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
30 ÷ 110

English | Français | Deutsch | Italiano | Español

32 ↓ 108 kW

33.3 ↓ 107 kW

HFC 410A

Roof-mouted 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-15GB
Part number / Code / Teil Nummer / Codice / Código : **3990475GB**
Supersedes / Annule et remplace / Annulliert und ersetzt /
Annulla e sostituisce / Anula y sustituye : **IOM RT 04-N-14GB**

CE AFAQ ISO 9001 VERSION 2000

INSTALLATION INSTRUCTION English

NOTICE D'INSTALLATION Français

INSTALLATIONSHANDBUCH Deutsch

ISTRUZIONI INSTALLAZIONE Italiano

INSTRUCCIONES DE INSTALACIÓN Español

CONTENTS

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

GENERAL RECOMMENDATIONS

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

SAFETY DIRECTIONS

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

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

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

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

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

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

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

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

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

WARNING

Cutoff power supply before starting to work on the appliance.

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

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

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

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

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

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

EQUIPMENT SAFETY DATA

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

INSPECTION AND STORAGE

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

Inspect the units for any visible or hidden damage.

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

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

WARRANTY

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

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

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

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

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 Rooft@ir

1 Installation and maintenance manual

1 Control manual

PRESENTATION

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

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		RT30	RT40	RT50	RT60	RT70	RT80	RT100	RT110
Compressor type		Scroll Tandem	Scroll Tandem	Scroll Tandem	Scroll	Scroll	Scroll	Scroll	Scroll
Compressor quantity		2	2	2	2	2	2	2	2
Number of circuit		1	1	1	2	2	2	2	2
Refrigerant		R410A							
Charge of circuit	kg	SEE NAME PLATE							
Type of indoor blower		Centrifuge (entraînement par courroie)/roue libre avec moteur EC (entraînement direct)							
Number of blower		1/1	1/2	1/2	1/2	1/2	1/3	1/3	1/3
Nominal indoor airflow	m^3/h	5 500	7 650	9 200	11 500	12 500	16 500	18 650	20 000
Type of outdoor fans		Hélicoïde axial							
Number of outdoor fans		2	2	2	4	4	4	2	2
Nominal external total airflow	m^3/h	16 000	16 000	16 000	32 000	32 000	32 000	34 000	34 000

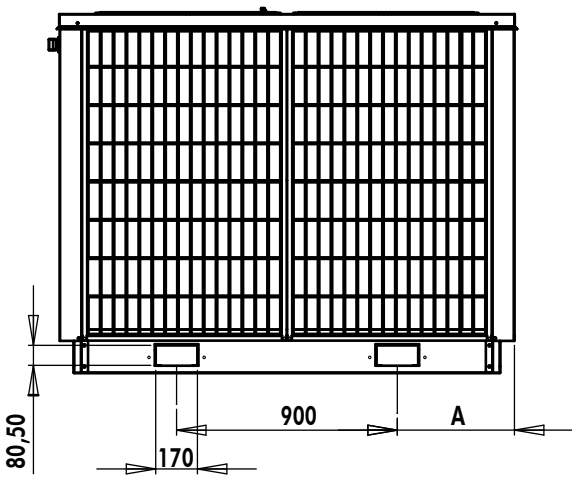
You can adjust the available static pressure and flow by adjusting the variable motor pulley fitted to the blower (SEE AIR BALANCING).

DIMENSIONS

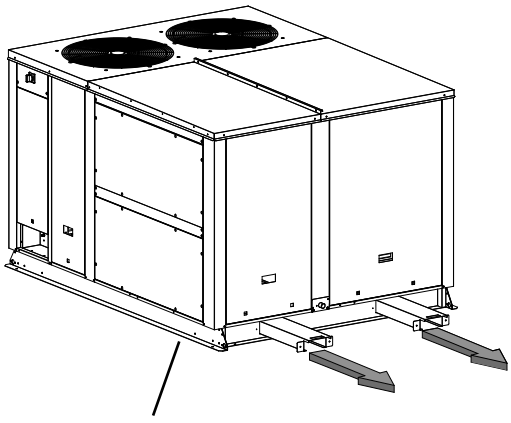
SEE APPENDIX

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.



