

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

# ROOFT@IR

## 40 ÷ 110



English

Français

Deutsch

Italiano

Español



40  
↓  
108 kW



38  
↓  
107 kW



**Roof-mounted air conditioning unit**

**Unite d'air conditionne de toiture**

**Dachklimagerät**

**Unità d'aria condizionata da tetto**

**Unidad da aire acondicionado de tejado**

**IOM RT 04-N-2ALL**

Part number / Code / Teil Nummer / Codice / Código : **3990475**

Supersedes / Annule et remplace / Annulliert und ersetzt /

Annulla e sostituisce / Anula y sustituye : **IOM RT 04-N-1ALL**





**INSTALLATION INSTRUCTION**

NOTICE D'INSTALLATION

INSTALLATIONSHANDBUCH

ISTRUZIONI INSTALLAZIONE

INSTRUCCIONES DE INSTALACIÓN

English

Français

Deutsch

Italiano

Español

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## **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 apply to 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 $>50^{\circ}\text{C}$ .
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 $50^{\circ}\text{C}$ 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 breathing 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 damages 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 WARRANTY SHALL BE NULL AND VOID IN THE EVENT OF NON-COMPLIANCE WITH ANY OF THE ABOVE CONDITIONS.**

## CONTENTS OF PACKAGE

- 1 Roof@ir
- 1 Installation and maintenance manual
- 1 Control manual

## PRESENTATION

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

The RT is design very compact and it has an optimal foot print/weight ratio. Numerous accessoires and options can be added to the basic version to adapt it perfectly to the client's specific requirements. All units are charged and tested at the factory and are supplied ready to start for quick and easy commissioning.

## TECHNICAL SPECIFICATIONS

Models		40	50	60	70	80	100	110
Compressor type		Scroll Tandem	Scroll Tandem	Scroll	Scroll	Scroll	Scroll	Scroll
Compressor quantity		2	2	2	2	2	2	2
Number of circuit		1	1	2	2	2	2	2
Refrigerant		R410A						
Charge of circuit	kg	SEE NAME PLATE						
Number of blower		1	1	1	1	1	1	1
Type		Centrifugal						
Nominal indoor airflow	m <sup>3</sup> /h	7 650	9 200	11 500	12 500	16 500	18 650	20 000
Number of outdoor fans		2	2	4	4	4	2	2
Type		Helicoid						
Nominal external total airflow	m <sup>3</sup> /h	16 000	16 000	32 000	32 000	32 000	34 000	34 000

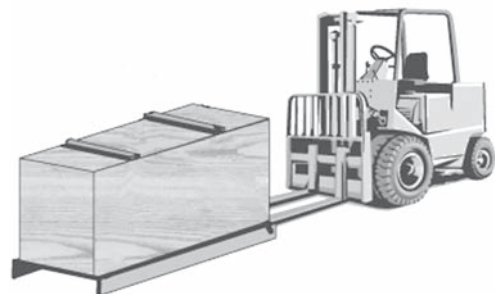
You can adjust the available static pressure and flow by adjusting the variable motor pulley fitted to the blower (SEE AIR BALANCING).

## DIMENSIONS

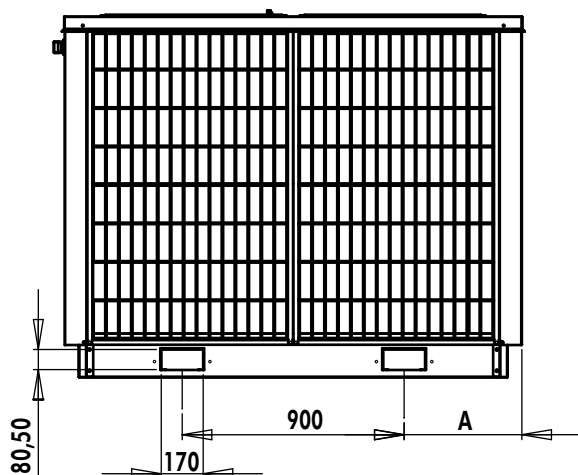
### SEE APPENDIX

## HANDLING

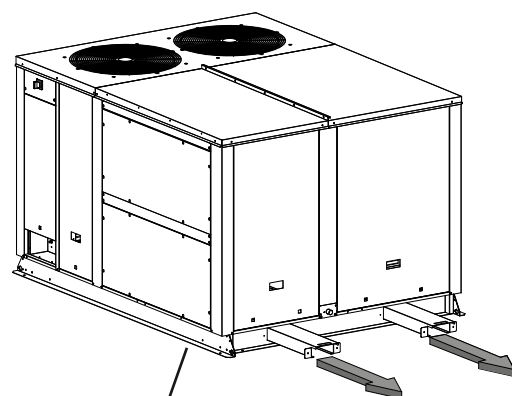
Forks guiderails are supplied as standard with the machine irrespective of the air configuration. They enable the machine to be moved without damaging its base or casing.



In the case of a downward air configuration, remember to remove the forks guiderails before lifting the unit to install it on the roof curb.



	40-50	60-110
A	478	651



FORKS GUIDERAILS



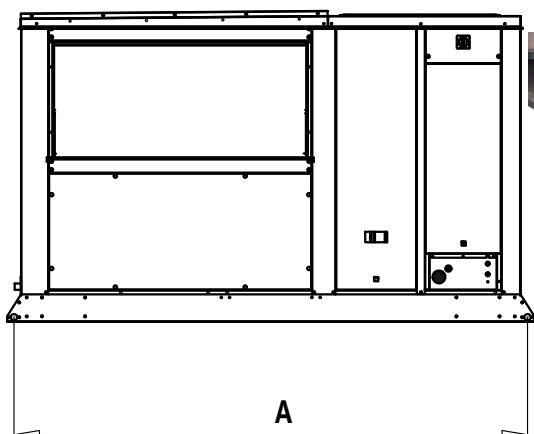
MINIMUM FORK LENGTH: 2M  
**LIFTING WITH THE FORKS GUIDERAILS OBLIGATORY**



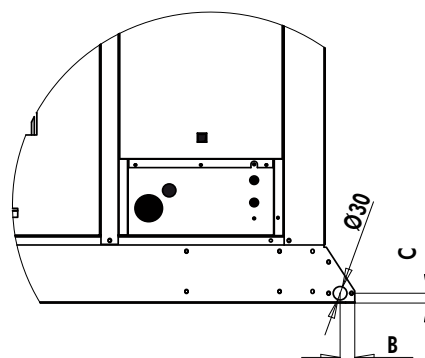
The unit is also designed to be lifted by slings.

The rings mounted rigidly on the unit's base frame enable lifting in complete safety.

A spreader must be used to avoid damaging the casing of the machine.



	40-50	60-110
A	2420	3328
B	32	36
C	22	36



**NET WEIGHT**

Models		<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>100</b>	<b>110</b>
Weight	Kg	580	640	920	950	995	1085	1125

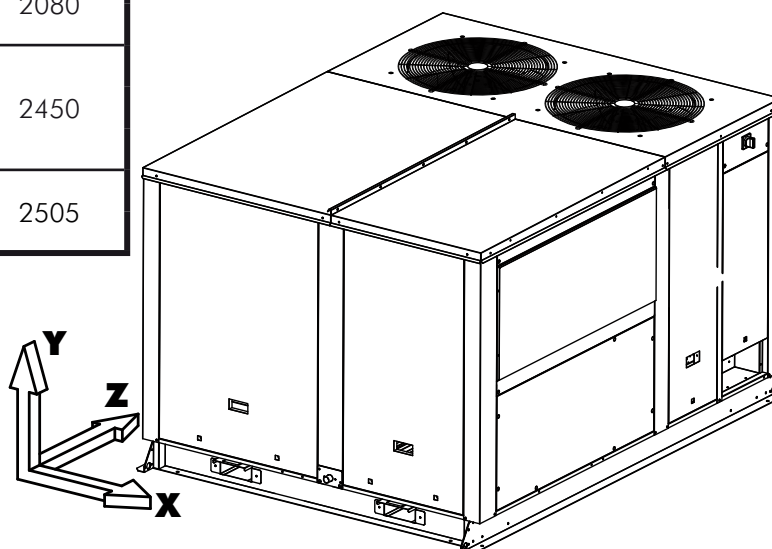


**THE LIFTING POINT MUST SUIT THE UNIT'S CENTRE OF GRAVITY (SEE CHART BELOW).**

**CENTRE OF GRAVITY IN RELATION TO UNIT DIMENSIONS**

Models	$X_G$	$Y_G$	$Z_G$
	mm	mm	mm
<b>40</b>	1380	870	2080
<b>50</b>			
<b>60</b>	1110	1080	2450
<b>70</b>			
<b>80</b>			
<b>100</b>	1050	950	2505
<b>110</b>			

Approximative length



## ELECTRICAL SPECIFICATIONS

### UNIT WITHOUT HEATING

Models		40		50		60		70		80		100		110	
		PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz													
Maximum current	A	42	47	49	55	69	73	73	77	101	101	93	99	96	102
Total starting current	A	127	133	142	148	166	170	168	172	239	239	270	276	273	279
Fuse rating FFG aM	A	50	50	50	63	80	80	80	80	125	125	100	100	100	100

### UNIT WITH HEATING TYPE CH1

Models		40		50		60		70		80		100		110	
		PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz													
Capacities	KW	21		21		36		36		36		36		36	
Maximum current	A	72	77	79	85	121	125	125	129	153	153	145	151	148	154
Total starting current	A	158	163	172	178	218	222	220	224	291	291	322	328	325	331
Fuse rating FFG aM	A	80	80	80	100	125	125	125	160	160	160	160	160	160	160

### UNIT WITH HEATING TYPE CH2

Models		40		50		60		70		80		100		110	
		PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz													
Capacities	KW	31.5		31.5		48		48		48		48		48	
Maximum current	A	87	92	94	100	138	142	142	146	170	170	162	169	165	172
Total starting current	A	173	178	187	193	235	239	237	241	308	308	339	346	342	349
Fuse rating FFG aM	A	100	100	100	100	160	160	160	160	200	200	200	200	200	200

## IMPORTANT

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 void.

### PLACE OF INSTALLATION AND REQUIREMENTS

- The building structure must be capable to carrying the weight of the unit during operation.
- The place of installation must not be subject to flooding.
- The Rooft@ir 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 Rooft@ir. 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.

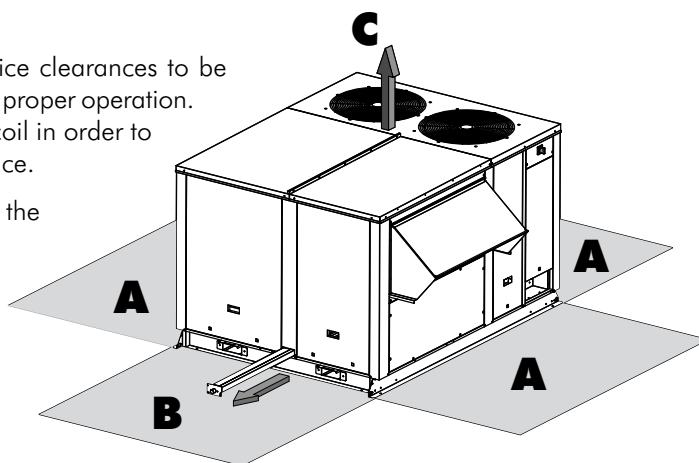


The unit supporting base shall be supplied as indicated in the manual. There could be a risk of personal injury or damage to property in the event of the unit being incorrectly supported.

**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		40	50	60	70	80	100	110
A	mm	1200	1200	1500	1500	1500	1500	1500
B*	mm	1400	1400	1600	1600	1600	1600	1600
C	mm	3000	3000	3000	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 syphon
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.

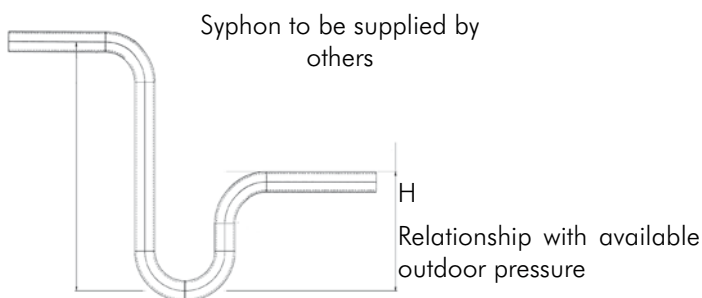
**ATTACHMENT TO THE GROUND**

**SEE APPENDIX**

**CONDENSATE DRAIN PAIN**



Ø 30  
t = 30mm

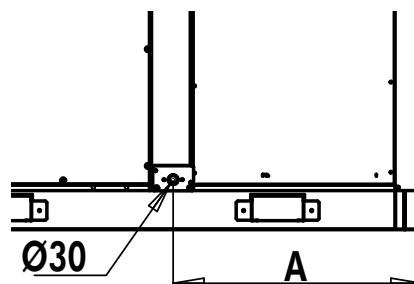


The installer must imperatively supply a syphon.

**CAUTION**

	40-50	60-110
A	822	995

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

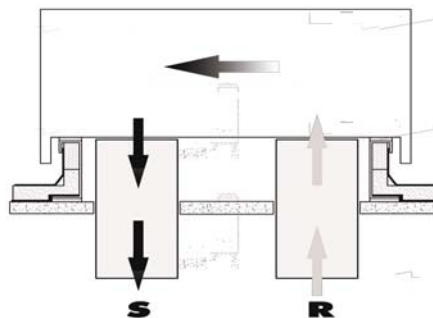


## ROOF CURB

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

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 ROOFT@IR 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:

- knocked-down and non-adjustable version  
This fixed roof curb, as an option, is supplied in kit form. Ask your sales representative.
- An adjustable version is available assembled at the factory with a return air grille (see below).

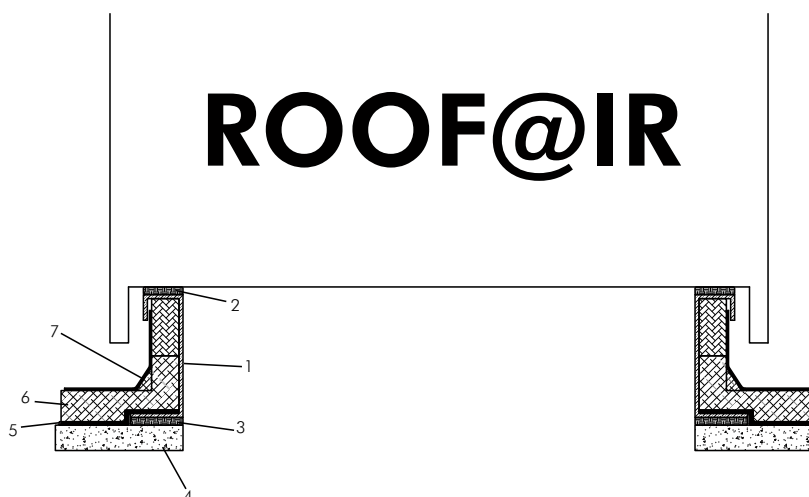
## ROOF CURB DIMENSIONS

# SEE APPENDIX

The frame of the curb receiving the unit must be revealed. 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.

To insulate the Roof curb before posing to ROOFT@IR it.

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

### GENERALITES

The unit is designed to be connected to a duct work. 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 4 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.



**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: S2
- Front discharge: S3
- Top discharge: S4

### AIR INTAKE

- Return air from below: R1
- Return air from the side: R2
- Return air from the rear: R3
- Return air from the top: R4

The "Downward discharge" and "Return air from below" versions requires the presence of a roof curb. For all cases, the installation must be analysed to avoid any risk of damage to the support on which the unit will be mounted, given its weight, .

### DIMENSIONS

**SEE APPENDIX**

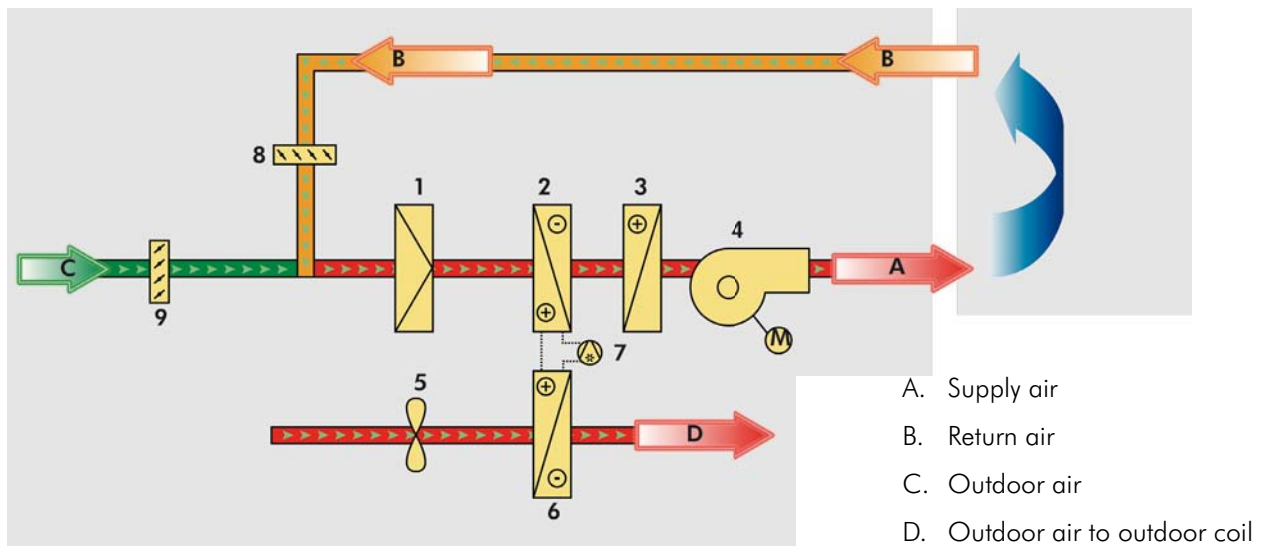
## ECONOMISER

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 coil
4. Main blower
5. Condenser fan
6. Outdoor coil
7. Compressor with reversal cycle valve
8. Return air dampers
9. Outdoor air dampers



**THE ECONOMISER OPTION IS NOT COMPATIBLE WITH THE RETURN AIR FROM THE TOP (R4) AND RETURN AIR FROM THE REAR (R3) CONFIGURATIONS.**



## ELECTRIC HEAT

The electric coil is located directly at the blower outlet. It is only available for the downward discharge version (S1) or front discharge (S3). 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

#### N766

SE3377	models 40/50	Control	230V 50Hz +/- 10%
SE33781	models 40/50	Power Tri	400V+N 50Hz +/- 10%
SE33782	models 40/50	Power Tri	400V+N 50Hz +/- 10%
SE3380	models 60/70/80	Control	230V 50Hz +/- 10%
SE3563	models 100/110	Control	230V 50Hz +/- 10%
SE33791	models 60/70/80/100/110	Power Tri	400V+N 50Hz +/- 10%
SE33792	models 60/70/80	Power Tri	400V+N 50Hz +/- 10%
SE3559	models 100/110	Power Tri	400V+N 50Hz +/- 10%
SE33793	models 40/50/60/70/80/100/110	Power Tri	400V+N 50Hz +/- 10%

### 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.

- Three 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 :	C1/2 compressors magneto-thermal circuit breaker
KM1/2 :	C1/2 compressors power circuit contactor
C1/2 :	Compressors
R1/2 :	C1/2 compressors crankcase heater
FT1 :	Control circuit magneto-thermal circuit breaker (+ outdoor fans RT40 - RT50)
F2 :	Fuse-terminal + fuse (1A)
T1 :	230V/24V AC transformer
Q3 :	Blower fan magneto-thermal circuit breaker
FT3/4 :	Outdoor fans magneto-thermal circuit breaker
Q4 :	Extractor fan magneto-thermal circuit breaker
Q7/8 :	Outdoor fans magneto-thermal circuit breaker
KM3/4/7/8 :	Fan power contactors

AS :	Soft start motor – three phase model (option)
M3 :	Indoor fan motor
M4 :	Extractor fan motor
CV :	Extractor fan motor condenser
MV1/2/3/4 :	Outdoor fan motor
CV1/2/3/4 :	Outdoor fan motor condenser
Q5/6 :	Heating elements magnetic circuit breakers (option)
K5/6 :	Heating elements power contactors (option)
CH.1 :	Small capacity heating option
CH.2 :	Large capacity heating option
SP7/8 :	Condensing pressure sensor (All Seasons option)
FSP7/8 :	Variable speed regulator (All Seasons option)
KA2/3 :	Outdoor fans auxiliary contactors (All Seasons / Heat pump mode option)
HPD7/8 :	Defrosting pressostat

### CONTROL AND REGULATION DIAGRAMS

pCO1 :	CAREL regulation
Q1/2 :	C1/2 compressors additional magneto-thermal circuit breaker
Q3 :	Blower fan additional magneto-thermal circuit breaker
Q5/6 :	Heating elements additional magnetic circuit breaker (option)
Q7/8 :	Outdoor fans additional magneto-thermal circuit breaker
OF1/2/3/4 :	MO1/2/3/4 motors internal protection
FM :	Heating safety thermostat (83°C) (option)
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
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 coil modulating valve (option)
HWC :	Anti-freezing, hot water battery warning
DFA :	Clogged filter warning ( $\Delta P > 250\text{Pa}$ )
AF :	Air pressostat ( $\Delta P < 50\text{Pa}$ )
ON/OFF :	ON/OFF switch (not supplied)



SWS :	Winter/Summer switch (not supplied)
KM1/2 :	C1/2 compressors power contactor
KM3/4/7/8 :	Fan power contactors
K5/6 :	Heating elements power contactors (option)
EV1/2 :	Circuits 1 and 2 cycle inversion valve (option)
KA2/3 :	Relay contactors of the outdoor fan (option "all seasons"/ heat pump mode)

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

Model	40		50		60		70		80		100		110	
	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE	PE	GE
Q1	Range 13-18A		17-23A		17-23A		24-32A		25-40A		25-40A		25-40A	
	Adjustment 15A		18A		21A		23A		35A		35A		38A	
Q2	Range 13-18A		17-23A		17-23A		24-32A		25-40A		25-40A		25-40A	
	Adjustment 15A		18A		21A		23A		35A		38A		38A	
Q3	4-6.3A	9-14A	4-6.3A	9-14A	9-14A	13-18A	9-14A	13-18A	13-18A	13-18A	13-18A	13-18A	13-18A	13-18A
	Adjustment 4A	10.9A	4.8A	11A	11A	14.8A	11A	14.8A	14.8A	15.6A	15.5A	16.3A	15.5A	16.3A
Q4	6A		6A		6A		6A		6A		6A		6A	
Q7/8	Range /		/		/		/		/		2.5-4A		2.5-4A	
	Adjustment /		/		/		/		/		2.5A		2.5A	
FT1	10A		10A		2A		2A		2A		2A		2A	
FT3	/		/		10A		10A		10A		/		/	
FT4	/		/		10A		10A		10A		/		/	
Contactor AC3														
KM1	18A		18A		25A		25A		40A		40A		40A	
KM2	18A		18A		25A		25A		40A		40A		40A	
KM3	9A	12A	9A	12A	12A	18A	12A	18A	18A	18A	18A	18A	18A	18A
KM4	9A		9A		9A		9A		9A		9A		9A	
KM7	9A		9A		9A		9A		9A		6A		6A	
KM8	/		/		9A		9A		9A		6A		6A	

### COMPRESSORS CRANKCASE HEATER

Models	40	50	60	70	80	100	110
Power W	70	90	90	90	75	90+75	75

### PRESSOSTATS SETTING

Refrigerant circuit

Factory low pressure adjustment 2bars (29PSI)

Factory high pressure adjustment 42bars (609.16PSI)

Clogged filter  $\Delta P$  warning (upstream/downstream filters) > 250 Pa

Airflow detector  $\Delta P$  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. The distribution board must support the intensity of the whole of the machines installed.

