A1 CATEGORY II:
NOTIFIED BODY: TÜV RHEINLAND – 6, RUE HALÉVY – 75 009 PARIS - FRANCE.
THE PRODUCTS ARE PROVIDED WITH CE 0035 MARKING OF CONFORMITY

DIRECTIVE MACHINES 98 / 37 C.E.E.
DIRECTIVE BASSE TENSION (DBT) 73 / 23 / C.E.E.
DIRECTIVE COMPATIBILITE ELECTROMAGNETIQUE 2004 / 108 / C.E.E
DIRECTIVE DES EQUIPEMENTS SOUS PRESSION (DESP) 97 / 23 C.E.E.
SOUS-MODULE A1 CATEGORIE II :
AVEC SURVEILLANCE PAR LE TUV RHEINLAND 6, RUE HALÉVY – 75 009 PARIS - FRANCE.
LES PRODUITS SONT FOURNIS AVEC LE MARQUAGE DE CONFORMITE CE 0035

RICHTLINIE MASCHINEN 98 / 37 / EG
RICHTLINIE NIERDERSPANNUNG (DBT) 73 / 23 / EG
RICHTLINIE ELEKTROMAGNETISHE VERTRÄGLICHKEIT 2004 / 108 / EG
RICHTLINIE FÜR AUSRÜSTUNGEN UNTER DRUCK (DESP) 97 / 23 / EG
UNTER MODUL A1, KATEGORIE II :
MIT KONTROLLE DURCH DEN TUV RHEINLAND 6, RUE HALÉVY – 75 009 PARIS - FRANCE.
DIE PRODUKTE WERDEN MIT DER MARKIERUNG CONFORMITE CE 0035 GELIEFERT.

DIRETTIVA MACHINE 98 / 37 / CEE
DIRETTIVA BASSA TENSIONE (DBT) 73 / 23 / CEE
DIRETTIVA COMPATIBILITA ELETTROMAGNATICA 2004 / 108 / CEE
DIRETTIVA DEGLI IMPIANTI SOTTO PRESSIONE (DESP) 97 / 23 / CEE
SOTTOMODULO A1, CATEGORIA II :
CON SUPERVISION POR EL TUV RHEINLAND 6, RUE HALÉVY – 75 009 PARIS - FRANCE.
I PRODOTTI SONO FORNITI CON LA MARCATURA DI CONFORMITE CE 0035.

DIRECTIVA MAQUIAS 98 / 37 / CEE
DIRECTIVA BAJA TENSION (DBT) 73 / 23 / CEE
DIRECTIVA COMPATIBILIDAD ELECTROMAGNETICA 2004 / 108 / CEE
DIRECTIVA DE LOS EQUIPOS A PRESION (DESP) 97 / 23 / CEE
BAJA MODULO A1, CATEGORIA II :
CON SORVEGLIANZA DAL TUV RHEINLAND 6, RUE HALÉVY – 75 009 PARIS - FRANCE.
LOS PRODUCTOS SE PROPORCIONAN CON EL MARCADO DE CONFOR CE 0035.

And that the following paragraphs of the harmonised standards have been applied.
Et que les paragraphes suivants les normes harmonisées ont été appliqués.
Und dass die folgenden Paragraphen der vereinheitlichten Normen Angewandt wurden.
E che sono stati applicati i seguenti paragraphi delle norme armonnizzate.
Y que se han aplicado los siguientes apartados de las normas armonizadas.

EN 60204-1
EN 378-1

EN 50 082
EN 378-2

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27570 - FRANCE
Le: 13/05/2008
Laurent Collongues
Manufacturing Director France
AIRWELL Industrie France

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27570 Tillières-sur-Avre
FRANCE
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🖷 : +33 (0)2 32 32 55 13

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Dans un souci d'amélioration constante, nos produits peuvent être modifiés sans préavis. Photos non contractuelles.

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Con objeto de mejorar constantemente, nuestros productos pueden ser modificados sin previo aviso. Fotos no contractuales.