FORKS GUIDERAILS

	RT30/40/50	RT60/110
A	478	651.5

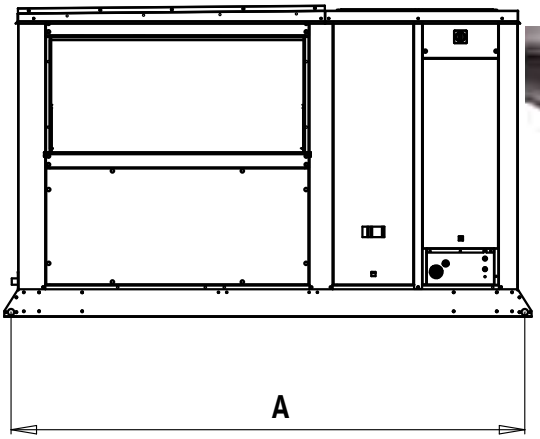
MINIMUM FORK LENGTH: 2M

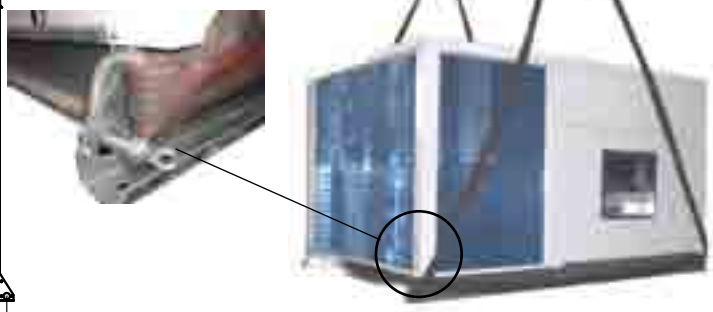
LIFTING WITH THE FORKS GUIDERAILS OBLIGATORY

The unit is also designed to be lifted by slings.

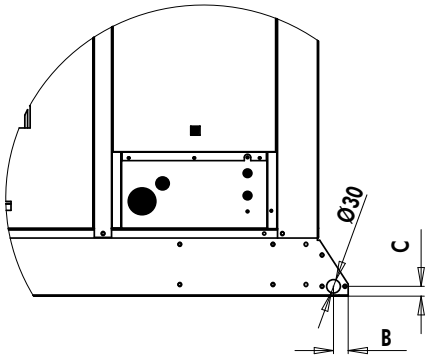
The rings mounted rigidly on the unit's base frame enable lifting in complete safety.

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





	RT30/40/50	RT60/110
A	2420	3328
B	32	36
C	22	36



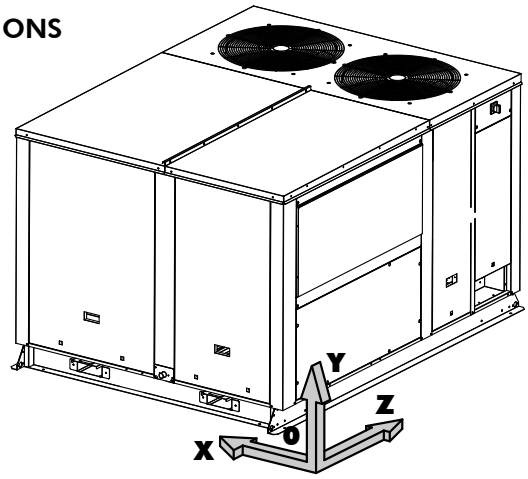
NET WEIGHT

Models	Base modul (kg)	option (kg)						
		heat		filter		economiser	double skin	Exhaust blower
		electric	hot water	G4	G4 +F6			
RT30	600	51	15	20	25	41	54	45
RT40	650	51	15	20	25	41	54	45
RT50	700	51	15	20	25	41	54	45
RT60	1100	35	20	30	40	72	80	62
RT70	1150	35	20	30	40	72	80	62
RT80	1200	35	20	30	40	72	80	62
RT100	1300	35	20	30	40	72	80	62
RT110	1350	35	20	30	40	72	80	62