If the remote controls include a 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**

**Yellow LED = 1**

Low voltage supply

The compressor rotation direction is correct

**Green LED = 1**

**Yellow LED = 0**

Phase inversion or phase absent (L1)

The compressor and the fans do not start.

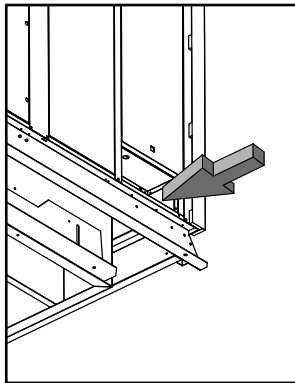
**Green LED = 0**

**Yellow LED = 0**

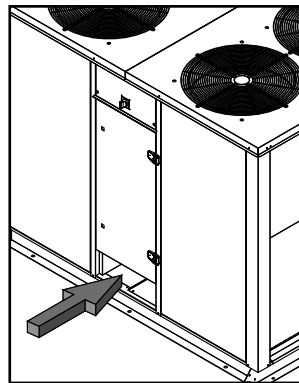
Phase absent (L2 or L3)

the compressor and the fans do not start.

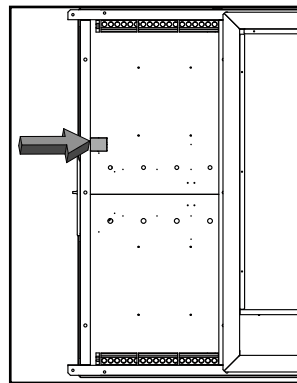
The electric connection of range RT is done in a single point on the level of the principal circuit breaker (copper wire cable recommended).



RT40 - 50



RT60 - 70 - 80



RT100 - 110

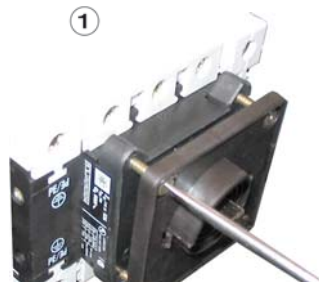
These units are equipped with a local switch used as general terminal board.



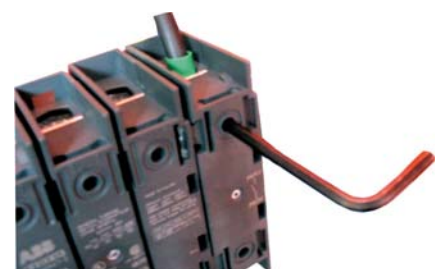
The switch can be padlocked.

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 ratings, refer to the electrical specifications.

3N~400V



Use a pozidrive M3.5 screwdriver, Form Z, to make the connections.



Use a key for hexagonal socket screws of 4mm, to make the connections.

## 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.
5. the cables and wires are clear of or protected from pipework and sharp edges.

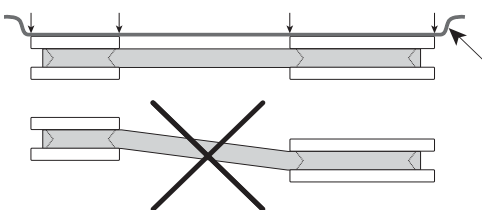
#### VISUAL CHECK

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

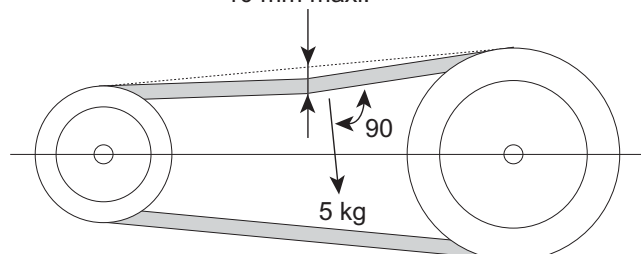
1. Connections flexible type, secure and detachable for service access.
2. blower drive  
Pulley adjustment correct for expected air quantity and static pressure.  
Belt tension correct.
3. Check that the Biloc Sheaves on both the blower shaft and the motor shaft are correctly fitted to the bush and 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  
10 mm maxi.



## 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) differ from the nominal values at the unit.

### CASE N°1:

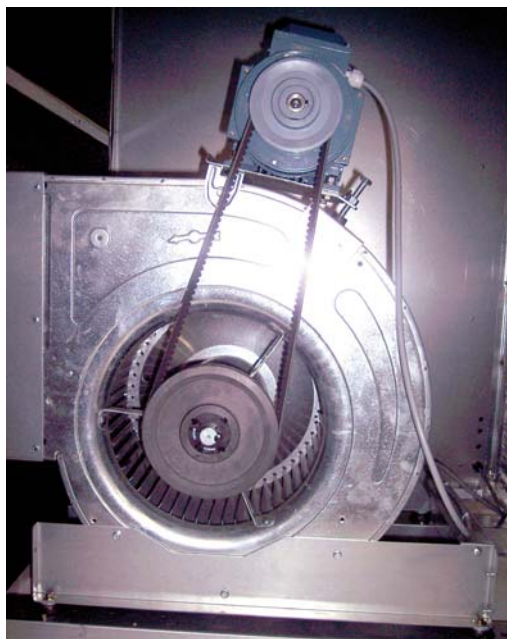
There is less pressure drop in the ductwork than planned, i.e. motor current draw is higher than nominal and the external pressure is lower than nominal. The slower speed must be reduced to lower the treated airflow and re-establish the air balance point. It is imperative to adjust the pulley, otherwise 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.

It should be noted that for the RT40-50 range, the maximum usable motor size is 3kW. A choice of factory-fitted motor/blower assemblies are available for higher. Accordingly, preliminary pressure drop calculations of the installed ductwork are vital for selecting the right equipment.



RT 40 - RT 50  
BLOWER MOTOR < 3kW



RT 40 - RT 110  
BLOWER MOTOR > 3kW

## OPERATING CHECK LIST

### GENERAL

Check 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 equipped 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. Check externally 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 check 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 5°K and 12°K.

## 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, specially on the indoor coil, before the cooling season.

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

## OPENING OF ACCESS PANELS

All access panels are removable by unscrewing the self tapping retaining screws.

## 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 G4 high efficiency 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.
2. Remove the panels.
3. Check that the insulation is not damaged. Repair as required.

### CONDENSATE DRAIN PAN

1. Check that the drainage orifices, conduits and syphon 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

1. 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.

- 5. Replace the panels and add any missing screws.**

## TROUBLE SHOOTING

Problem	Probable cause	Solution
<b>Unit operates continuously but without performing</b>	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.
<b>Frozen suction line</b>	The overheating setting on the thermostatic expansion valve is too low.	Increase the setting.
	refrigerant charge too low	Check the refrigerant fluid charge
<b>Evaporator freezing</b>	Filters clogged	Replace filters
	Insufficient charge	Check the refrigerant fluid charge
	Evaporator air intake temperature too low	Check the economiser setting.
<b>Excessive noise</b>	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.	
<b>Low oil level in the compressor</b>	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.
<b>One or both compressors do not operate.</b>	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.
<b>Low pressure pressostat being activated.</b>	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
<b>High pressure pressostat being activated.</b>	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.
<b>Liquid line too hot</b>	Insufficient refrigerant charge.	Locate and eliminate the causes of charge losses and top up the refrigerant fluid charge.
<b>Liquid line frozen</b>	Clogged filter dryer.	Replace the filter cartridge.

<b>Problem</b>	<b>Probable cause</b>	<b>Solution</b>
<b>Fans do not operate.</b>	Electrical circuit problems.	Check the connections.
	Internal circuit thermal cut-out activated.	Contact an approved Service Centre.
<b>Fan surging</b>	Duct network pressure too low.	Generate an additional pressure loss (refer to aeraulic curves)
<b>Reduced output in both Heating and Cooling mode</b>	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.
<b>Electric heater is not operating.</b>	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

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## APPENDIX

DIMENSIONS .....	III	R4 .....	XVIII
RT40 - RT50 .....	III	REFRIGERANT CIRCUIT DIAGRAM .....	XIX
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EXHAUST BLOWER .....	VI	WIRING DIAGRAM .....	XXI
ATTACHMENT TO THE GROUND .....	VII	RT40 - RT50 .....	XXII
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RT60 - RT70 - RT80 - RT100 - RT110 .....	X	RT100 - RT110 .....	XXVI
ERP RT40 - RT50 .....	XI	CONTROL .....	XXVI
ERP RT60 - RT70 - RT80 - RT100 - RT110 .....	XIII	RT60 - RT70 - RT80 - RT100 - RT110 .....	XXVII
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S2 .....	XV	RT40 - RT50 .....	XXXI
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R3 .....	XVIII	RT80 - RT100 - RT110 .....	XXXIV
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		RDH500 .....	XXXV

## ANNEXE

DIMENSIONS .....	III	R4 .....	XVIII
RT40 - RT50 .....	III	SCHEMA DU CIRCUIT FRIGORIFIQUE .....	XIX
RT60 - RT70 - RT80 .....	IV	RTH40 - RTH50 .....	XX
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RT40 - RT50 .....	VII	CONTROL .....	XXII
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COSTIERE .....	VIII	RT60 - RT70 - RT80 .....	XXV
RT40 - RT50 .....	IX	CONTROL .....	XXV
RT60 - RT70 - RT80 - RT100 - RT110 .....	X	RT100 - RT110 .....	XXVI
ERP RT40 - RT50 .....	XI	CONTROL .....	XXVI
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S2 .....	XV	RT40 - RT50 .....	XXXI
S3 .....	XVI	AT15-15 .....	XXXI
S4 .....	XVI	RT60 - RT70 .....	XXXII
R1 .....	XVI	ADH450 .....	XXXII
R2 .....	XVI	RDH450 .....	XXXIII
R3 .....	XVIII	RT80 - RT100 - RT110 .....	XXXIV
		ADH500 .....	XXXV
		RDH500 .....	XXXV

## ANLAGE

ABMESSUNGEN .....	III	R4 .....	XVIII
RT40 - RT50 .....	III	KÄLTEKREISLAUFDIAGRAMM .....	XIX
RT60 - RT70 - RT80 .....	IV	RTH40 - RTH50 .....	XX
RT100 - RT110 .....	V	RTH60 - RTH70 - RTH80 - RTH100 - RTH110 .....	XX
EXHAUST BLOWER .....	VI	STROMLAUFPLANS .....	XXI
BEFESTIGUNG AM BODEN .....	VII	RT40 - RT50 .....	XXII
RT40 - RT50 .....	VII	CONTROL .....	XXII
RT60 - RT70 - RT80 - RT100 - RT110 .....	VII	POWER .....	XXIII
DACHRAHMEN .....	VIII	RT60 - RT70 - RT80 .....	XXV
RT40 - RT50 .....	IX	CONTROL .....	XXV
RT60 - RT70 - RT80 - RT100 - RT110 .....	X	RT100 - RT110 .....	XXVI
ERP RT40 - RT50 .....	XI	CONTROL .....	XXVI
ERP RT60 - RT70 - RT80 - RT100 - RT110 .....	XIII	RT60 - RT70 - RT80 - RT100 - RT110 .....	XXVII
ABMESSUNGEN DER KANALABGÄNGE .....	XV	POWER .....	XXVII
S1 .....	XV	REGELUNG DES LÜFTERSYSTEMS .....	XXXI
S2 .....	XV	RT40 - RT50 .....	XXXI
S3 .....	XVI	AT15-15 .....	XXXI
S4 .....	XVI	RT60 - RT70 .....	XXXII
R1 .....	XVI	ADH450 .....	XXXII
R2 .....	XVI	RDH450 .....	XXXIII
R3 .....	XVIII	RT80 - RT100 - RT110 .....	XXXIV
		ADH500 .....	XXXV
		RDH500 .....	XXXV

## ALLEGATO

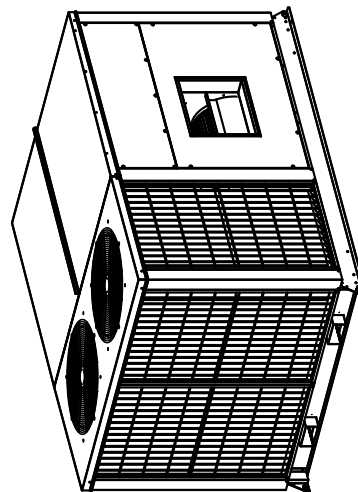
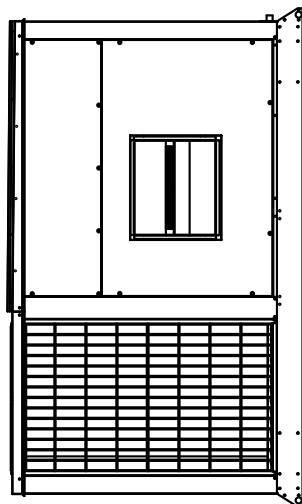
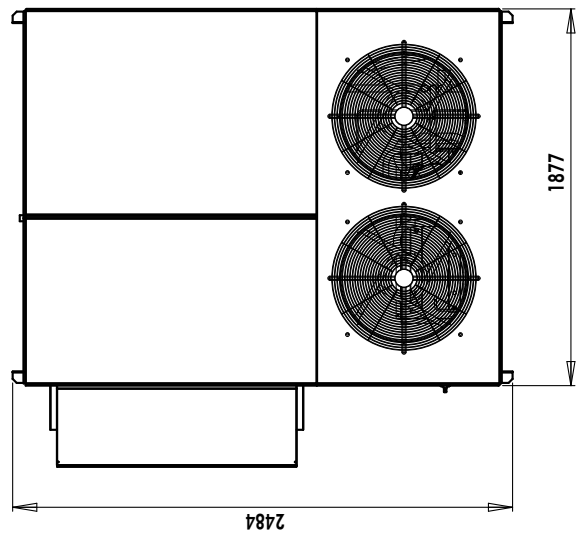
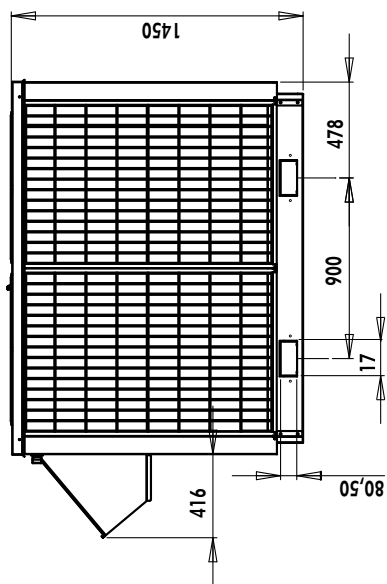
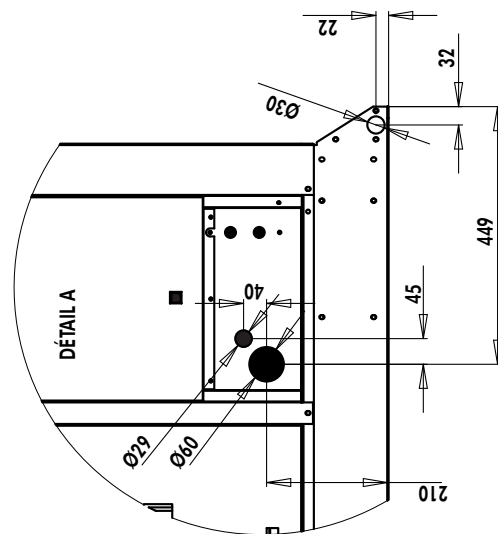
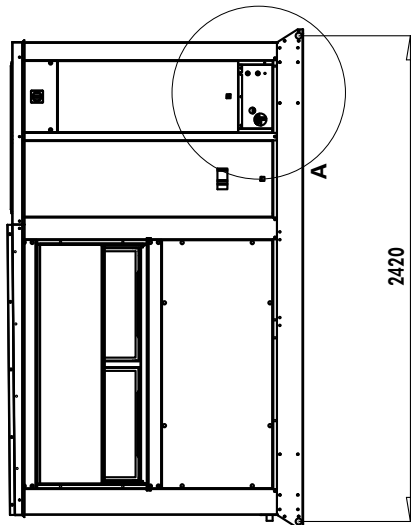
DIMENSIONI .....	III	R4 .....	XVIII
RT40 - RT50 .....	III	SCHEMA DEL CIRCUITO REFRIGERANTE .....	XIX
RT60 - RT70 - RT80 .....	IV	RTH40 - RTH50 .....	XX
RT100 - RT110 .....	V	RTH60 - RTH70 - RTH80 - RTH100 - RTH110 .....	XX
EXHAUST BLOWER .....	VI	SCHEMA ELETRICO .....	XXI
FISSAGGIO AL SUOLO .....	VII	RT40 - RT50 .....	XXII
RT40 - RT50 .....	VII	CONTROL .....	XXII
RT60 - RT70 - RT80 - RT100 - RT110 .....	VII	POWER .....	XXIII
SCANALATURA PERIMETRALE .....	VIII	RT60 - RT70 - RT80 .....	XXV
RT40 - RT50 .....	IX	CONTROL .....	XXV
RT60 - RT70 - RT80 - RT100 - RT110 .....	X	RT100 - RT110 .....	XXVI
ERP RT40 - RT50 .....	XI	CONTROL .....	XXVI
ERP RT60 - RT70 - RT80 - RT100 - RT110 .....	XIII	RT60 - RT70 - RT80 - RT100 - RT110 .....	XXVII
DIMENSIONI TELLE USCITE DI CONDOTTA .....	XV	POWER .....	XXVII
S1 .....	XV	REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'ARIA .....	XXXI
S2 .....	XV	RT40 - RT50 .....	XXXI
S3 .....	XVI	AT15-15 .....	XXXI
S4 .....	XVI	RT60 - RT70 .....	XXXII
R1 .....	XVI	ADH450 .....	XXXII
R2 .....	XVI	RDH450 .....	XXXIII
R3 .....	XVIII	RT80 - RT100 - RT110 .....	XXXIV
		ADH500 .....	XXXV
		RDH500 .....	XXXV

## ANEXO

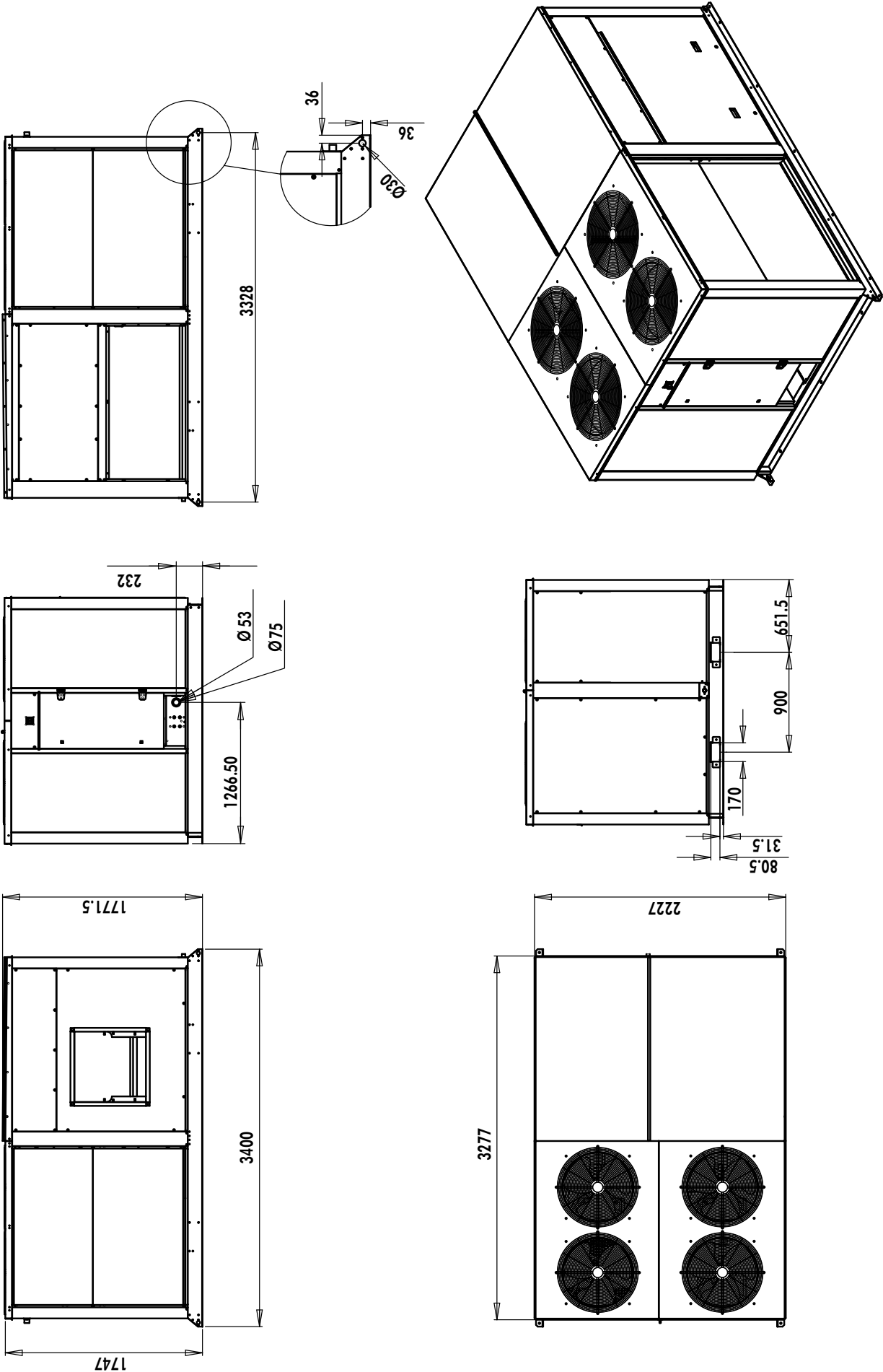
DIMENSIONES .....	III	R4 .....	XVIII
RT40 - RT50 .....	III	ESQUEMA DEL CIRCUITO FRIGORIFICO .....	XIX
RT60 - RT70 - RT80 .....	IV	RTH40 - RTH50 .....	XX
RT100 - RT110 .....	V	RTH60 - RTH70 - RTH80 - RTH100 - RTH110 .....	XX
EXHAUST BLOWER .....	VI	ESQUEMA ELECTRICO .....	XXI
FIJACIÓN EN EL SUELO .....	VII	RT40 - RT50 .....	XXII
RT40 - RT50 .....	VII	CONTROL .....	XXII
RT60 - RT70 - RT80 - RT100 - RT110 .....	VII	POWER .....	XXIII
PETO .....	VIII	RT60 - RT70 - RT80 .....	XXV
RT40 - RT50 .....	IX	CONTROL .....	XXV
RT60 - RT70 - RT80 - RT100 - RT110 .....	X	RT100 - RT110 .....	XXVI
ERP RT40 - RT50 .....	XI	CONTROL .....	XXVI
ERP RT60 - RT70 - RT80 - RT100 - RT110 .....	XIII	RT60 - RT70 - RT80 - RT100 - RT110 .....	XXVII
DIMENSIONES DE LAS SALIDAS DE CONDUCTOS .....	XV	POWER .....	XXVII
S1 .....	XV	AJUSTE DEL ISTEMA AEROLICO .....	XXXI
S2 .....	XV	RT40 - RT50 .....	XXXI
S3 .....	XVI	AT15-15 .....	XXXI
S4 .....	XVI	RT60 - RT70 .....	XXXII
R1 .....	XVI	ADH450 .....	XXXII
R2 .....	XVI	RDH450 .....	XXXIII
R3 .....	XVIII	RT80 - RT100 - RT110 .....	XXXIV
		ADH500 .....	XXXV
		RDH500 .....	XXXV

DIMENSIONS  
 DIMENSIONS  
 ABMESSUNGEN  
 DIMENSIONI  
 DIMENSIONES

RT40 - RT50

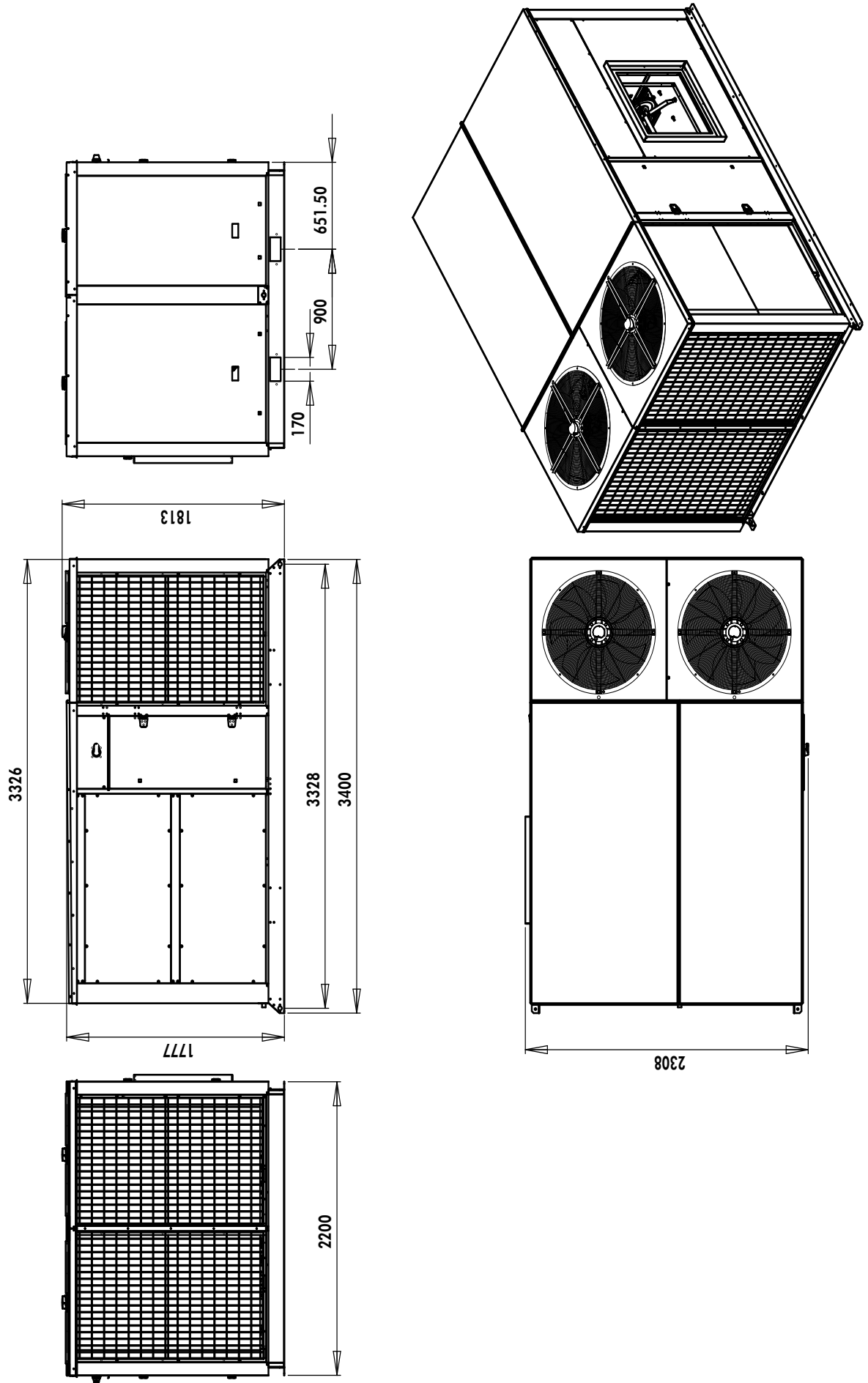


RT60 - RT70 - RT80

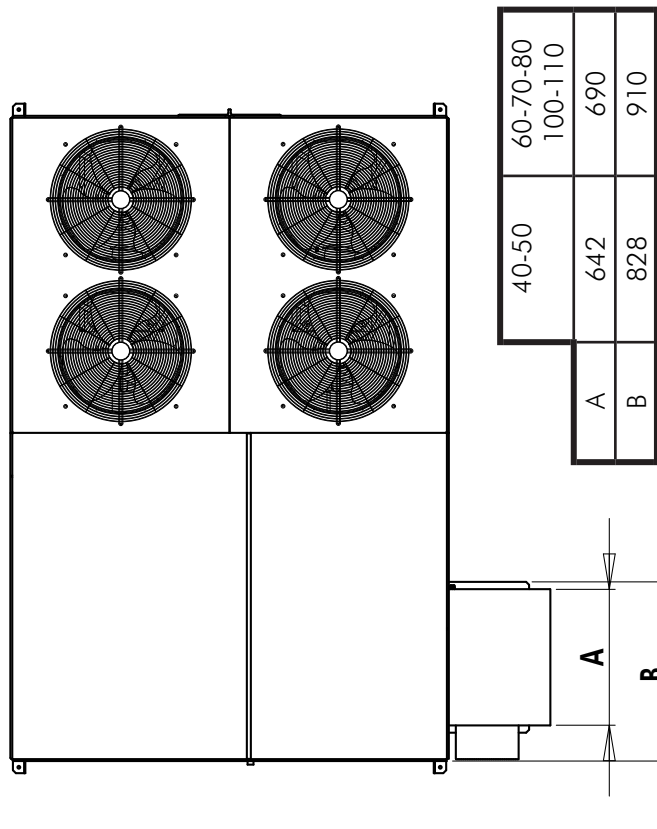
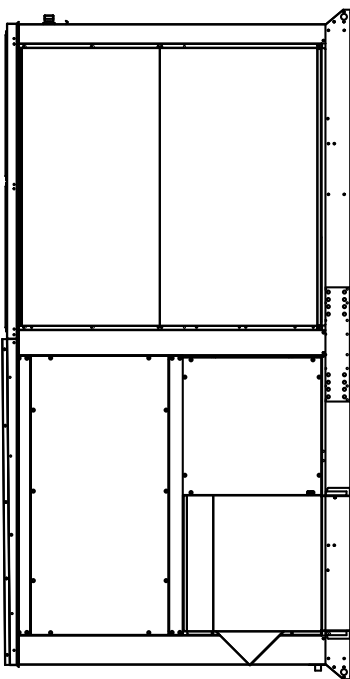
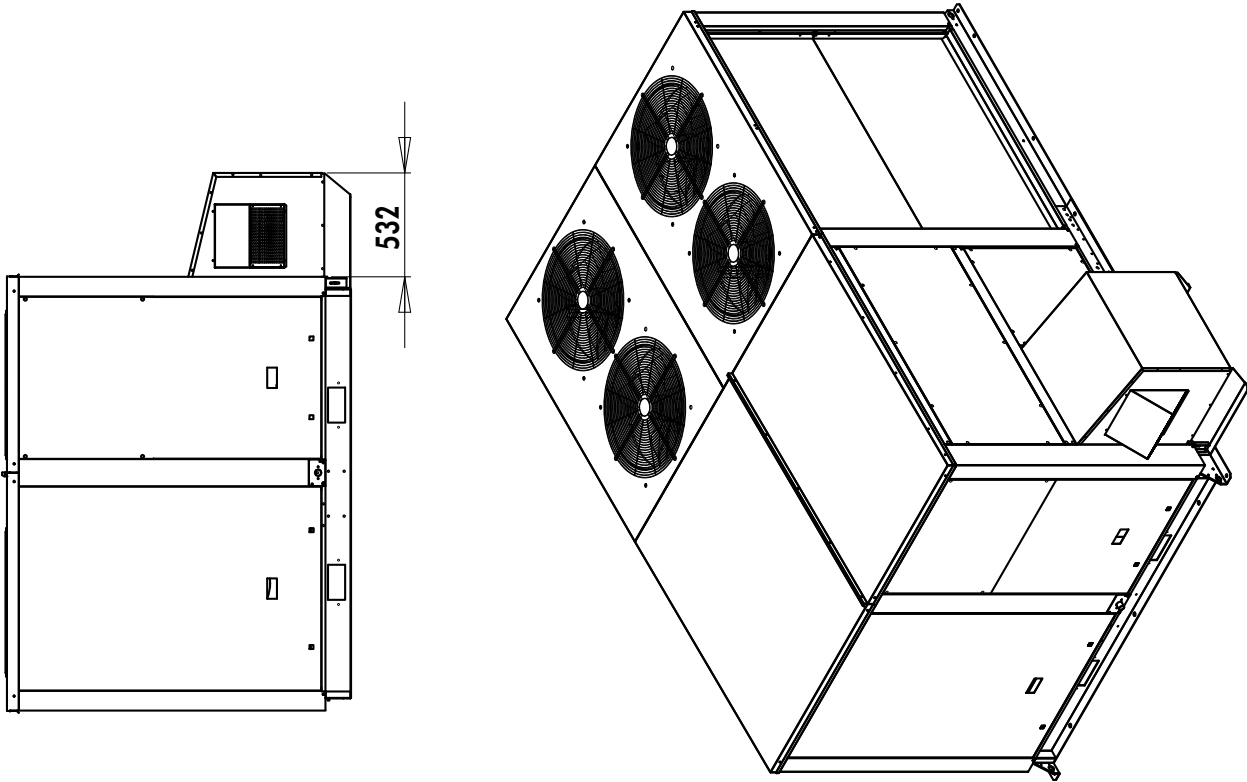




RT100 - RT110

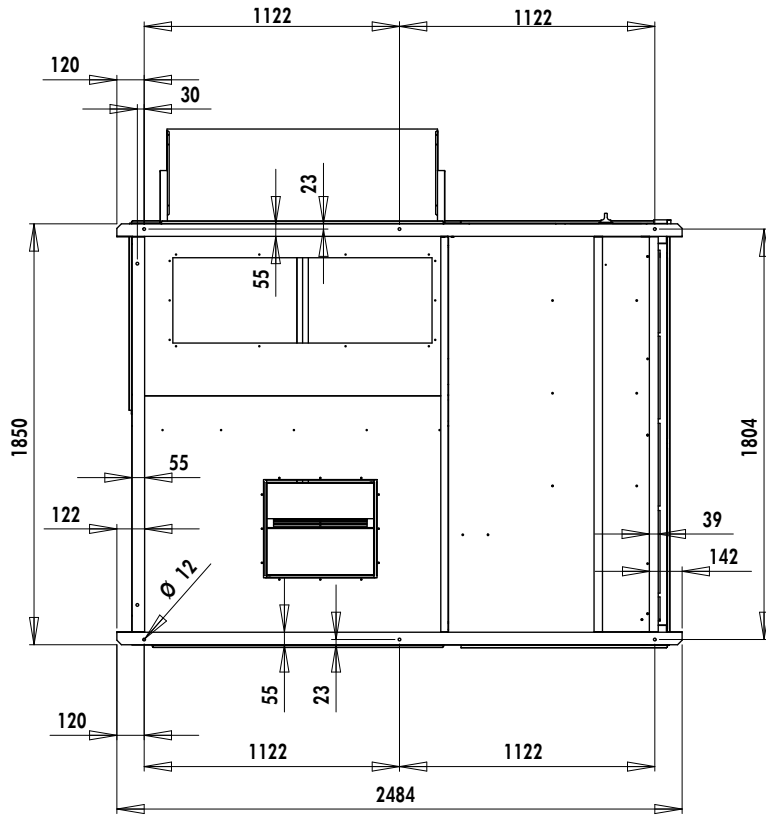


EXHAUST BLOWER

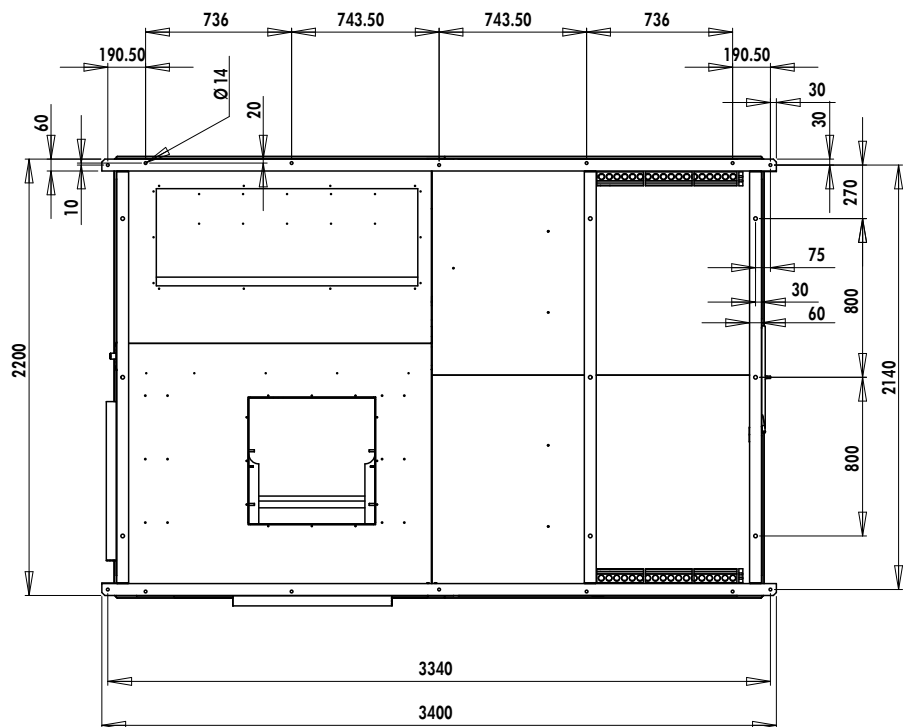


ATTACHMENT TO THE GROUND  
 FIXATION AU SOL  
 BEFESTIGUNG AM BODEN  
 FISSAGGIO AL SUOLO  
 FIJACIÓN EN EL SUELO

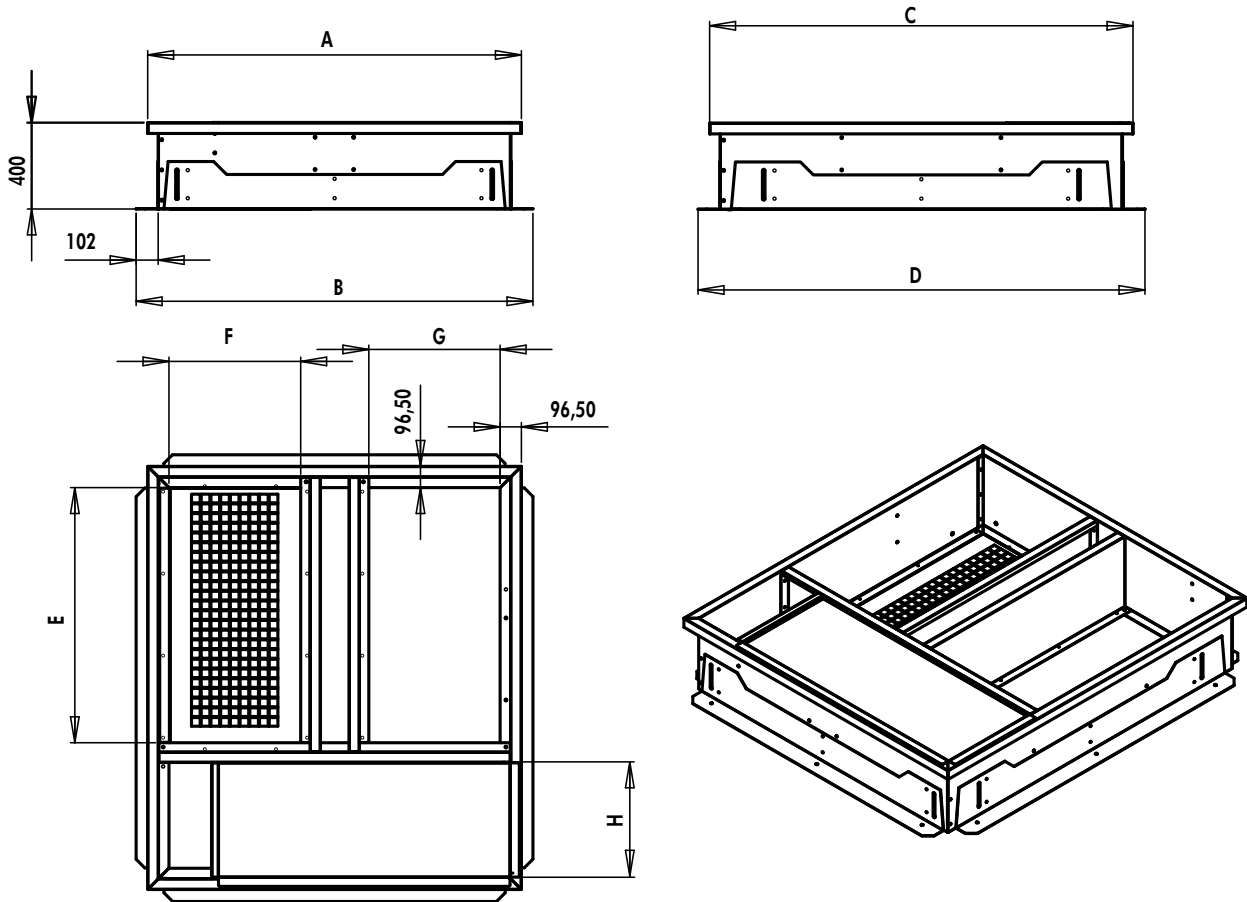
RT40 - RT50



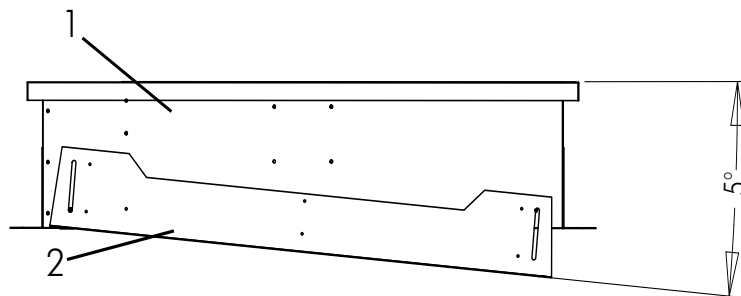
RT60 - RT70 - RT80 - RT100 - RT110



ROOF CURB  
 COSTIERE  
 DACHRAHMEN  
 SCANALATURA PERIMETRALE  
 PETO



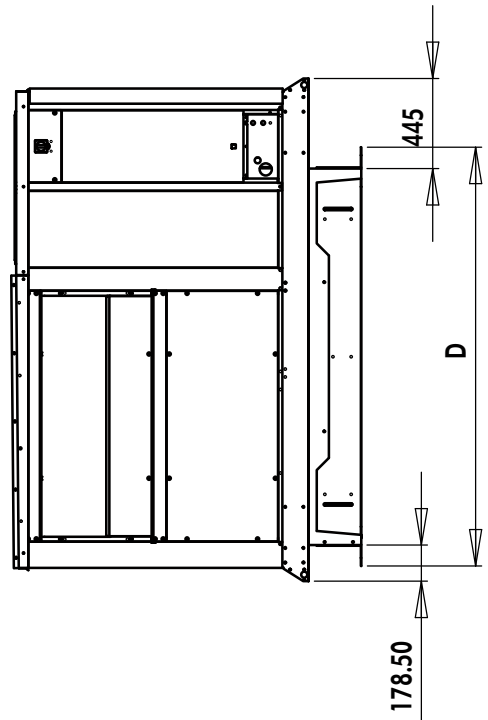
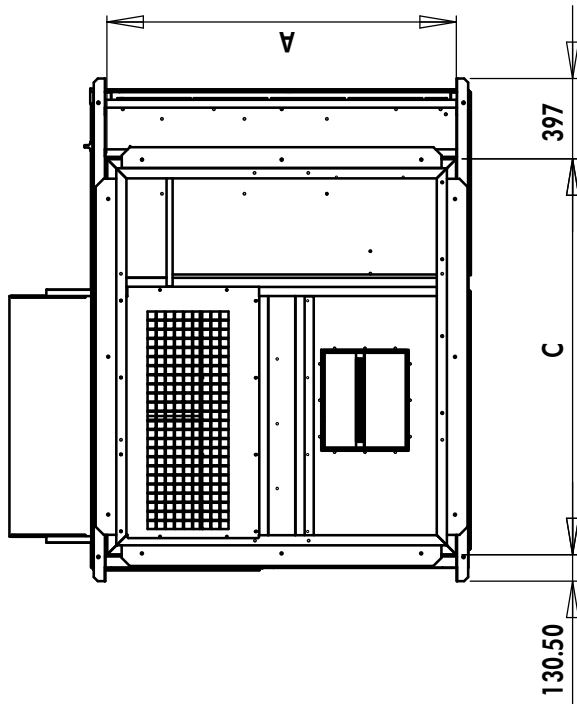
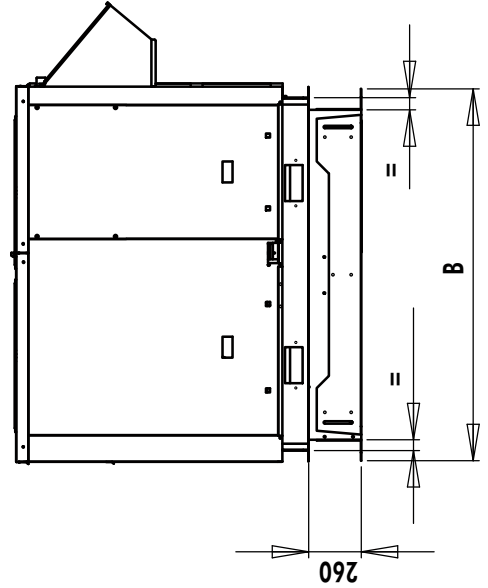
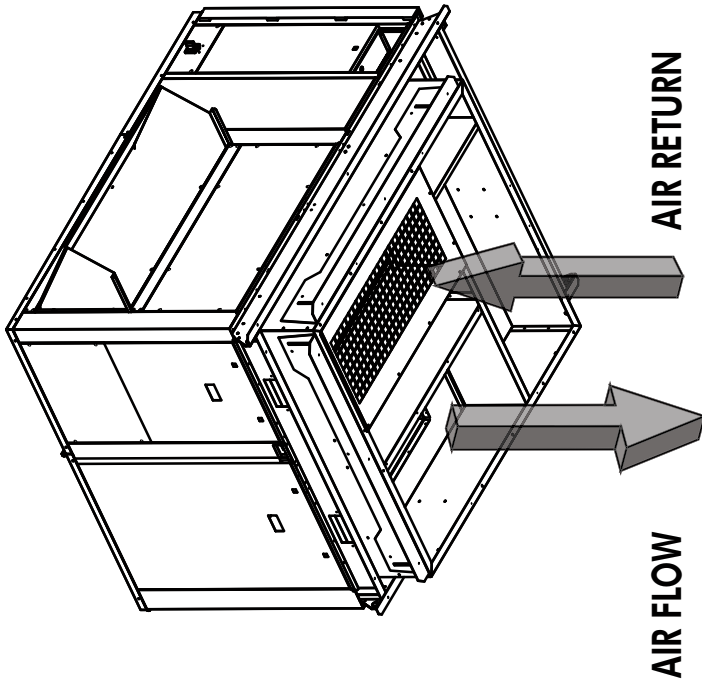
ADJUSTABLE VERSION  
 VERSION REGLABLE  
 VERSTELLBARE AUSFÜHRUNG  
 VERSIONE REGOLABILE  
 VERSIÓN AJUSTABLE



RIGIDLY WELD PART 2 TO PART 1 TO ENSURE A RIGID SINGLE-PIECE ASSEMBLY.  
 SOUDER RIGIDEMENT LA PIÈCE 2 SUR 1 POUR FAIRE UN ENSEMBLE MONOBLOC.  
 DAS TEIL 2 AUF 1 STARR AUFSCHWEISSEN, UM EINE FESTE EINHEIT ZU BILDEN.  
 SILDARE RIGIDAMENTE IL PEZZO 2 SUL PEZZO 1 AL FINE DI OTTENERE UN INSIEME MONOBLOCCO.  
 SOLDAR RÍGIDAMENTE LA PIEZA 2 SOBRE LA PIEZA 1 PARA CONSTITUIR UN CONJUNTO MONOBLOQUE.