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
RT30	959	726	1315
RT40	950	771	1339
RT50			
RT60	1110	1080	2450
RT70			
RT80			
RT100	1050	950	2505
RT110			



Approximative length

ELECTRICAL SPECIFICATIONS

UNIT WITHOUT HEATING

Models		RT30		RT40		RT50		RT60	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Maximum current	A	42	43	46	51	57	63	70	70
Total starting current	A	104	105	132	137	179	185	191	191
Fuse rating FFG aM	A	50	50	50	63	63	63	80	80

Models		RT70		RT80		RT100		RT110	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Maximum current	A	74	75	94	94	100	100	109	109
Total starting current	A	198	198	260	260	275	275	284	284
Fuse rating FFG aM	A	80	80	100	100	100	100	125	125

UNIT WITH HEATING TYPE CH1

Models		RT30		RT40		RT50		RT60	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Capacities	KW	9		18		18		36	
Maximum current	A	58	59	77	82	88	94	123	123
Total starting current	A	119	121	163	168	211	217	254	254
Fuse rating FFG aM	A	63	63	80	100	100	100	125	125

Models		RT70		RT80		RT100		RT110	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Capacities	KW	36		36		36		36	
Maximum current	A	127	127	157	157	163	163	172	172
Total starting current	A	251	251	323	323	338	338	347	347
Fuse rating FFG aM	A	160	160	160	160	200	200	200	200

UNIT WITH HEATING TYPE CH2

Models		RT30		RT40		RT50		RT60	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Capacities	KW	18		36		36		45	
Maximum current	A	73	75	109	114	119	125	139	139
Total starting current	A	135	137	195	200	242	248	270	270
Fuse rating FFG aM	A	80	80	125	125	125	125	160	160

Models		RT70		RT80		RT100		RT110	
		PE	GE	PE	GE	PE	GE	PE	GE
Power supply		3+N /400 /50Hz							
Capacities	KW	45		45		45		45	
Maximum current	A	143	143	173	173	178	178	187	187
Total starting current	A	277	277	339	339	353	353	362	362
Fuse rating FFG aM	A	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 avoid.

PLACE OF INSTALLATION AND REQUIREMENTS

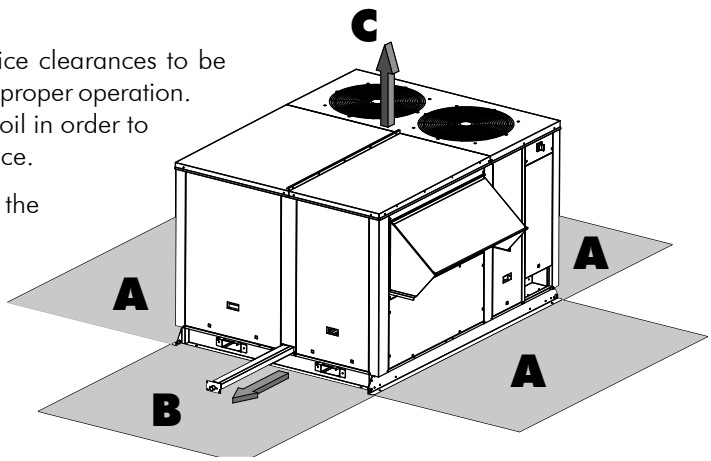
- The building structure must be capable of carrying the weight of the unit during operation.
- The place of installation must not be subject to flooding.
- The Rooft@ir should be installed on a flat, clean surface without any obstacles. The surface area must be sufficient to spread the weight of the 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		RT30	RT40	RT50	RT60	RT70	RT80	RT100	RT110
A	mm	1200	1200	1200	1500	1500	1500	1500	1500
B*	mm	1400	1400	1400	1600	1600	1600	1600	1600
C	mm	3000	3000	3000	3000	3000	3000	3000	3000

* Removable condensates tray.