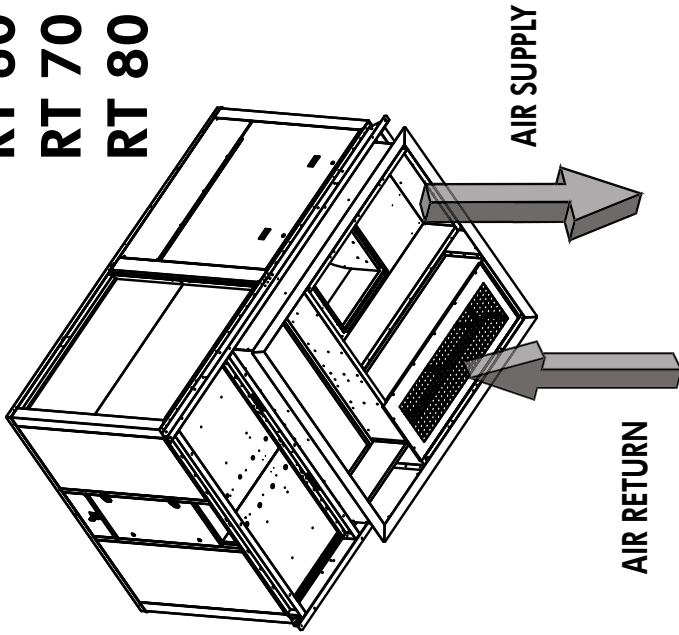


RT40 - RT50

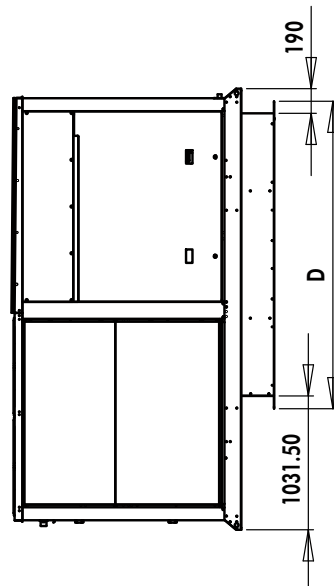
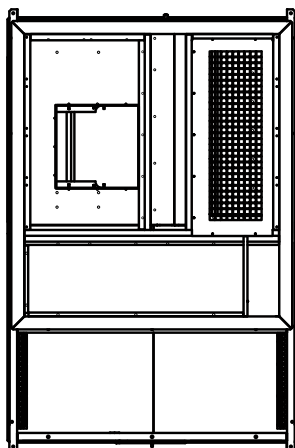
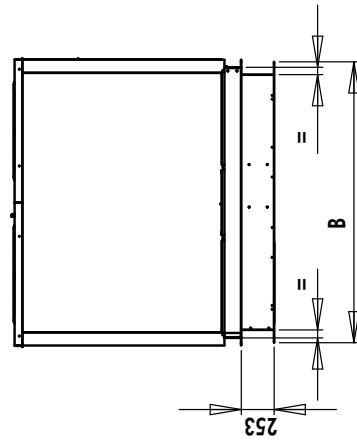
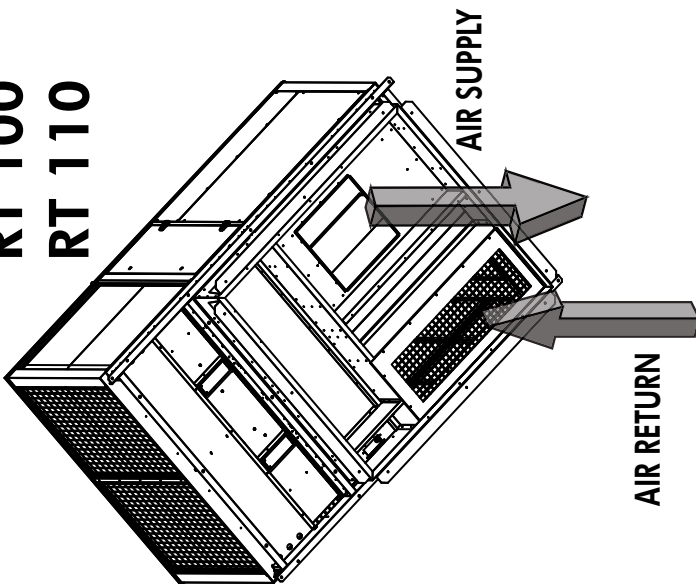


RT60 - RT70 - RT80 - RT100 - RT110

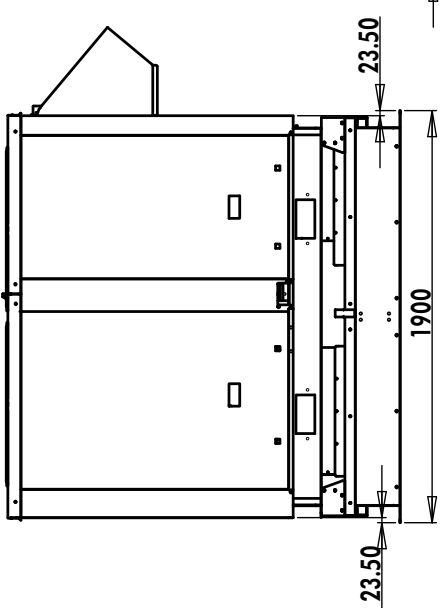
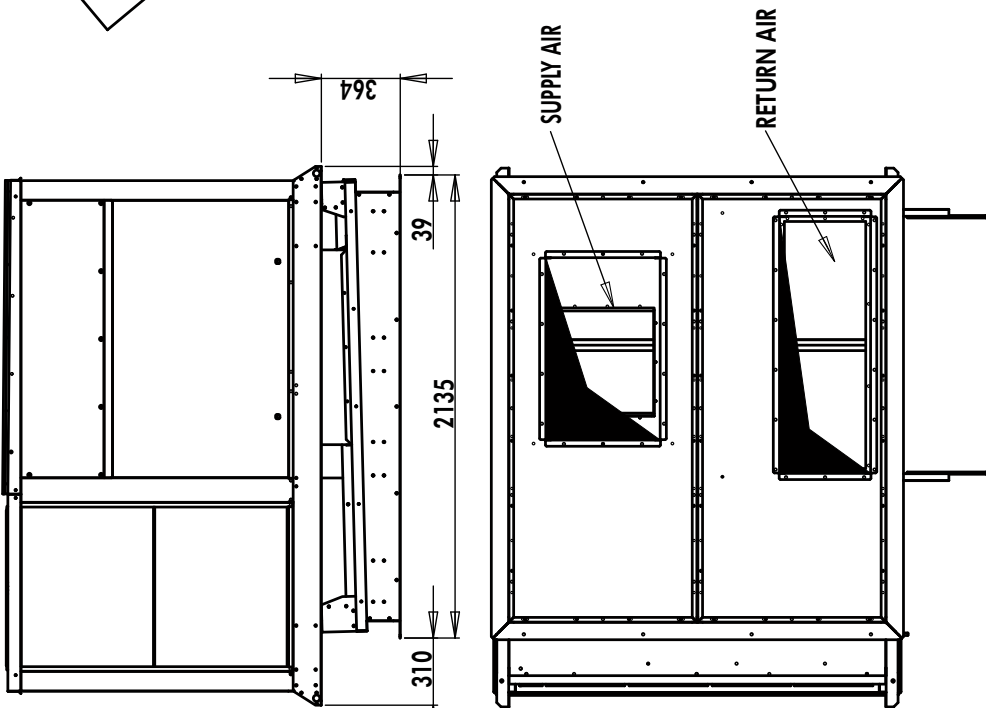
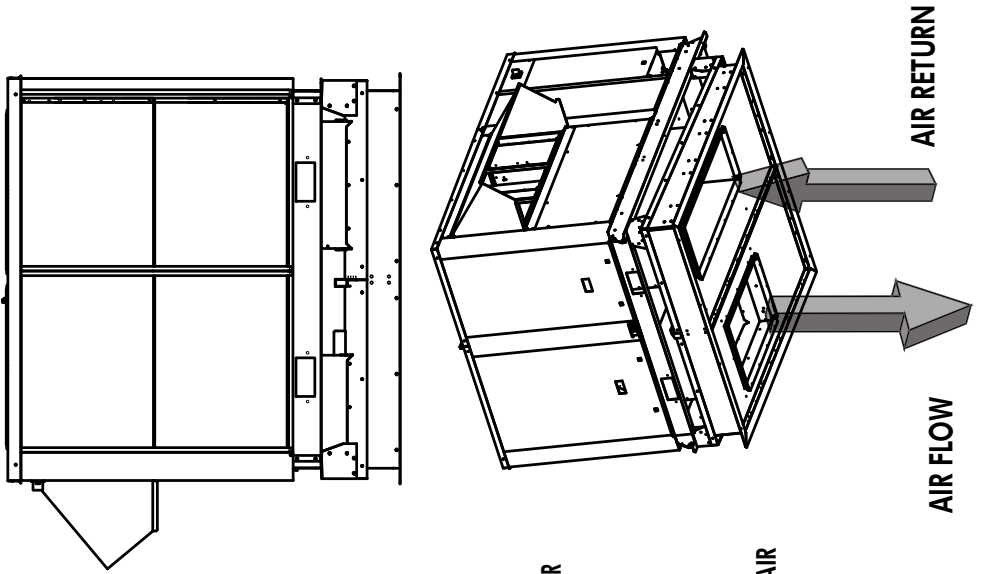
**RT 60**  
**RT 70**  
**RT 80**



**RT 100**  
**RT 110**

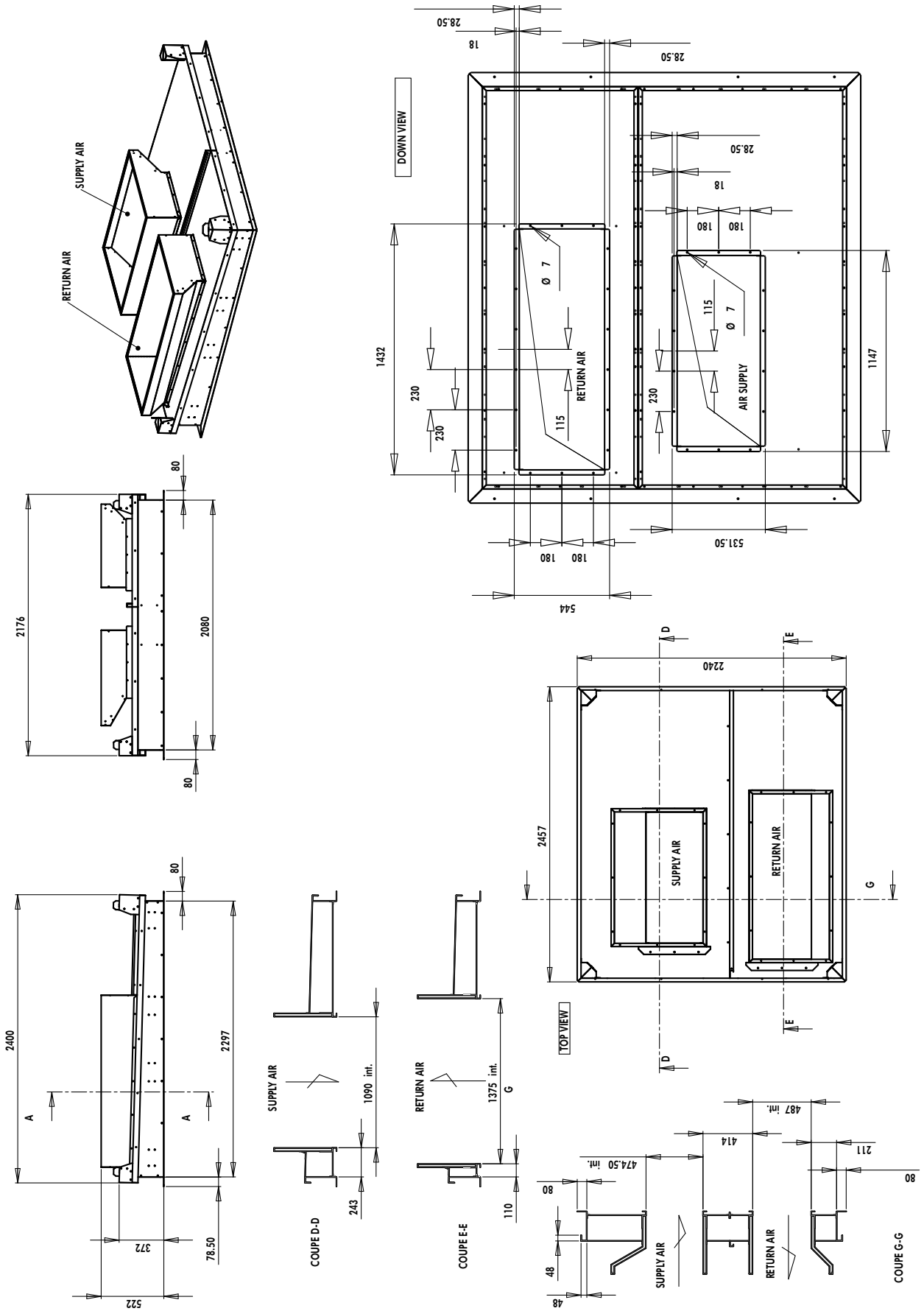


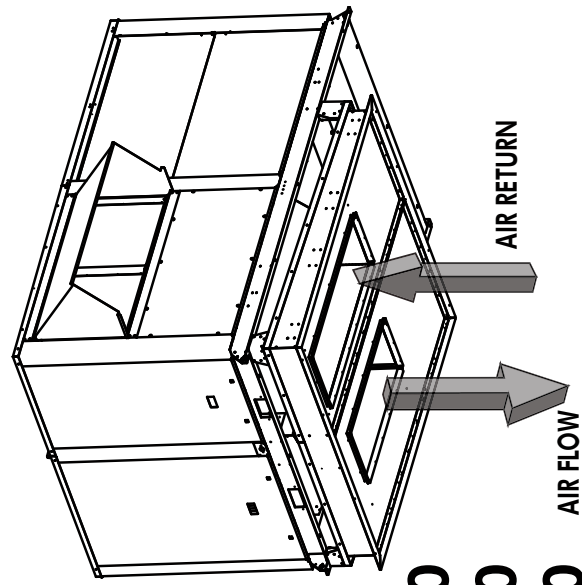
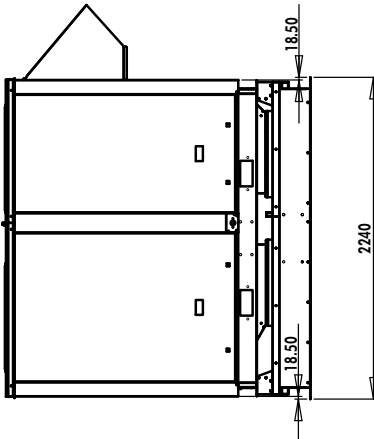
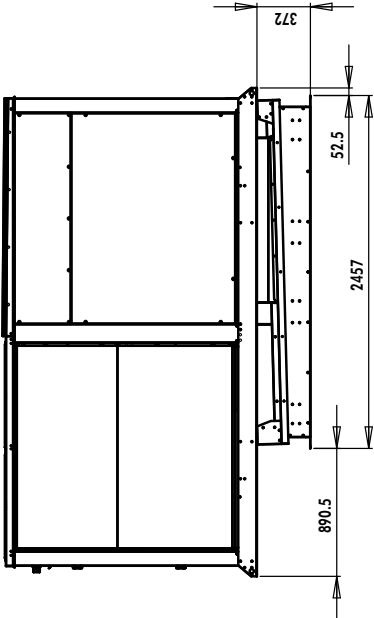
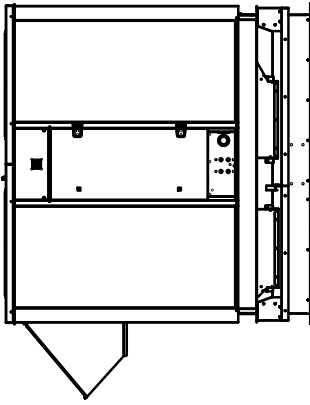




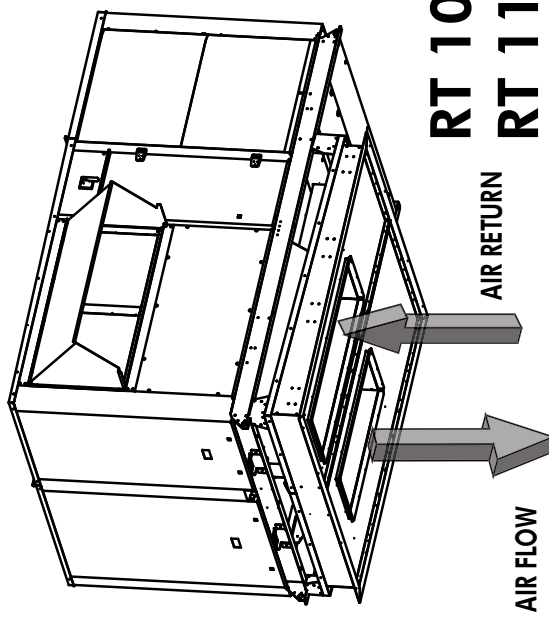
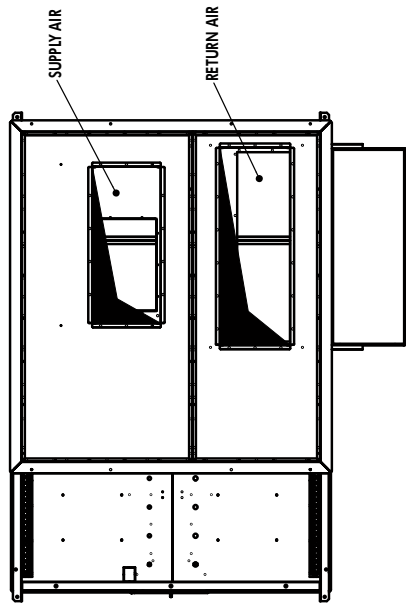


ERP RT60 - RT70 - RT80 - RT100 - RT110



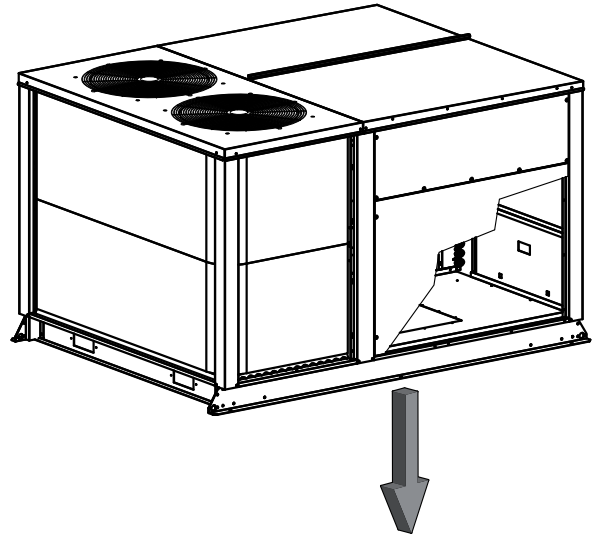
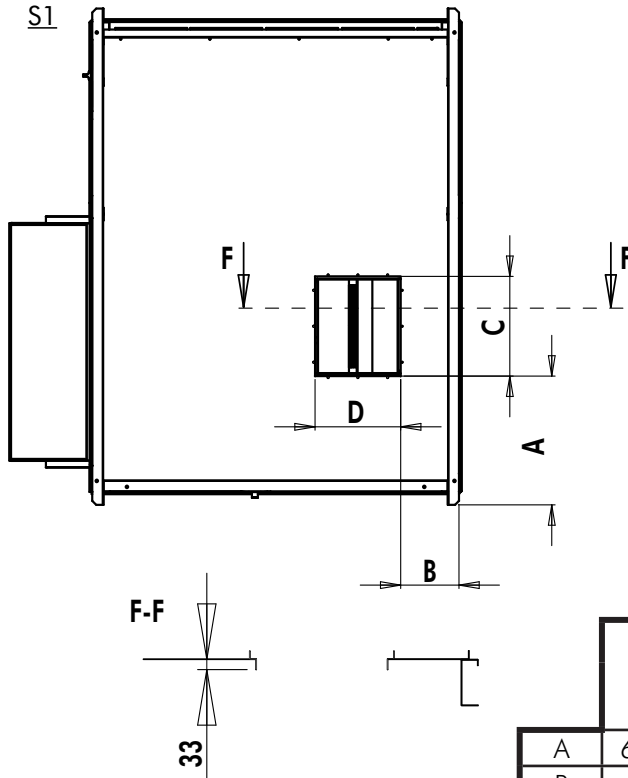


**RT 60**  
**RT 70**  
**RT 80**



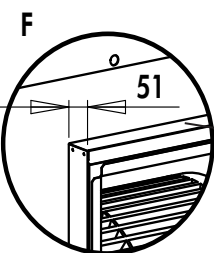
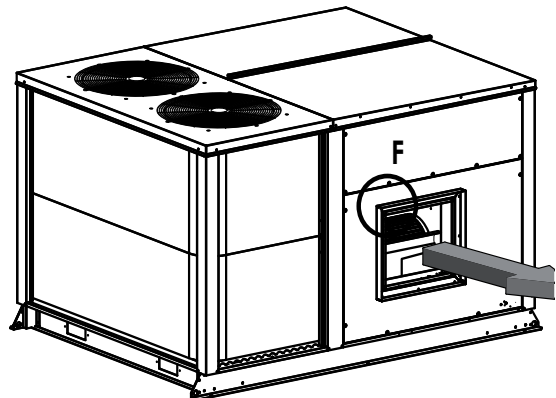
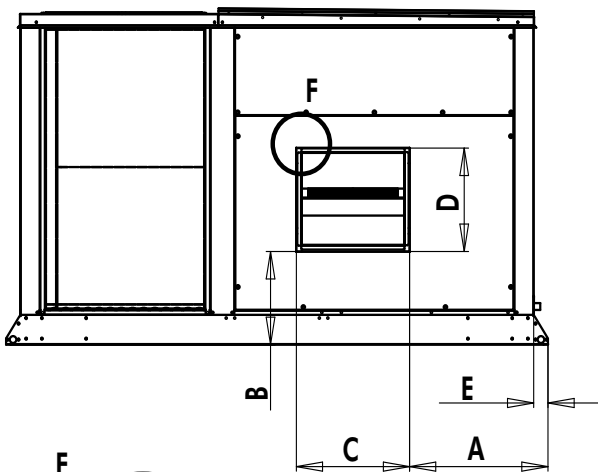
**RT 100**  
**RT 110**

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



	40-50		60-70		80-100-110	
		Electric heat		Electric heat		Electric heat
A	645.5	437	737	409	738	409
B	295	249.5	325	324	328	324
C	497	793	574	1030.5	641	1030.5
D	430	413	574	574	641	574

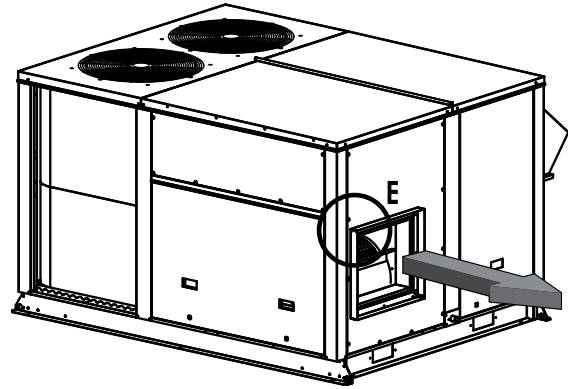
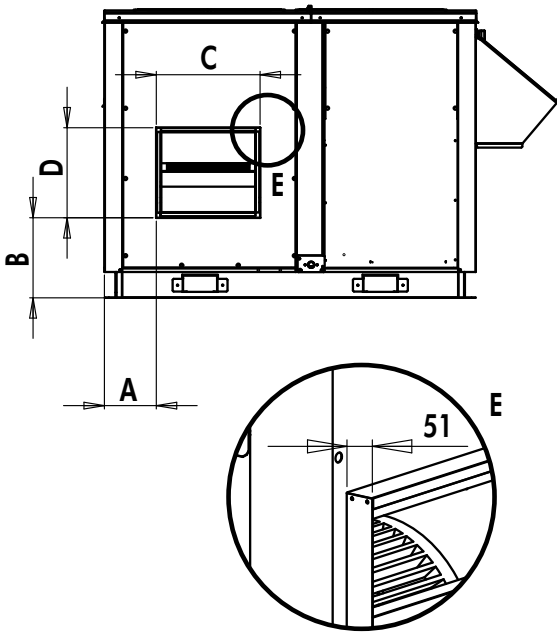
S2



DELIVERED NOT INSTALLED  
 LIVRE NON INSTALLE  
 GELIEFERT NICHT INSTALLIERT  
 CONSEGNA TO NON INSTALLATO  
 SUMINISTRADO NO INSTALADO

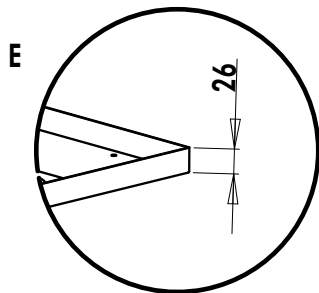
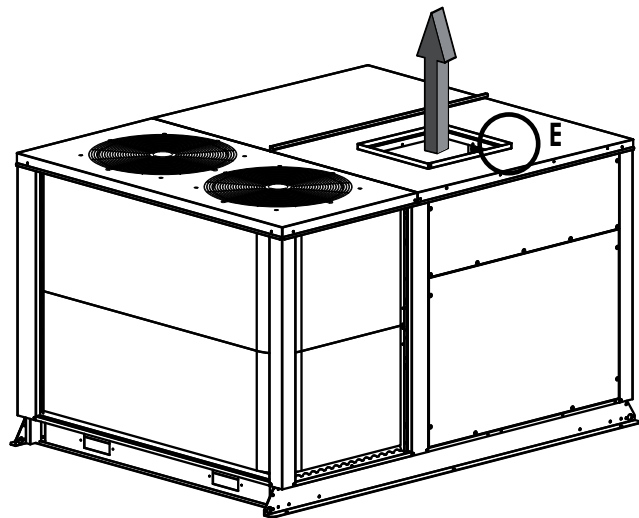
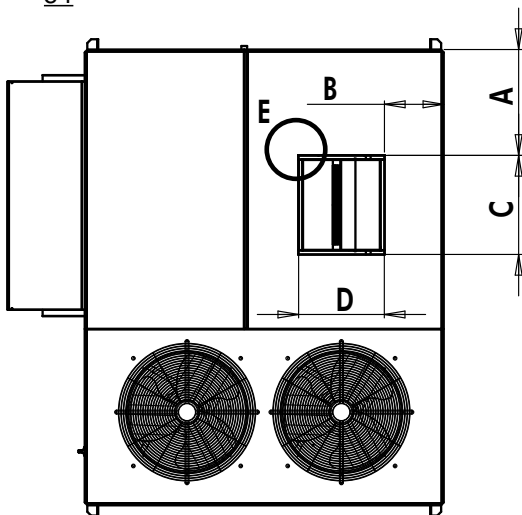
	40-50	60-70	80-100-110
A	593.5	658	660
B	365	391.5	414.5
C	601	734	803
D	534	734	803
E	65.5	73.5	73.5

S3



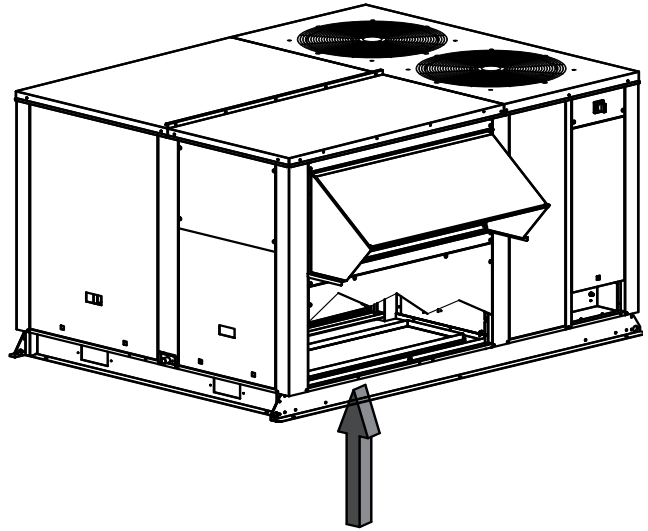
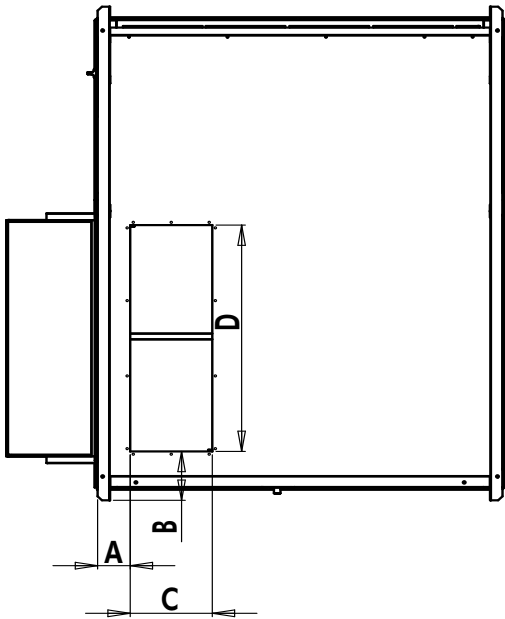
	40-50	60-70	80-100-110
A	161.5	175.5	177
B	360	393	416
C	601	734	803
D	534	734	803

S4



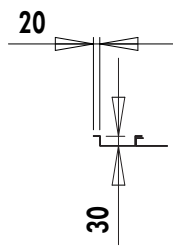
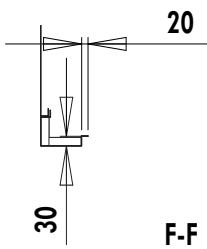
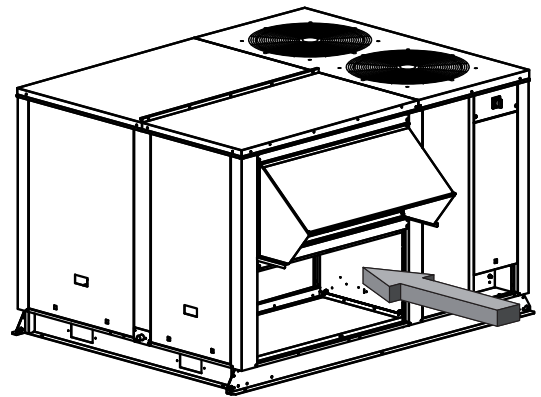
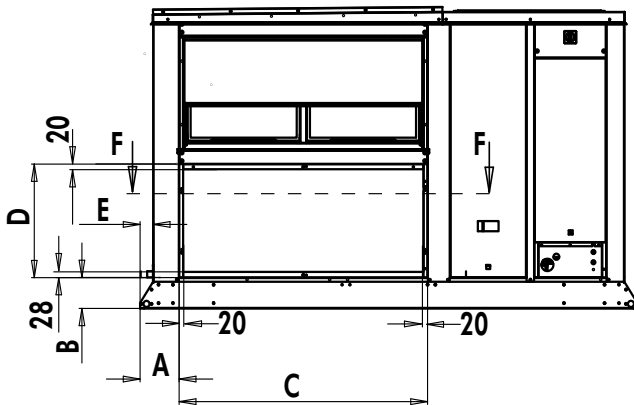
	40-50	60-70	80-100-110
A	550	645	648
B	279	346	280
C	560	620	688
D	497	620	688

R1



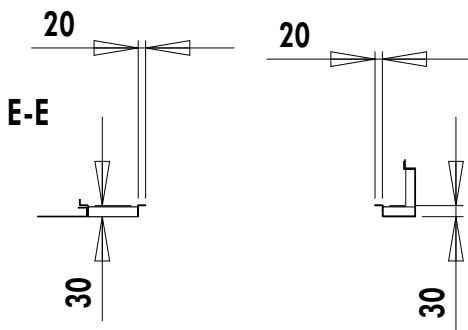
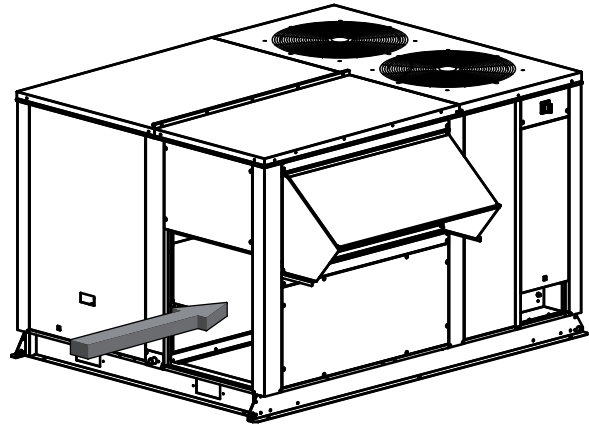
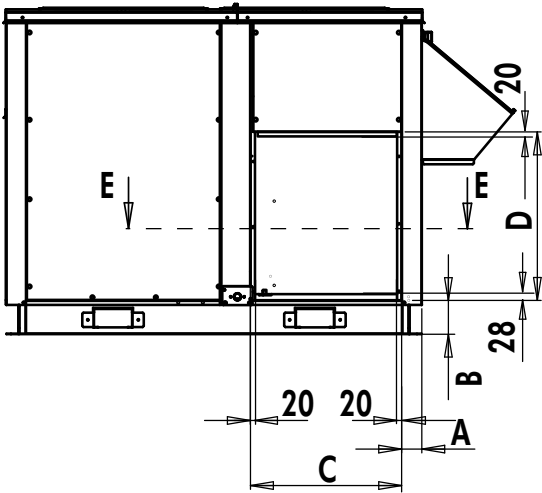
	40-50	60-70-80-100-110
A	149	149
B	246	274.5
C	375	490
D	1139	1318

R2



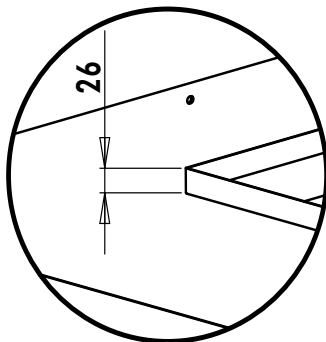
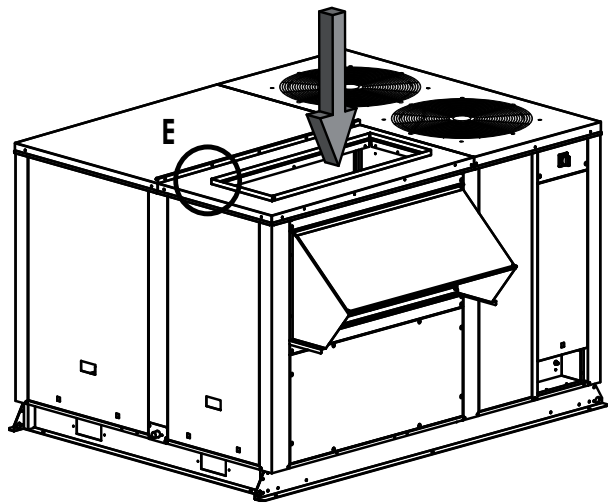
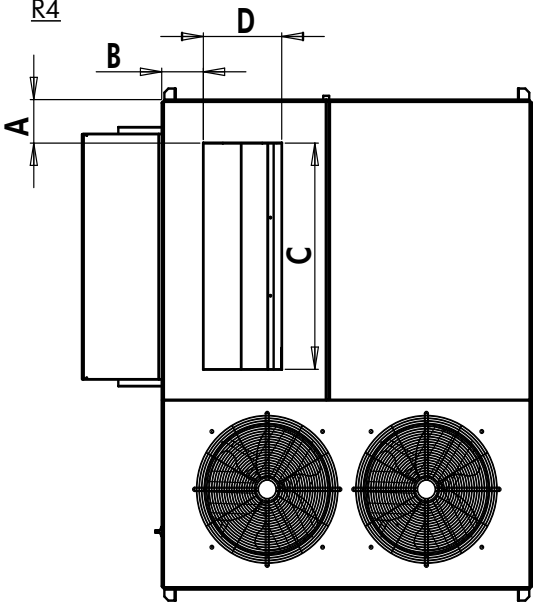
	40-50	60-70-80-100-110
A	195	150
B	150	150
C	1241	1420
D	553.5	703.5
E	65.5	73.5

R3



	40-50	60-70-80-100-110
A	90	100
B	150	150
C	663	826
D	750	854

R4



	40-50	60-70-80-100-110
A	180	180
B	180	180
C	1139	1359
D	439	532

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

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  
 BP1 : Evaporator Pressure Tap 1  
 BP2 : Evaporator Pressure Tap 2  
 B1 : Liquid Tank 1  
 B2 : Liquid Tank 2  
 M I1 : Moisture Indicator 1  
 M I2 : Moisture Indicator 2  
 TEV1 : Thermodynamic Expansion Valve 1  
 TEV2 : Thermodynamic Expansion Valve 2  
 V1 : 4 way valve 1  
 V2 : 4 way valve 2  
 VP : Vacuum draining take-off

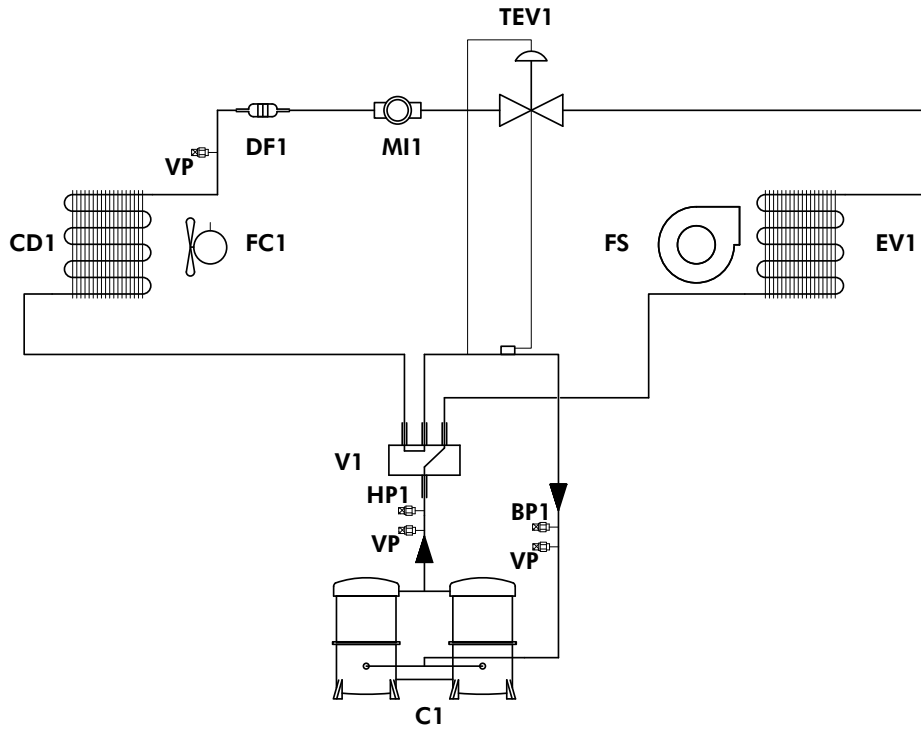
C1 : Kompressor 1  
 C2 : Kompressor 2  
 CD1 : Verflüssiger 1  
 CD2 : Verflüssiger 2  
 EV1 : Verdampfer 1  
 EV2 : Verdampfer 2  
 FC1 : Axialventilator 1  
 FC2 : Axialventilator 2  
 FS : Zentrifugalventilator  
 HP1 : Druckanschlussstelle Hochdruck 1  
 HP2 : Druckanschlussstelle Hochdruck 2  
 DF1 : Wasserabscheidungsfilter 1  
 DF2 : Wasserabscheidungsfilter 2  
 BP1 : Druckanschlussstelle Niederdruck 1  
 BP2 : Druckanschlussstelle Niederdruck 2  
 B1 : Flasche mit Flüssigkeitsreserve 1  
 B2 : Flasche mit Flüssigkeitsreserve 2  
 M I1 : Flüssigkeitsschauglas 1  
 M I2 : Flüssigkeitsschauglas 2  
 TEV1 : Thermostatisches Druckminderventil 1  
 TEV2 : Thermostatisches Druckminderventil 2  
 V1 : Umkehrventil 1  
 V2 : Umkehrventil 2  
 VP : Anschluss zum Evakuieren

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  
 BP1 : Toma de presión BP 1  
 BP2 : Toma de presión BP 2  
 B1 : Botella de reserva 1  
 B2 : Botella de reserva 2  
 M I1 : indicador luminoso líquido 1  
 M I2 : indicador luminoso líquido 2  
 TEV1 : Reductor de presión termostático 1  
 TEV2 : Reductor de presión termostático 2  
 V1 : Válvula de inversión 1  
 V2 : Válvula de inversión 2  
 VP : Toma de vacío