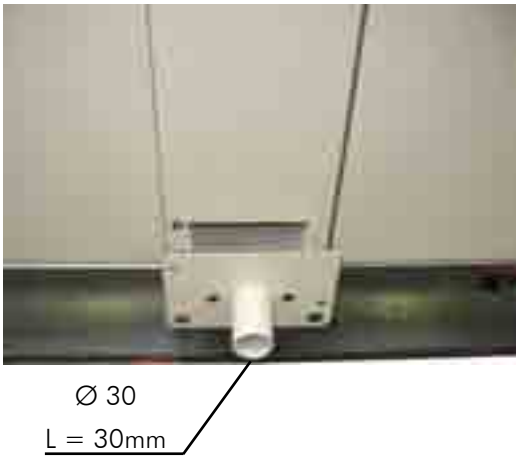
UNIT LOCATION

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

ATTACHMENT TO THE GROUND

SEE APPENDIX

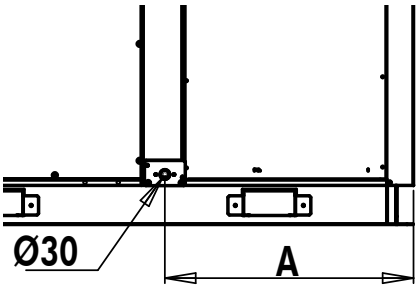
CONDENSATE DRAIN PAN



The installer must imperatively supply a siphon.