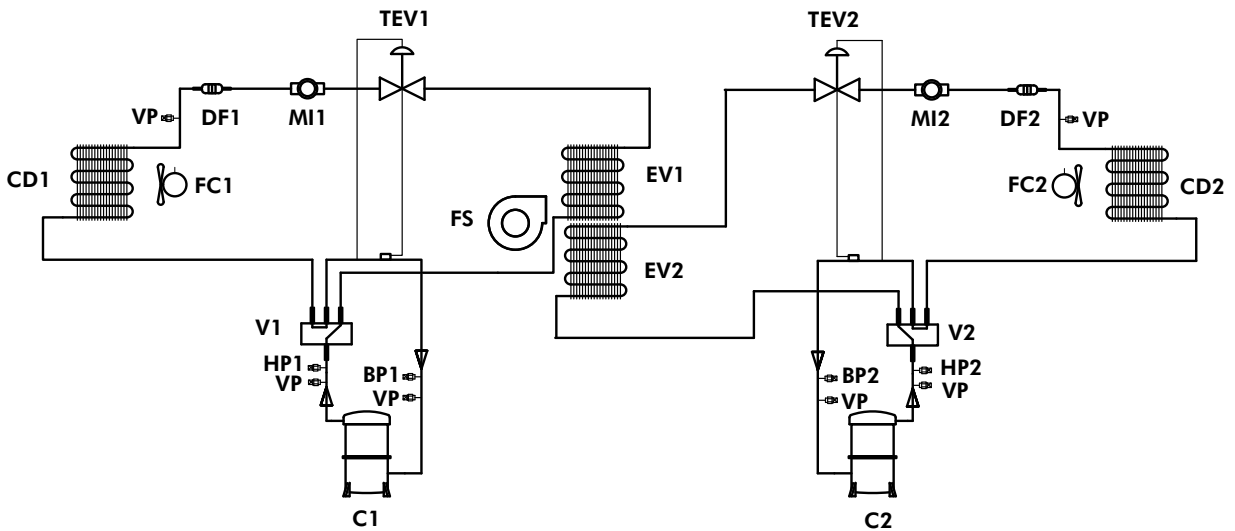
C1 : Compresseur 1  
 C2 : Compresseur 2  
 CD1 : Condenseur 1  
 CD2 : Condenseur 2  
 EV1 : Evaporateur 1  
 EV2 : Evaporateur 2  
 FC1 : Ventilateur hélicoïde 1  
 FC2 : Ventilateur hélicoïde 2  
 FS : Ventilateur centrifuge  
 HP1 : Prise de pression HP 1  
 HP2 : Prise de pression HP 2  
 DF1 : Filtre déshumidificateur 1  
 DF2 : Filtre déshumidificateur 2  
 BP1 : prise de pression BP 1  
 BP2 : prise de pression BP 2  
 B1 : Bouteille de réserve 1  
 B2 : Bouteille de réserve 2  
 M I1 : voyant liquide 1  
 M I2 : voyant liquide 2  
 TEV1 : Détendeur thermostatique 1  
 TEV2 : Détendeur thermostatique 2  
 V1 : Vanne d'inversion 1  
 V2 : Vanne d'inversion 2  
 VP : Prise de tirage au vide

C1 : Compresore 1  
 C2 : Compresore 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  
 BP1 : Presa di pressione BP 1  
 BP2 : Presa di pressione BP 2  
 B1 : Bombola di riserva 1  
 B2 : Bombola di riserva 2  
 M I1 : spia liquido 1  
 M I2 : spia liquido 2  
 TEV1 : Regolatore di pressione termostatico 1  
 TEV2 : Regolatore di pressione termostatico 2  
 V1 : Valvola di inversione 1  
 V2 : Valvola di inversione 2  
 VP : Presa di tiraggio a vuoto

RTH40 - RTH50



RTH60 - RTH70 - RTH80 - RTH100 - RTH110





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!**

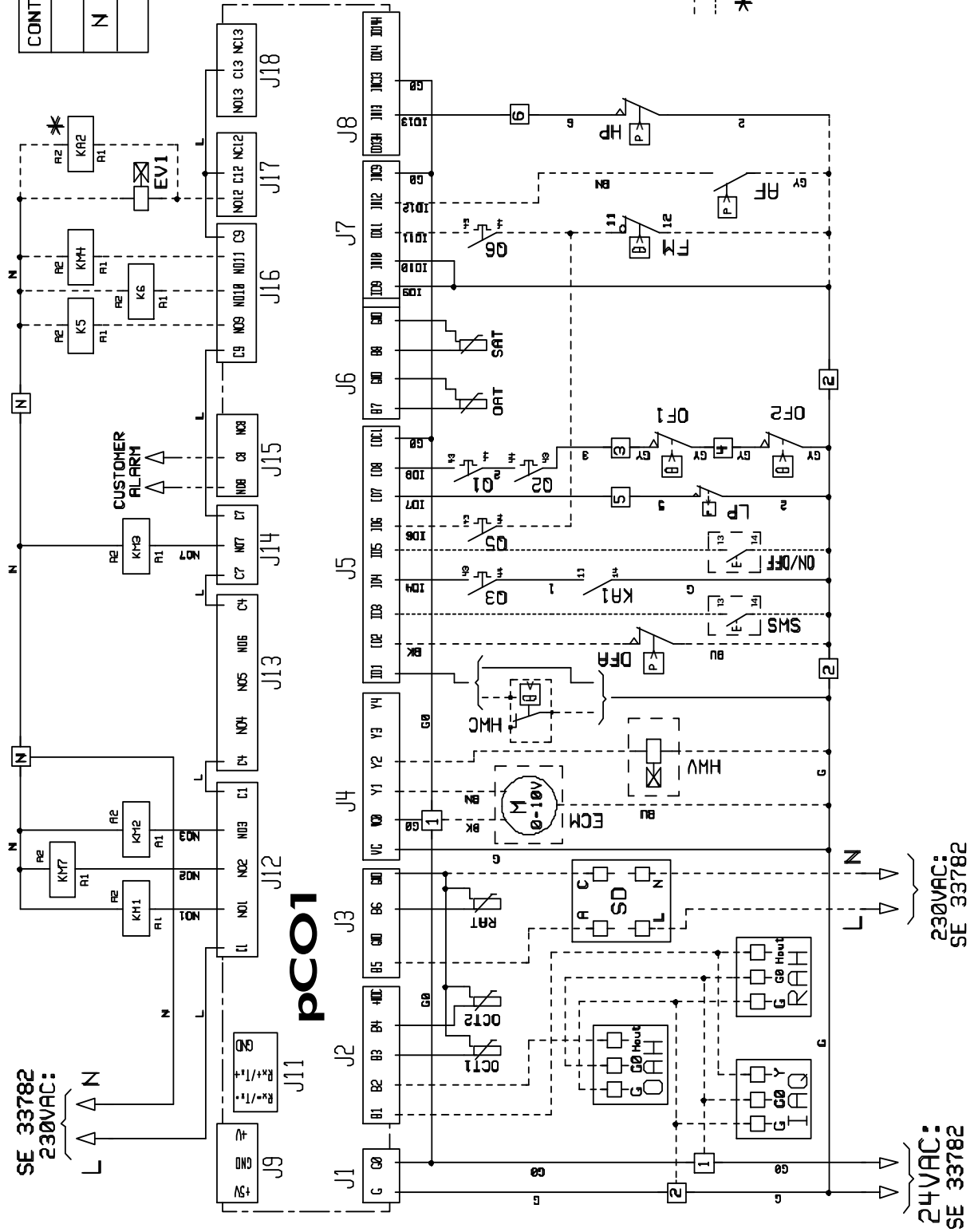
RT40 - RT50

CONTROL

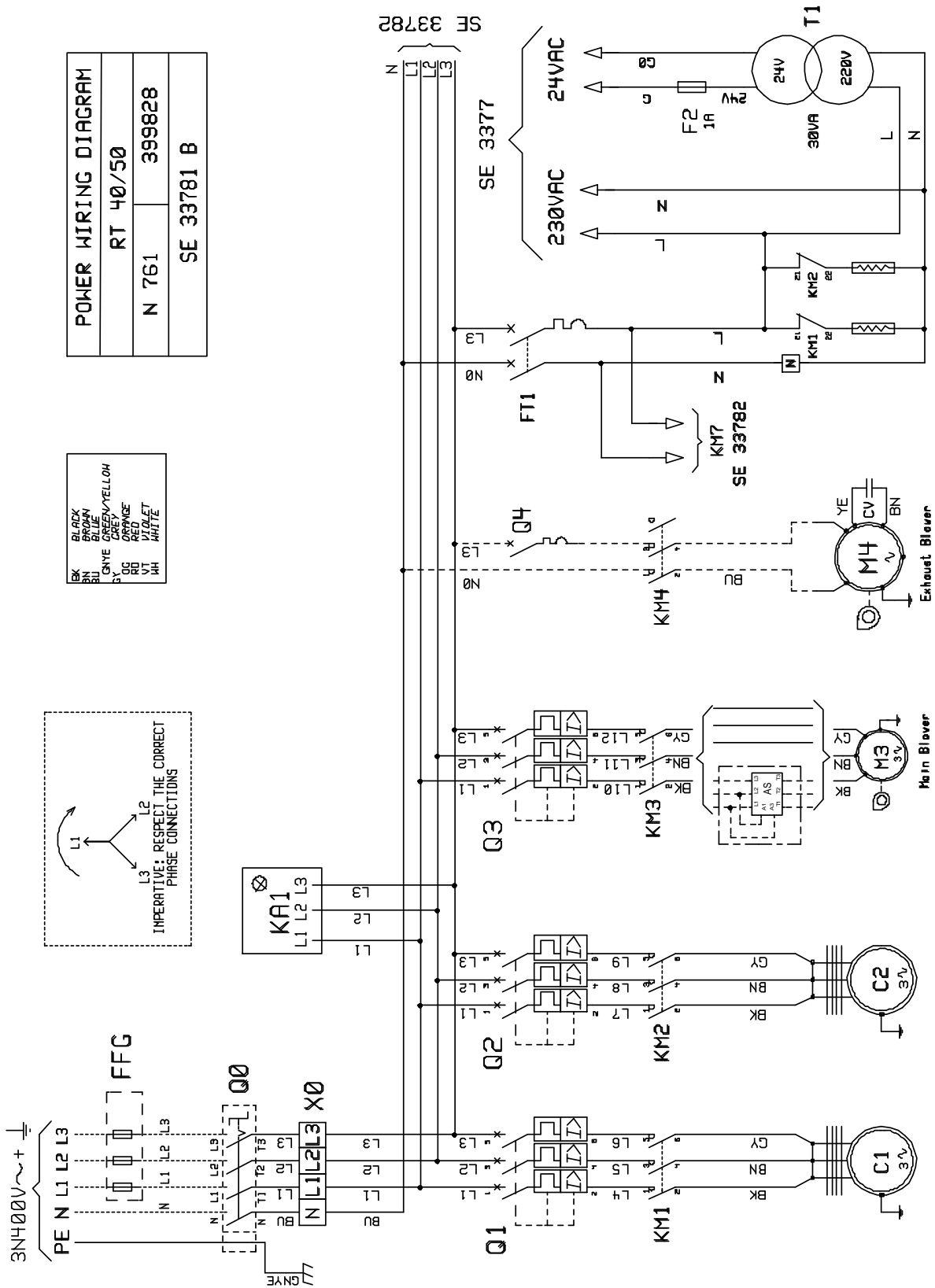
CONTROL WIRING DIAGRAM	
RT 40/50	
N 761	399827
	SE 33782

BK	BLACK
BN	BROWN
BL	BLUE
BY	BLUE/YELLOW
CC	GREEN
OC	ORANGE
CC	RED
RV	VIOLET
HH	WHITE

--- OPTION  
 - - - - - CUSTOMER INPUTS  
 \* ALL SEASONS  
 \* HEATPUMP MODEL ONLY

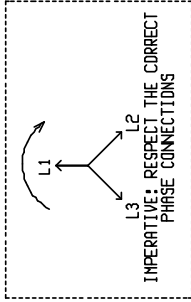


POWER

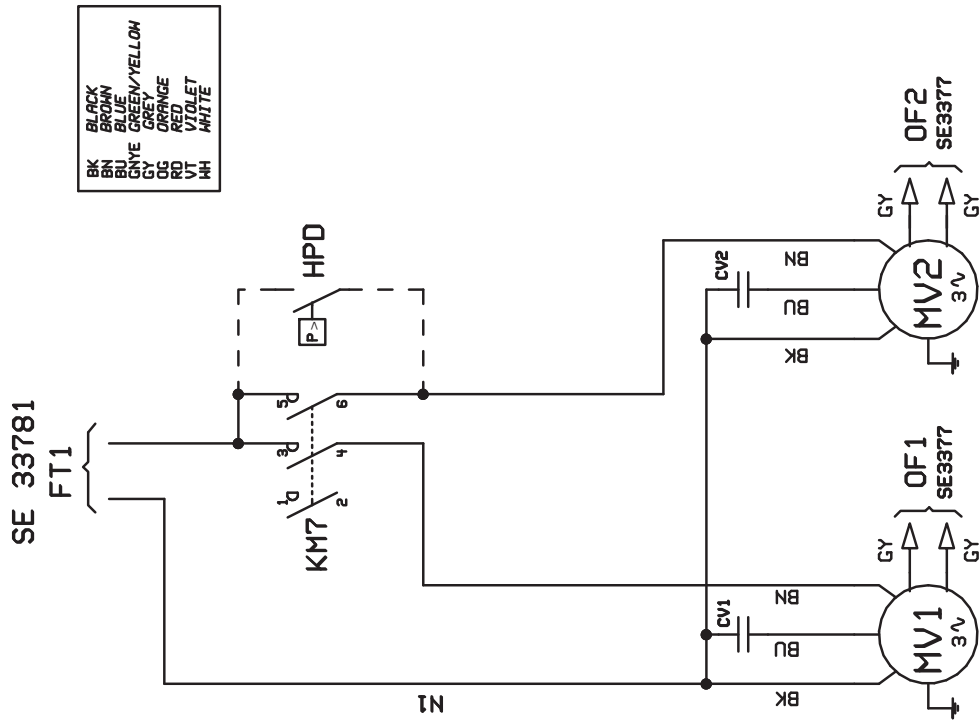


POWER WIRING DIAGRAM	
RT 40/50	399828
N 761	SE 33781 B

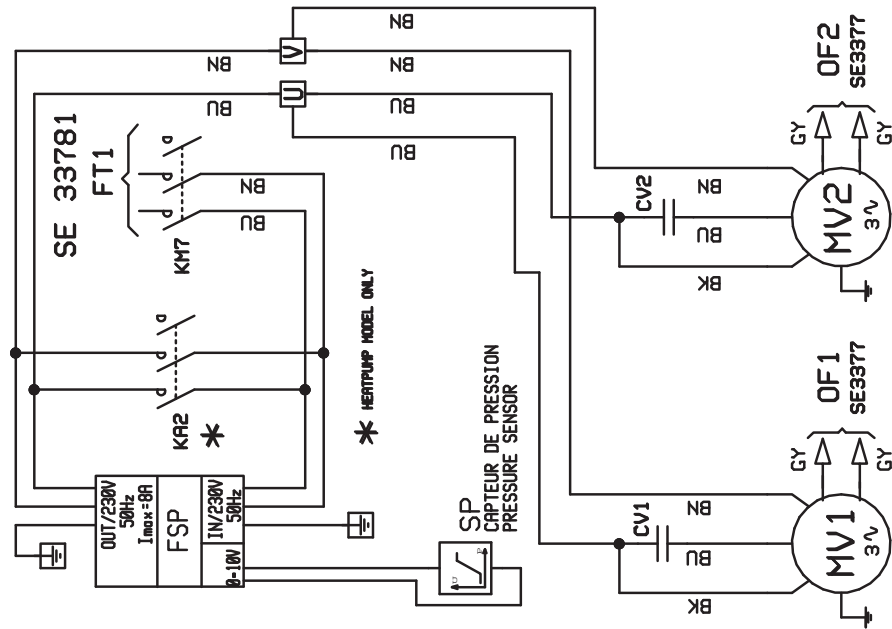
BK	BLACK
BN	BROWN
BL	BLUE
BY	YELLOW
CV	GREEN
GG	ORANGE
RD	RED
WT	WHITE
MT	GREY



POWER WIRING DIAGRAM	
RT 40/50	
N 761	399863
SE 33782C	



ALL SEASONS OPTION



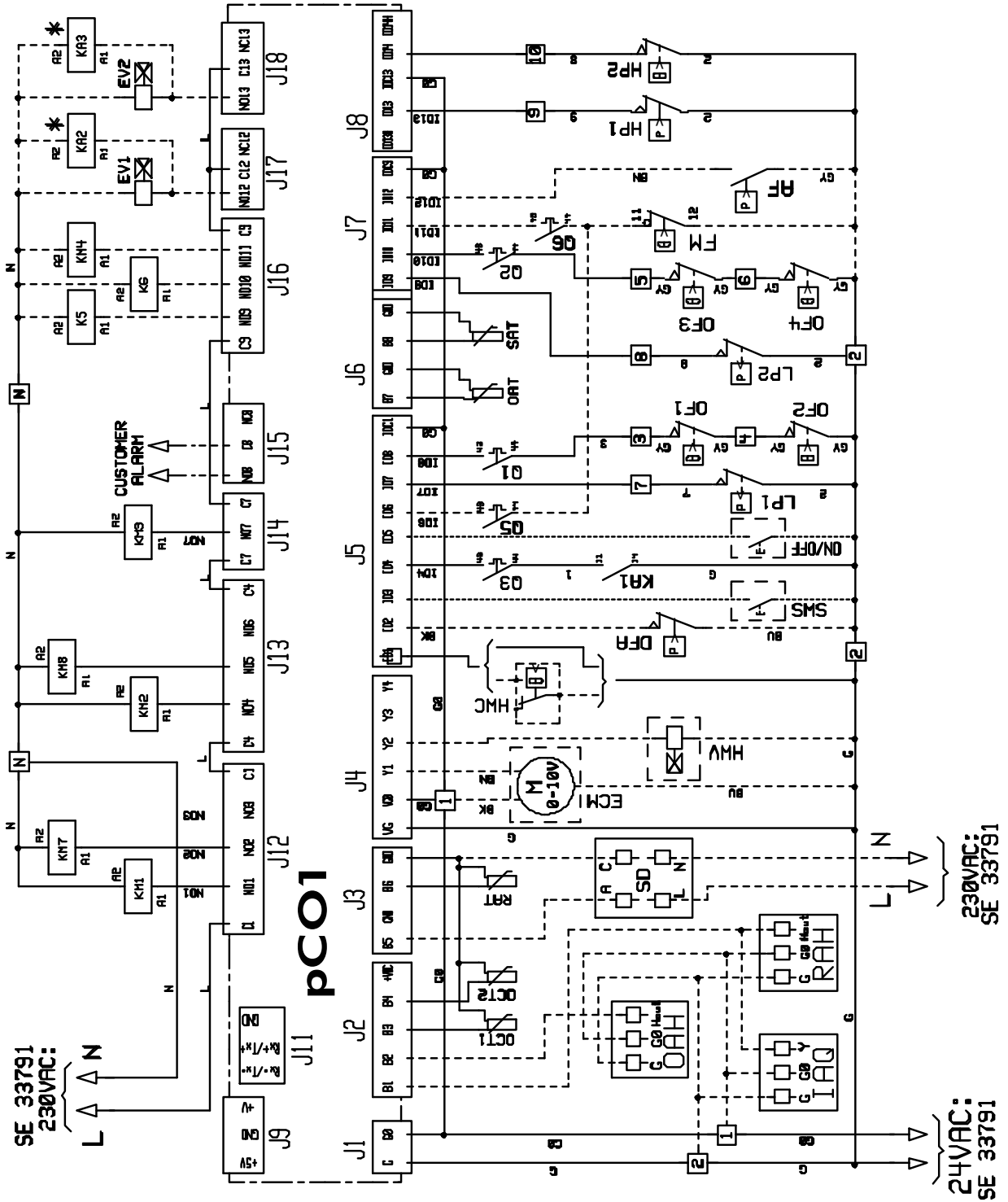
RT60 - RT70 - RT80

CONTROL

CONTROL WIRING DIAGRAM	
RT 60/70/80	
N 761	399830
	SE 3380B

BK	BLACK
BN	BLUE
BN	BROWN
BN	GREEN/YELLOW
BY	GREY
DC	ORANGE
DC	RED
FD	VIOLET
VI	VIOLET
WH	WHITE

----- OPTION  
 - - - - - CUSTOMER INPUTS  
 \* ALL SEASONS  
 \* HEATPUMP MODEL ONLY



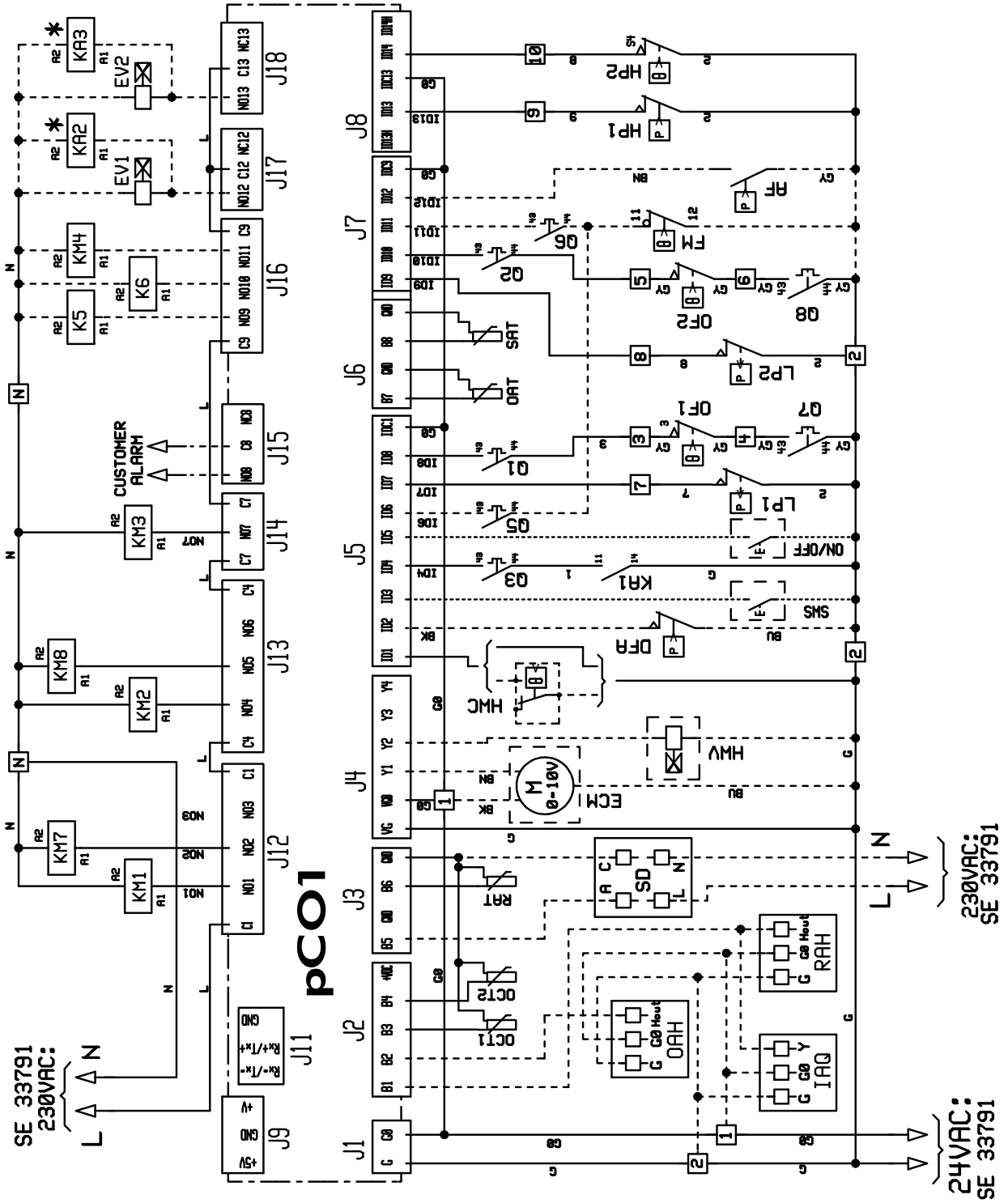
RT100 - RT110

CONTROL

CONTROL WIRING DIAGRAM	
RT 100/110	
N 761	399942
	SE 3563

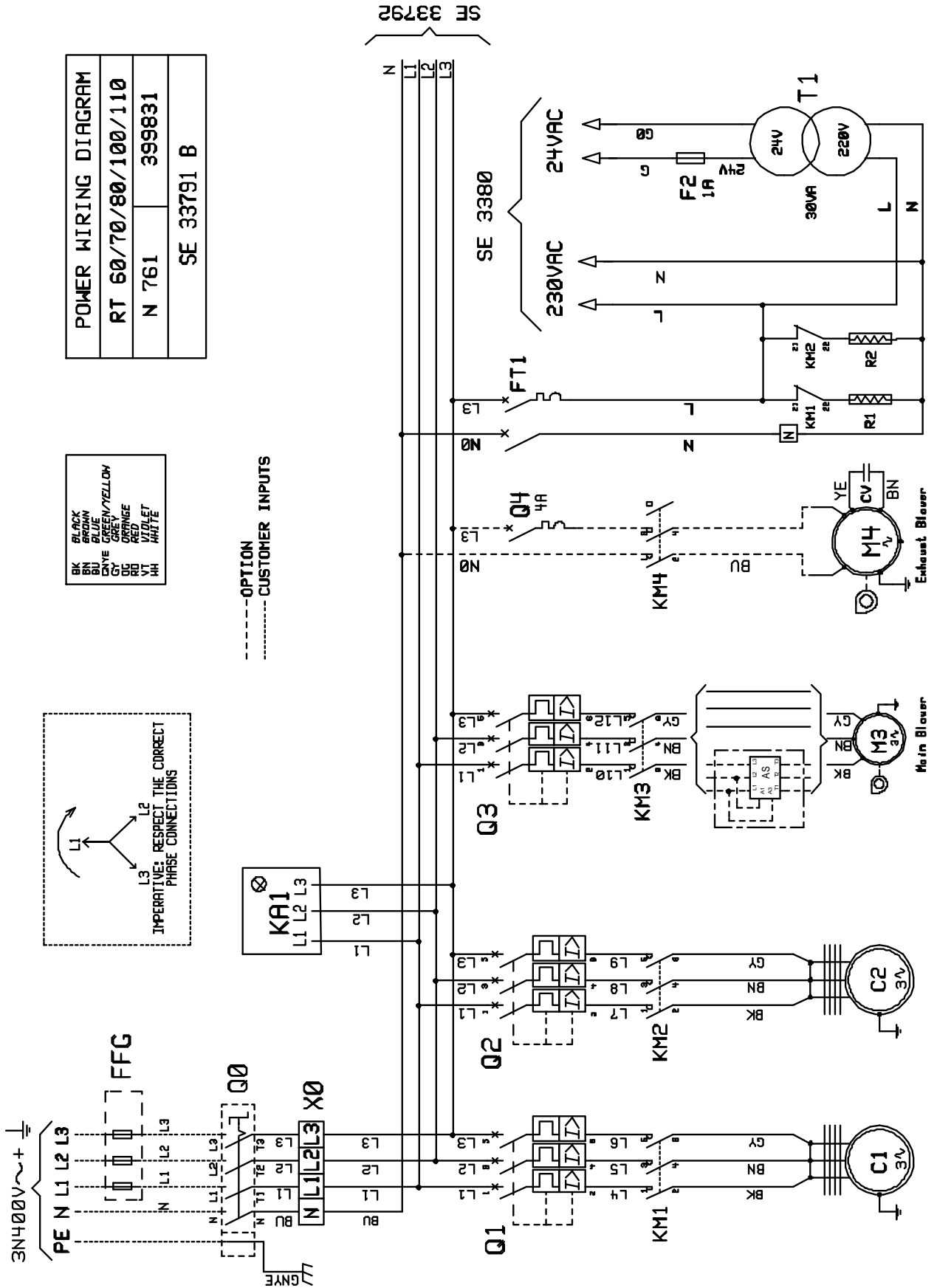
BK	BLACK
BN	BROWN
BU	BLUE
GN	GREEN/YELLOW
GR	GREEN
OR	ORANGE
RD	RED
VT	VIOLET
WH	WHITE

----- OPTION  
 \* CUSTOMER INPUTS  
 ALL SEASONS  
 \* HEATPUMP MODEL ONLY



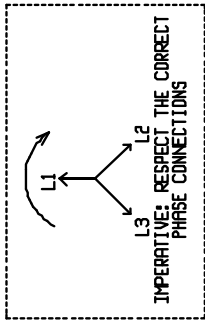
RT60 - RT70 - RT80 - RT100 - RT110

POWER



POWER WIRING DIAGRAM	
RT 60/70/80/100/110	
N 761	399831
SE 33791 B	

BK	BLACK
BRN	BROWN
BLU	BLUE
GRN/YEL	GREEN/YELLOW
GR	GREEN
ORN	ORANGE
RED	RED
WHT	WHITE
WH	WHITE

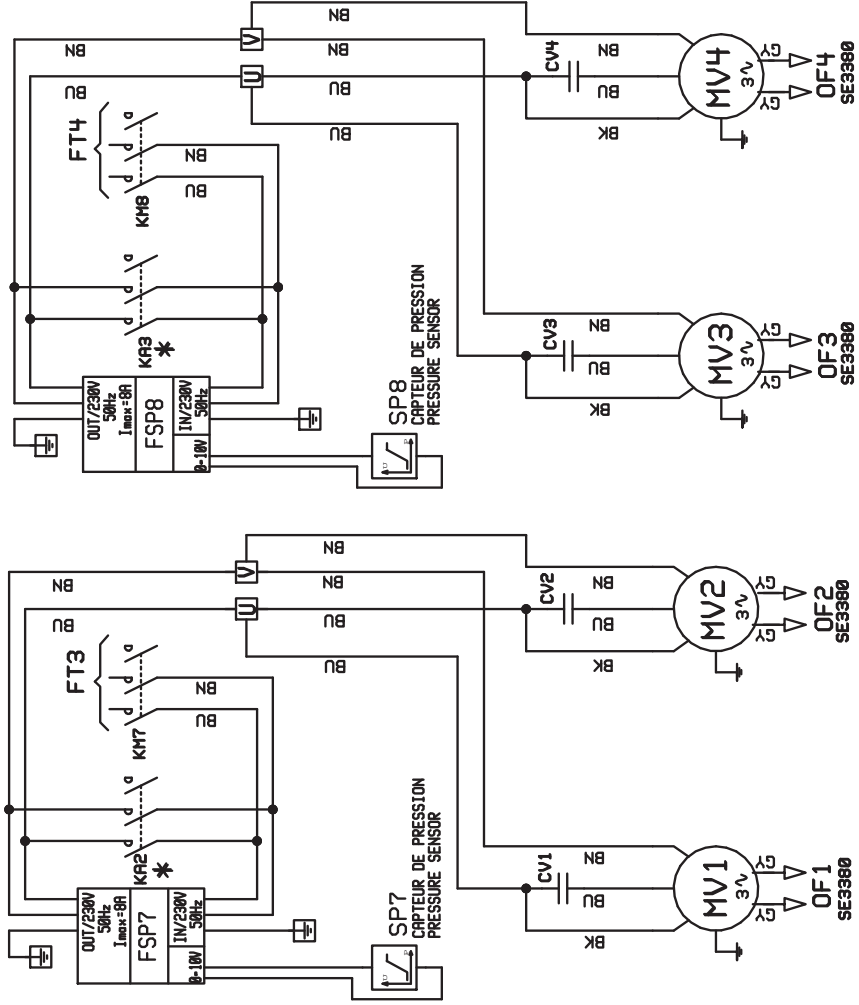


----- OPTION  
 ..... CUSTOMER INPUTS

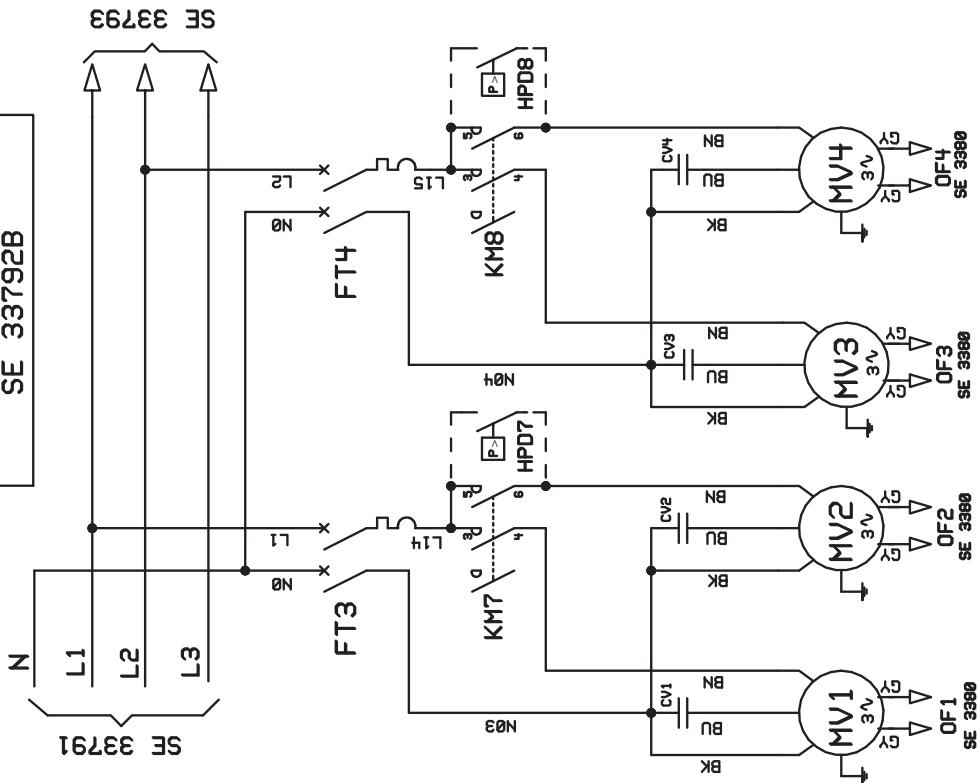
ALL SEASONS OPTION

BK	BLACK
BRN	BROWN
BLU	BLUE
GRN	GREEN/YELLOW
ORN	ORANGE
RED	RED
VT	VIOLET
WH	WHITE

\* HEATPUMP MODEL ONLY

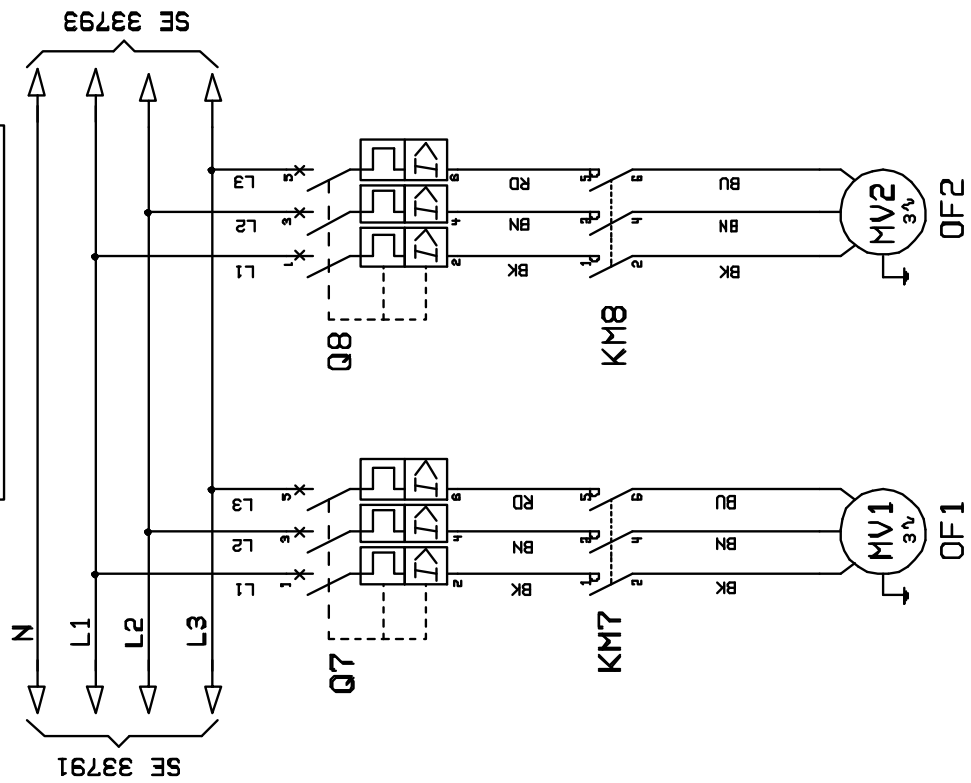


POWER WIRING DIAGRAM	
RT 60/70/80	
N 761	399862
SE 33792B	





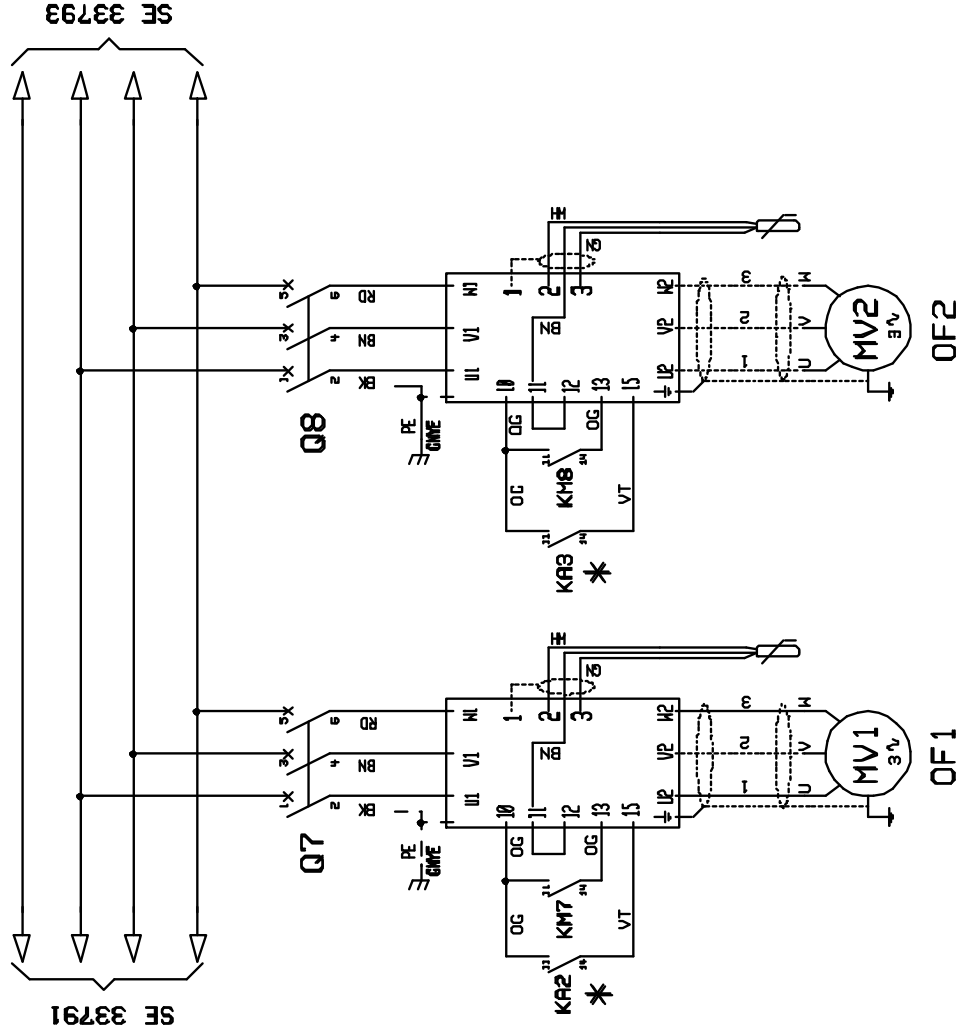
<b>POWER WIRING DIAGRAM</b>	
RT 100/110	
N 761	399939
SE 3445	



BK	BLACK
BN	BROWN
BL	BLUE
GR	GREEN/YELLOW
GY	GRAY
OR	ORANGE
DC	RED
LI	LIGHT BLUE
WH	WHITE

**ALL SEASONS OPTION**

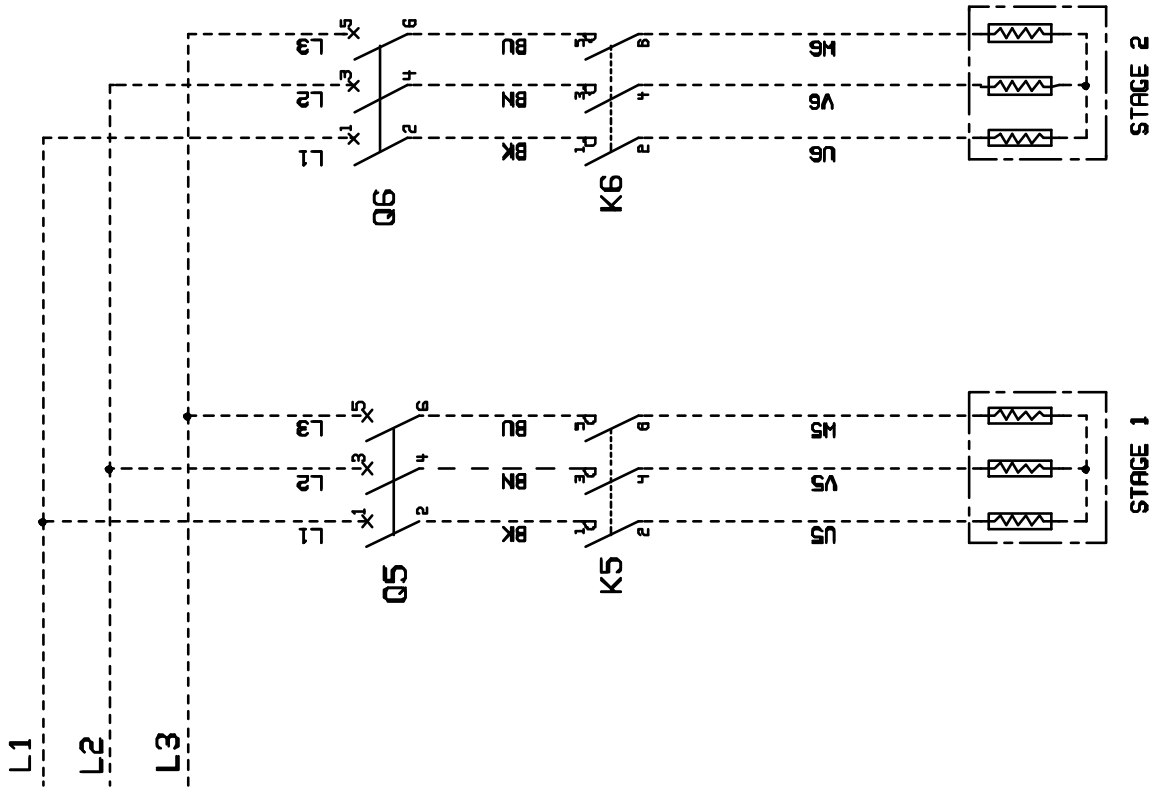
\* HEATPUMP MODEL ONLY



<b>ELECTRIC HEATER POWER WIRING DIAGRAM</b>	
RT 40/50/60/70/80/100/110	
N 761	399910
<b>SE 33793</b>	

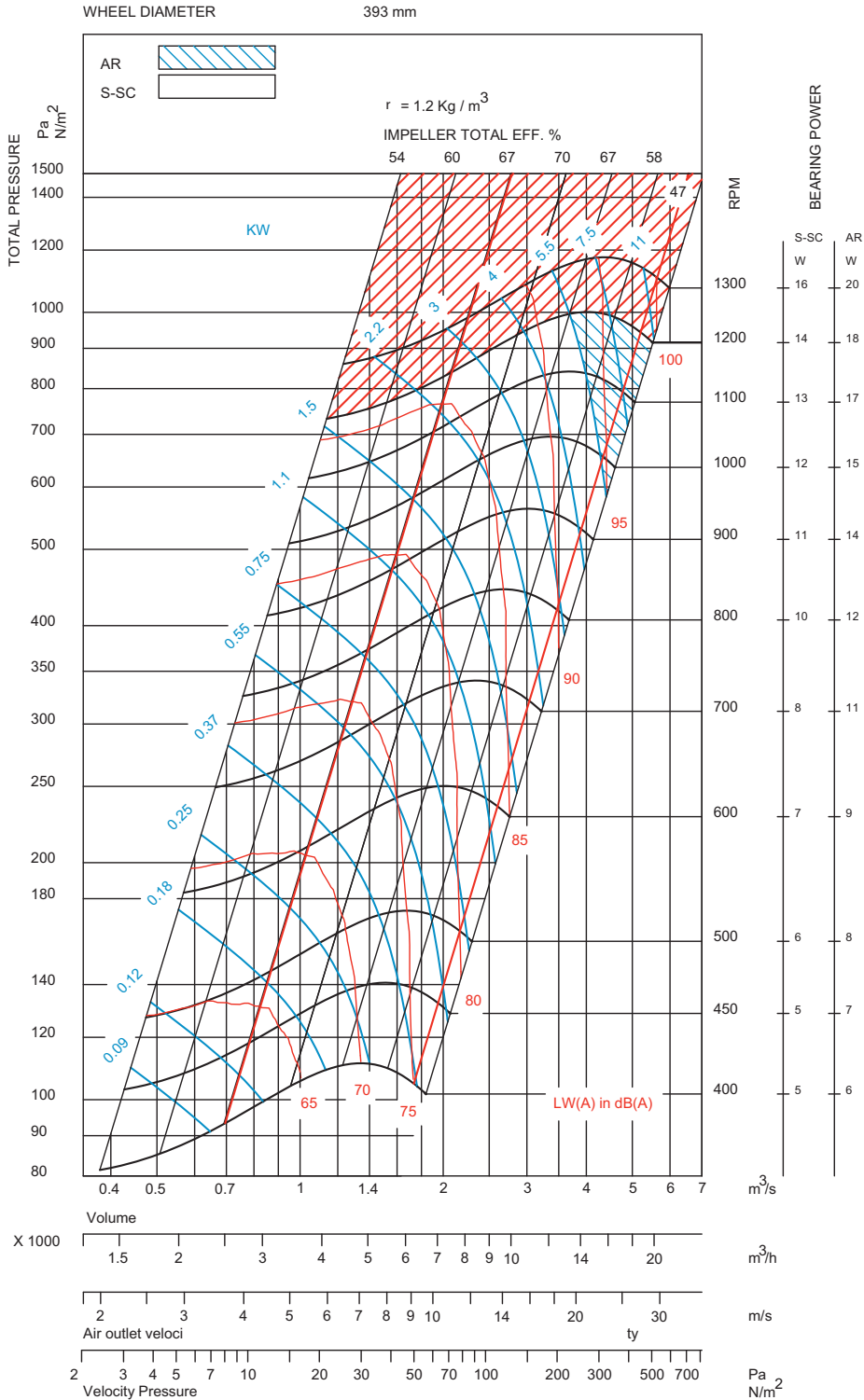
BK	BLACK
BN	BROWN
BU	BLUE
GN	GREEN/YELLOW
GY	GREY
DC	ORANGE
RD	RED
VT	VIOLET
WH	WHITE