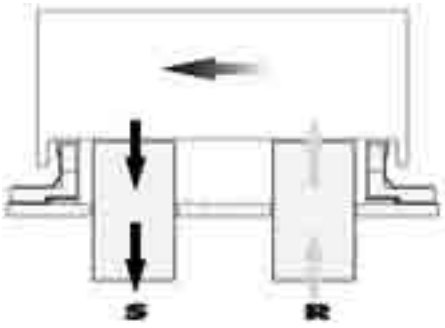
CAUTION

	RT30/40/50	RT60/110
A	822	995



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

ROOF CURB



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

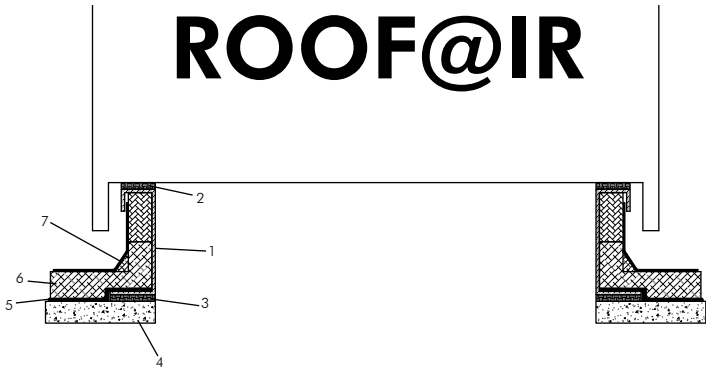
ROOF CURB DIMENSIONS

SEE APPENDIX

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

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

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



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

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

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

GENERALITIES

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

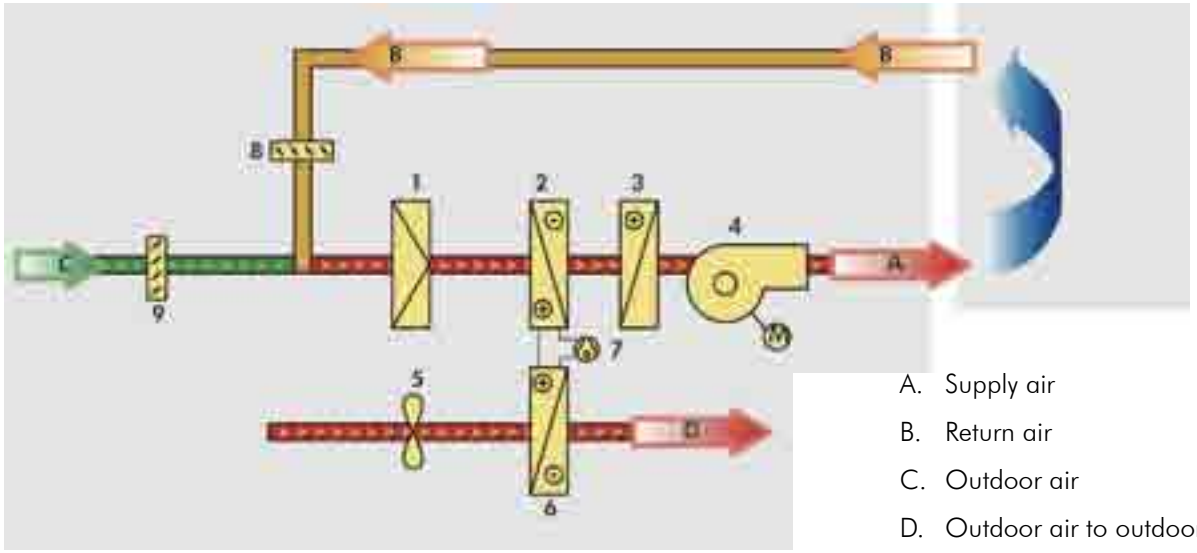
SEE APPENDIX

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

THE ECONOMISER OPTION IS NOT COMPATIBLE WITH THE RETURN AIR FROM THE REAR (R3) CONFIGURATION.

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



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

ELECTRIC HEAT

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

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.

WIRING DIAGRAM AND LEGEND

WIRING DIAGRAM

SEE APPENDIX

LEGEND

N766			
SE3377	models 30/40/50	Control	230V 50Hz +/- 10%
SE33781	models 30/40/50	Power Tri	400V+N 50Hz +/- 10%
SE33782	models 30/40/50	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 30/40/50/60/70/80/100/110	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.

➢ Thee phase 400 V~ + Neutral + Ground:

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

On the ground screw for the earth cable.

WIRING DIAGRAM KEY DESCRIPTIONS

POWER SUPPLY DIAGRAMS:

FFG :	Protective fuses (not supplied)
XO :	Phase distributor
QO :	Mains supply circuit switch
KA1 :	Three-phase network control relay (phase sequence and cut-out)
Q1/2 :	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 :	230V24V AC transformer
Q3 :	Blower fan magneto-thermal circuit breaker
FT3/4 :	Outdoor fans magneto-thermal circuit breaker
FF13/14 :	Porte fusibles des ventilateurs plug-fan

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 hearting 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 manual reset safety thermostat

FA: Heating automatic reset safety thermostat

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

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

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

HPT1/2 : Circuits 1 and 2 high-pressure transducer

LPT1/2 : Circuits 1 and 2 low-pressure transducer

OCT1/2 : Circuits 1 and 2 condenser temperature sensor

DPT : Transducteur différentiel de pression

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 (ΔP>250Pa)

AF : Air pressostat (ΔP<50Pa)

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

KM13 : Relais de commande des ventilateurs plug-fan

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

Model		RT30		RT40		RT50		RT60	
		PE	GE	PE	GE	PE	GE	PE	GE
Q1	Range	13-18A		13-18A		17-23A		20-25A	
	Adjustment	13A		15A		19.5A		21A	
Q2	Range	13-18A		13-18A		17-23A		20-25A	
	Adjustment	13A		15A		19.5A		21A	
Q3	Range	2.5-4A	4-6.3A	2.5-4A	6-10A	4-6.3A	9-14A	9-14A	
	Adjustment	3.2A	4.6A	3.2A	8.3A	4.6A	11A	11A	
Q4		6A		6A		6A		6A	
Q7/8	Range	/		/		/		/	
	Adjustment	/		/		/		/	
FT1		10A		10A		10A		2A	
FT3		/		/		/		10A	
FT4		/		/		/		10A	
Contactor AC3									
KM1		18A		18A		25A		25A	
KM2		18A		18A		25A		25A	
KM3		9A		9A	12A	9A	12A	12A	
KM4		9A		9A		9A		9A	
KM7		9A		9A		9A		9A	
KM8		/		/		/		9A	