----- OPTION



AERULIC ADJUSTMENT  
 CHARACTERITQUES AERULIQUES  
 REGELUNG DES LÜFTERSYSTEMS  
 REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'ARIA  
 AJUSTE DEL ISTEMA AEROLICO

RT40 - RT50  
 AT15-15

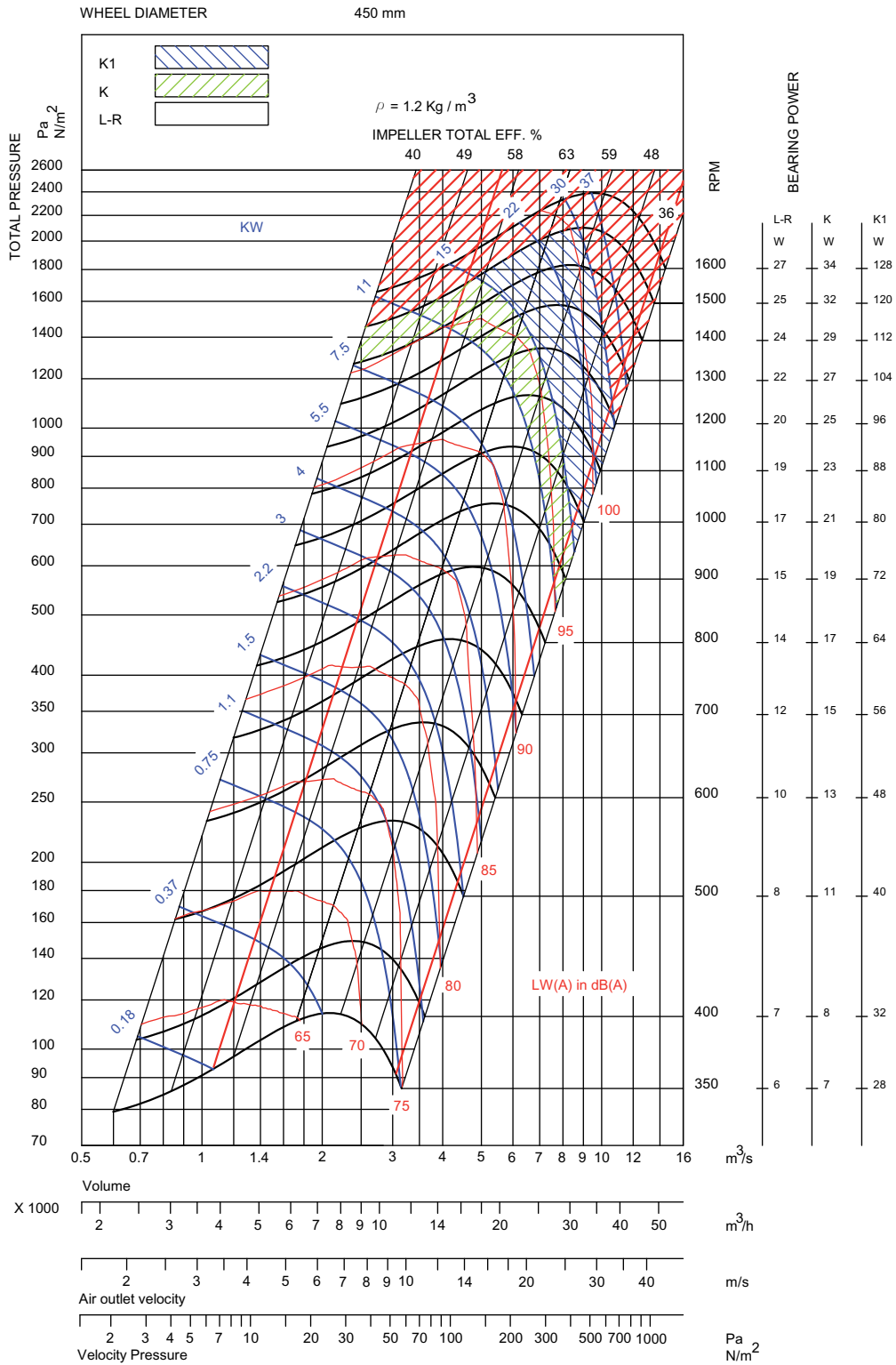


Performance shown is for installation type B, free inletducted outlet, and doesn't include the effects of appurtenances in the airstream.  
 Power rating kW doesn't include drive losses.  
 The AMCA Certified Ratings Seal applies to Air Performance only.

APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

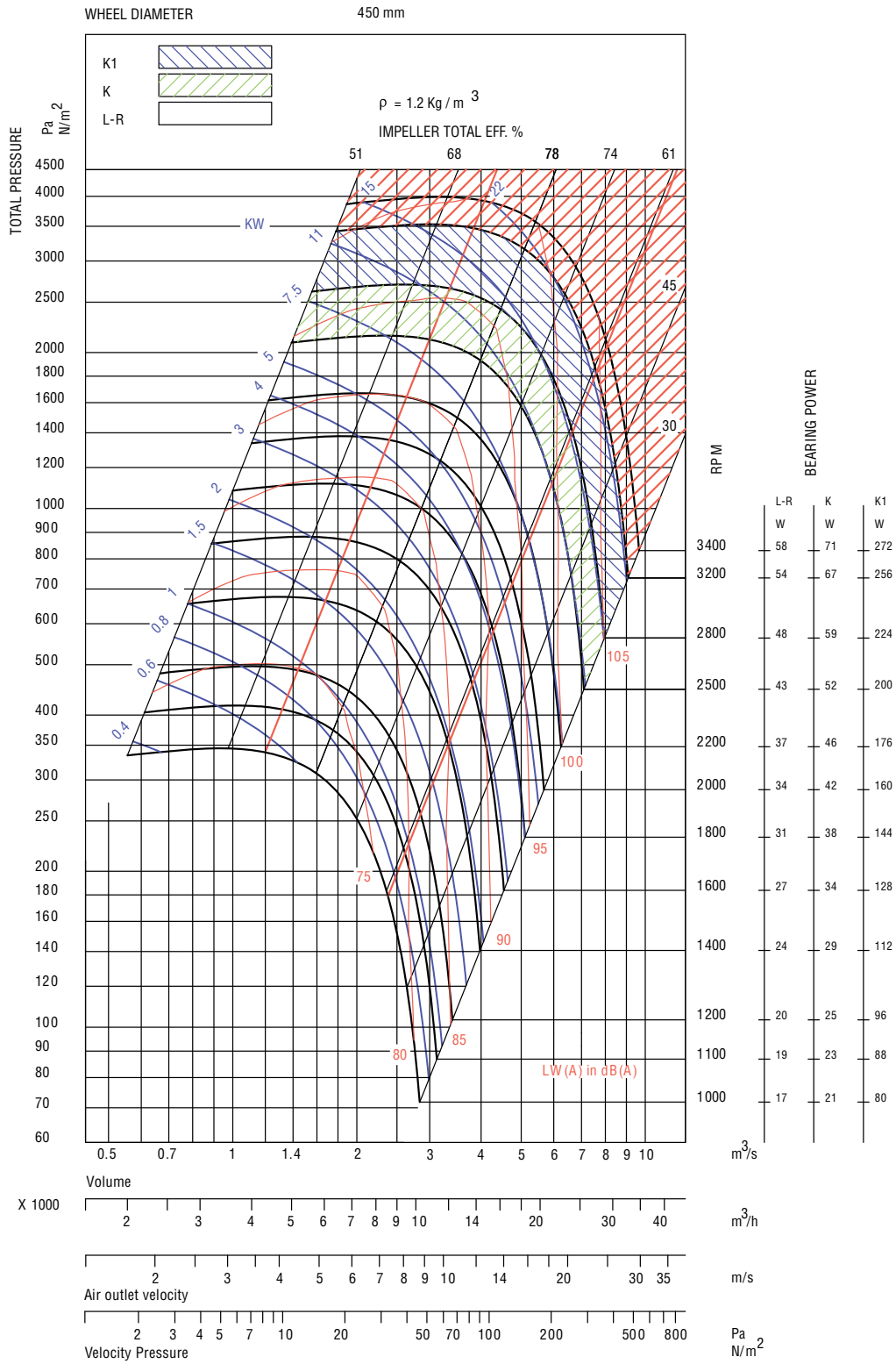
RT60 - RT70

ADH450



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.

RDH450

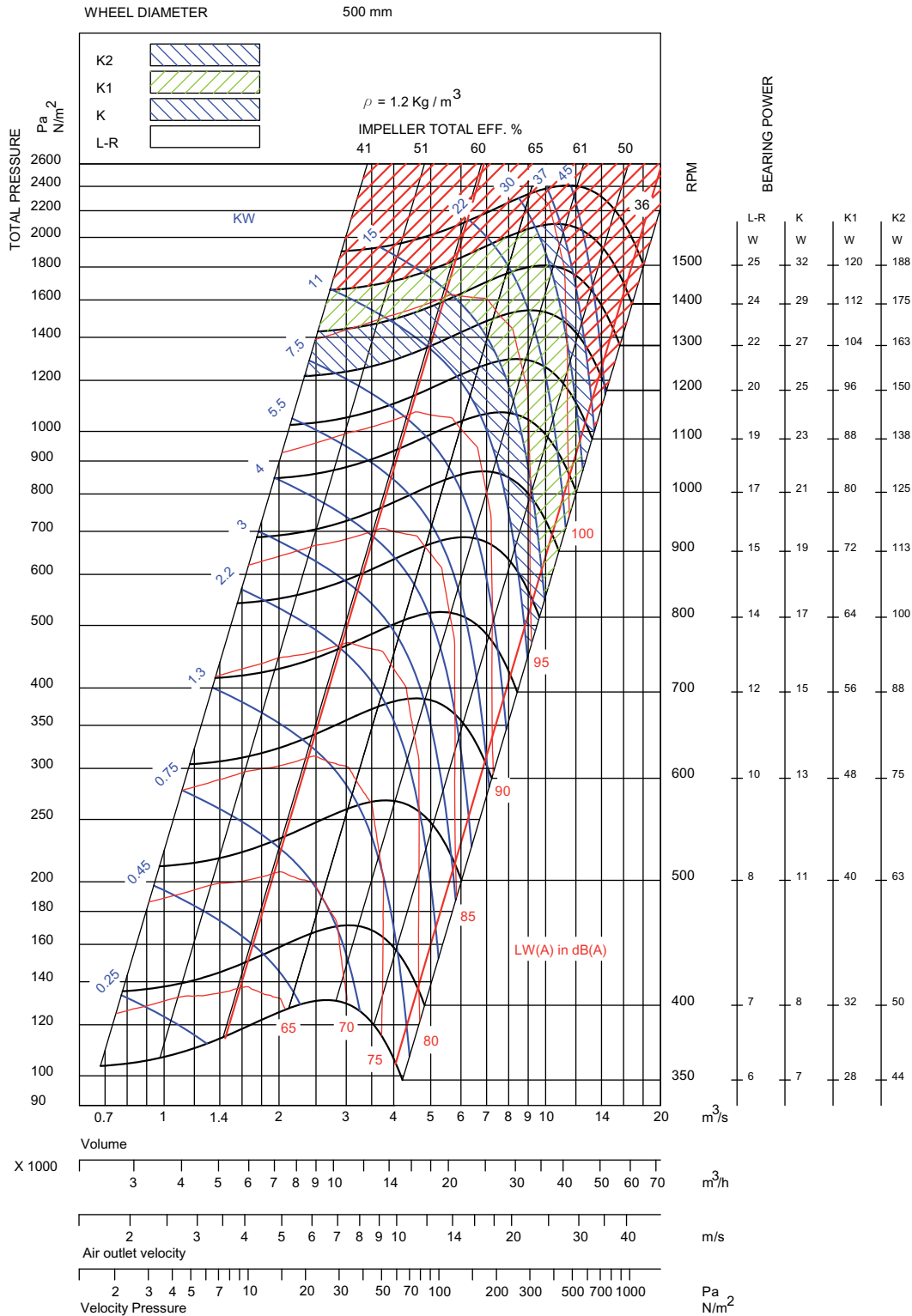


Performance shown is for installation type B, free inlet- ducted outlet, and doesn't include the effect of appuntenances in the airstream.  
 Power rating kW doesn't include drive losses.  
 The AMCA Certified Ratings Seal applies to Air Performance only.

# APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

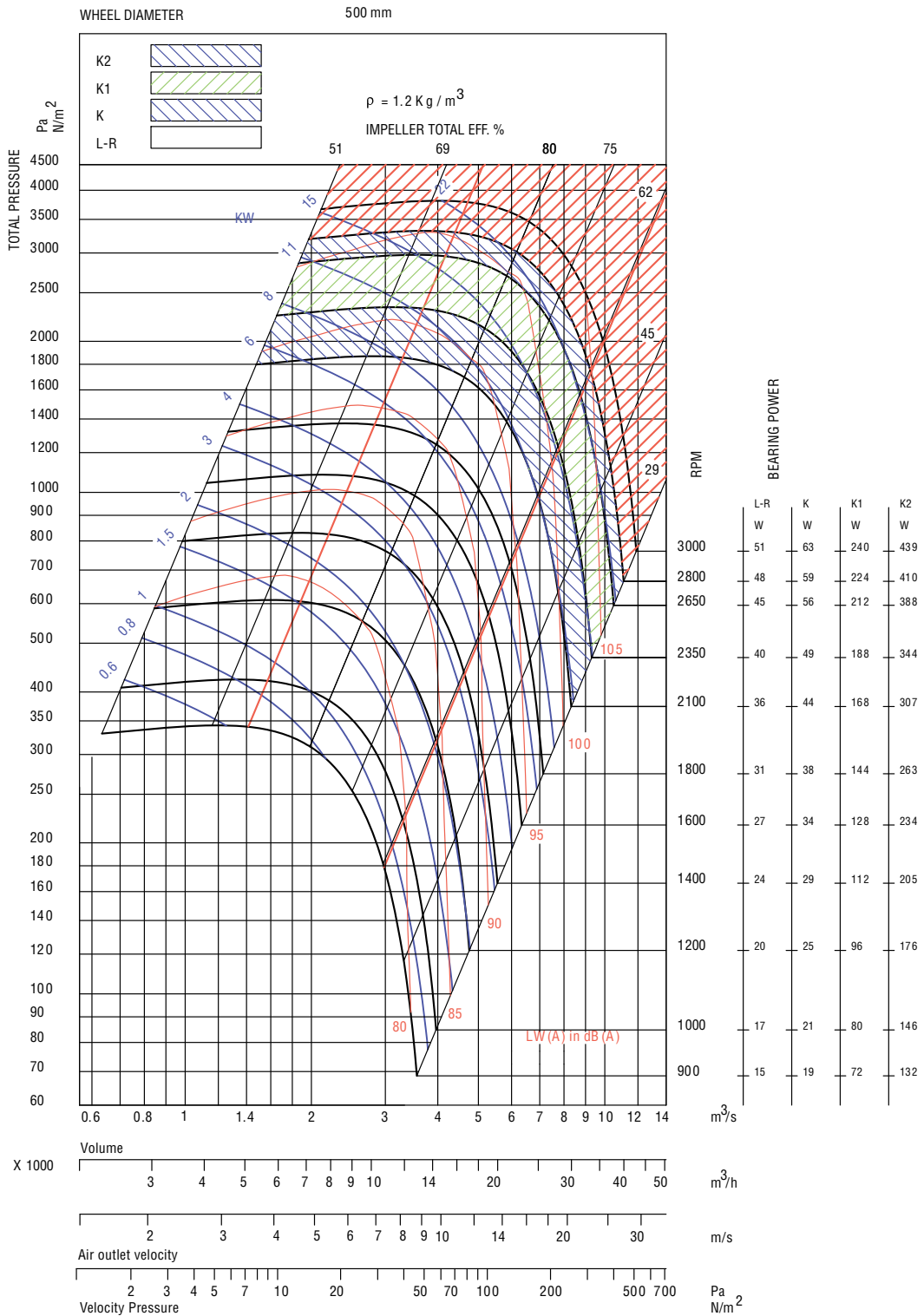
RT80 - RT100 - RT110

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.





**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**

<b>SIZE RTL/RTCL</b>		<b>Unit S/N</b>		<table border="1"> <tr> <th>Options</th> <th>Yes</th> <th>No</th> </tr> <tr> <td>Air filter</td> <td></td> <td></td> </tr> <tr> <td>Dirty filter switch</td> <td></td> <td></td> </tr> <tr> <td>Air flow switch</td> <td></td> <td></td> </tr> <tr> <td>Economiser</td> <td></td> <td></td> </tr> <tr> <td>Electric heat</td> <td></td> <td></td> </tr> <tr> <td>hot water coil</td> <td></td> <td></td> </tr> <tr> <td>All season kits</td> <td></td> <td></td> </tr> <tr> <td>Smoke detector</td> <td></td> <td></td> </tr> </table>	Options	Yes	No	Air filter			Dirty filter switch			Air flow switch			Economiser			Electric heat			hot water coil			All season kits			Smoke detector		
Options	Yes	No																													
Air filter																															
Dirty filter switch																															
Air flow switch																															
Economiser																															
Electric heat																															
hot water coil																															
All season kits																															
Smoke detector																															
<b>SIZE RTH/RTCH</b>		Comp 1 S/N																													
		Comp 2 S/N																													
		Comp 3 S/N																													
		Comp 4 S/N																													

**Installation**

**Comp1 oil level**

**Comp2 oil level**

**Comp3 oil level**

**Comp4 oil level**

R407C	R410
-------	------

Software version

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

<b>Power supply</b>	L1-L2	<input type="checkbox"/>	L1-L3	<input type="checkbox"/>	PC Board IATC	<input type="checkbox"/>
	L1-N	<input type="checkbox"/>	L2-L3	<input type="checkbox"/>		

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

<b>Safety device check Circuit 1</b>	OK	Value	<b>Safety device check Circuit 2</b>	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)												

APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

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 erklären in eigener Verantwortung, das die in der vorliegenden Beschreibung angegebenen Produkte den Bestimmungen der nachstehend erwähnten EG-Richtlinien und den nationalen Gesetzesvorschriften entsprechen, in denen diese Richtlinien umgesetzt sind.

## Dichiarazione CE di conformità

Dichiariamo, assumendone la responsabilità, che i prodotti descritti nel presente manuale sono conformi alle disposizioni delle direttive CEE di cui sott e alle legislazioni 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 enunciadas a continuación, así como a las legislaciones nacionales que las contemplan.

RT 40 - 50 - 60 - 70 - 80 - 100 - 110

MACHINERY DIRECTIVE 98 / 37 / EEC  
LOW VOLTAGE DIRECTIVE (DBT) 2006 / 95 / EEC  
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 89 / 336 / EEC AMENDED BY DIRECTIVE 92 / 31 / EEC AND 93 / 68 / EEC  
PRESSURISE EQUIPMENT DIRECTIVE (DESP) 97 / 23 / EEC  
SUB-MODULE A CATEGORY I: RT40  
SUB-MODULE A1 CATEGORY II: RT50 - RT60 - RT70 - RT80 - RT100 - RT110  
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) 2006 / 95 / C.E.E.  
DIRECTIVE COMPATIBILITE ELECTROMAGNETIQUE 89 / 336 / C.E.E. AMENDEE PAR DIRECTIVE 92 / 31 / CEE ET 93 / 68 / CEE  
DIRECTIVE DES EQUIPEMENTS SOUS PRESSION (DESP) 97 / 23 C.E.E.  
SOUS-MODULE A CATEGORIE I : RT40  
SOUS-MODULE A1 CATEGORIE II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110  
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 NIEDERSpannung (DBT) 2006 / 95 / EG  
RICHTLINIE ELEKTROMAGNETISCHE VERTRÄGLICHKEIT 89 / 336 / EG ABGEÄNDERT DURCH DIE RICHTLINIE 92 / 31 / EG UND 93 / 68 / EG  
RICHTLINIE FÜR AUSTRÜSTUNGEN UNTER DRUCK (DESP) 97 / 23 / EG  
UNTER MODUL A, KATEGORIE I : RT40  
UNTER MODUL A1, KATEGORIE II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110  
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) 2006 / 95 / CEE  
DIRETTIVA COMPATIBILITA ELETTRONAGNETICA 89 / 336 / CEE EMENDATA DALLA DIRETTIVA 92 / 31 / CEE E 93 / 68 / CEE  
DIRETTIVA DEGLI IMPIANTI SOTTO PRESSIONE (DESP) 97 / 23 / CEE  
SOTTOMODULO A, CATEGORIA I : RT40  
SOTTOMODULO A1, CATEGORIA II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110  
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) 2006 / 95 / CEE  
DIRECTIVA COMPATIBILIDAD ELECTROMAGNETICA 89 / 336 / CEE ENMENDADA POR LA DIRECTIVA 92 / 31 / CEE Y 93 / 68 / CEE  
DIRECTIVA DE LOS EQUIPOS A PRESION (DESP) 97 / 23 / CEE  
BAJA MODULO A, CATEGORIA I : RT40  
BAJA MODULO A1, CATEGORIA II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110  
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 paragrafi delle norme armonizzate.  
Y que se han aplicado los siguientes apartados de las normas armonizadas.

EN 60 204-1  
EN 378-1

EN 61 000-6-2  
EN 378-2

EN61 000-6-4

  
A. Tillyères Sur Avre  
27570 - FRANCE  
Le: 20/06/2007  
Franck Bailly  
Quality Manager  
ACE Industrie

**ACE INDUSTRIE**

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

*In dem Bemühen um ständige Verbesserung können unsere Erzeugnisse ohne vorherige Ankündigung geändert werden. Fotos nicht vertraglich bindend.*

*A causa della politica di continua miglioria posta in atto dal costruttore, questi prodotti sono soggetti a modifiche senza alcun obbligo di preavviso. Le foto pubblicate non danno luogo ad alcun vincolo contrattuale.*

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