Model		RT70		RT80		RT100		RT110	
		PE	GE	PE	GE	PE	GE	PE	GE
Q1	Range	20-25A		24-32A		25-40A		25-40A	
	Adjustment	23A		31A		31A		40A	
Q2	Range	20-25A		24-32A		25-40A		25-40A	
	Adjustment	23A		31A		40A		40A	
Q3	Range	9-14A		13-18A		13-18A		13-18A	
	Adjustment	11A		15.5A		15.5A		15.5	
Q4		6A		6A		6A		6A	
Q7/8	Range	/		/		2.5-4A		2.5-4A	
	Adjustment	/		/		2.5A		2.5A	
FT1		2A		2A		2A		2A	
FT3		10A		10A		/		/	
FT4		10A		10A		/		/	
Contactor AC3									
KM1		25A		32A		40A		40A	
KM2		25A		32A		40A		40A	
KM3		12A		18A		18A		18A	
KM4		9A		9A		9A		9A	
KM7		9A		9A		6A		6A	
KM8		9A		9A		6A		6A	

COMPRESSORS CRANKCASE HEATER

Models		RT30	RT40	RT50	RT60	RT70	RT80	RT100	RT110
Power	W	70	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 ΔP warning (upstream/downstream filters) $>$ 250 Pa

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

ELECTRICAL CONNECTIONS

WARNING

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

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

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

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

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

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

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

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

Short circuit protection shall be provided by others. This protection shall comprise fuses or circuit breakers with high breaking capacity, mounted on the distribution board. The distribution board must support the intensity of the whole of the machines installed.

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

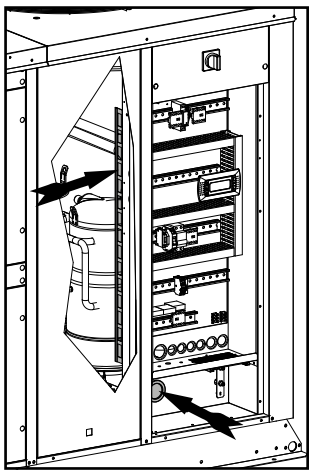
VERY IMPORTANT:

3N~400V-50HZ

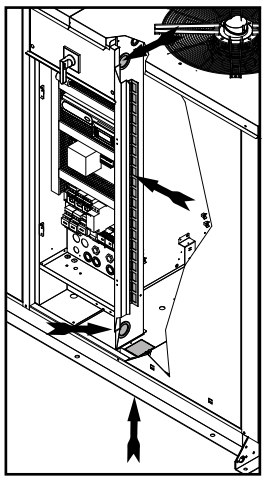
The outdoor unit is equipped as standard with a phase sequence and cut-out controller located in the electrical box.

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

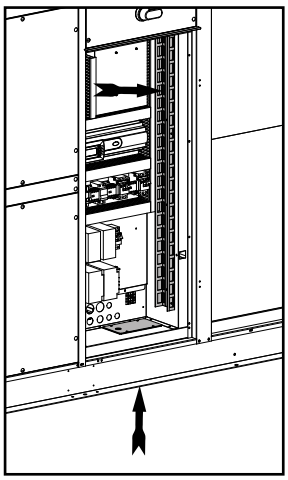
Green LED = 1	**Green LED = 1**	**Green LED = 0**
Yellow LED =1	**Yellow LED =0**	**Yellow LED =0**
Low voltage supply The compressor rotation direction is correct	Phase inversion or phase absent (L1) The compressor and the fans do not start.	Phase absent (L2 or L3) the compressor and the fans do not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

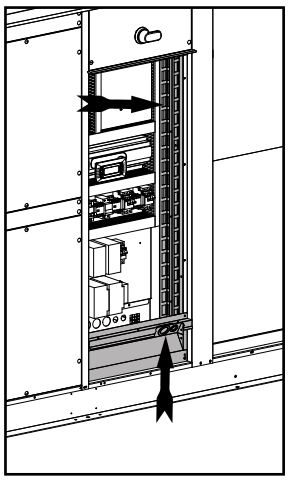


RT30 - RT40 - RT50



RT60 - RT70 - RT80





RT100 - RT110

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

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

The switch can be padlocked.

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

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.

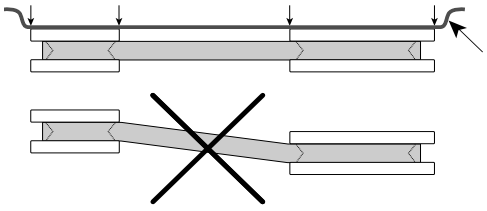
VISUAL CHECK

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

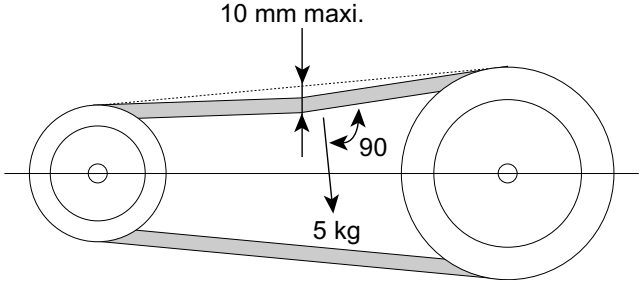
1. Connections flexible type, secure and detachable for service access.
2. Blower drive
   Pulley adjustment correct for expected air quantity and static pressure.
   Belt tension correct.
3. Check that the Biloc Sheaves on both the blower shaft and the motor schaft are correctly fitted to the bush and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

Belt alignment



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

Belt tensioning



AIR BALANCING

CAS VENTILATEUR CENTRIFUGE A ENTRAINEMENT PAR COURROIE

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 RT30-40-50 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.

RT30 - RT40 - RT50
BLOWER MOTOR < 3kW

RT30 - RT110
BLOWER MOTOR > 3kW

OPERATING CHECK LIST

GENERAL

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

PHASE ROTATION PROTECTION

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

ELECTRICAL

SET POINTS

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

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

OPERATING VOLTAGE:

Recheck voltage at unit supply terminals.

CONTROL

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

BLOWER & DRIVE

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

COMPRESSOR AND REFRIGERATION SYSTEM

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

FINAL CHECK

1. All panels and fan guards are in place and secured.
2. .Unit clean and free of remainder installation material.

FINAL TASKS

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

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

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

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

IN CASE OF WARRANTY - MATERIAL RETURN PROCEDURE

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

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

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

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

ORDERING SERVICE AND SPARE PARTS ORDER

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

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

MAINTENANCE

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

REGULAR MAINTENANCE

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

Servicing must be performed by experienced and qualified personnel only.

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

GENERAL INSPECTION

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

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

Check the condition of the 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 siphon are not blocked.
2. Eliminate all accumulated dirt.
3. Check that no traces of rust are present.

REFRIGERATION CIRCUIT

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

INDOOR COILS

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

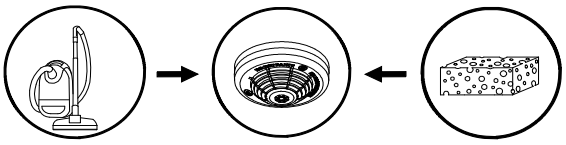
OUTDOOR COIL

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

PROTECTION DEVICES

1. Check the proper operation of the high pressure protection devices.
2. Clean the smoke detector

Remove any dust that has accumulated on the fins of the sensor head, using a vacuum cleaner or an anti-static cloth.



Clean the sensor assembly with a sponge or a slightly damp cloth.

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

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

APPENDIX
ANNEXE
ANLAGE
ALLEGATO
ANEXO

APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

APPENDIX

ANNEXE

ANLAGE

ALLEGATO

ANEXO

DIMENSIONS
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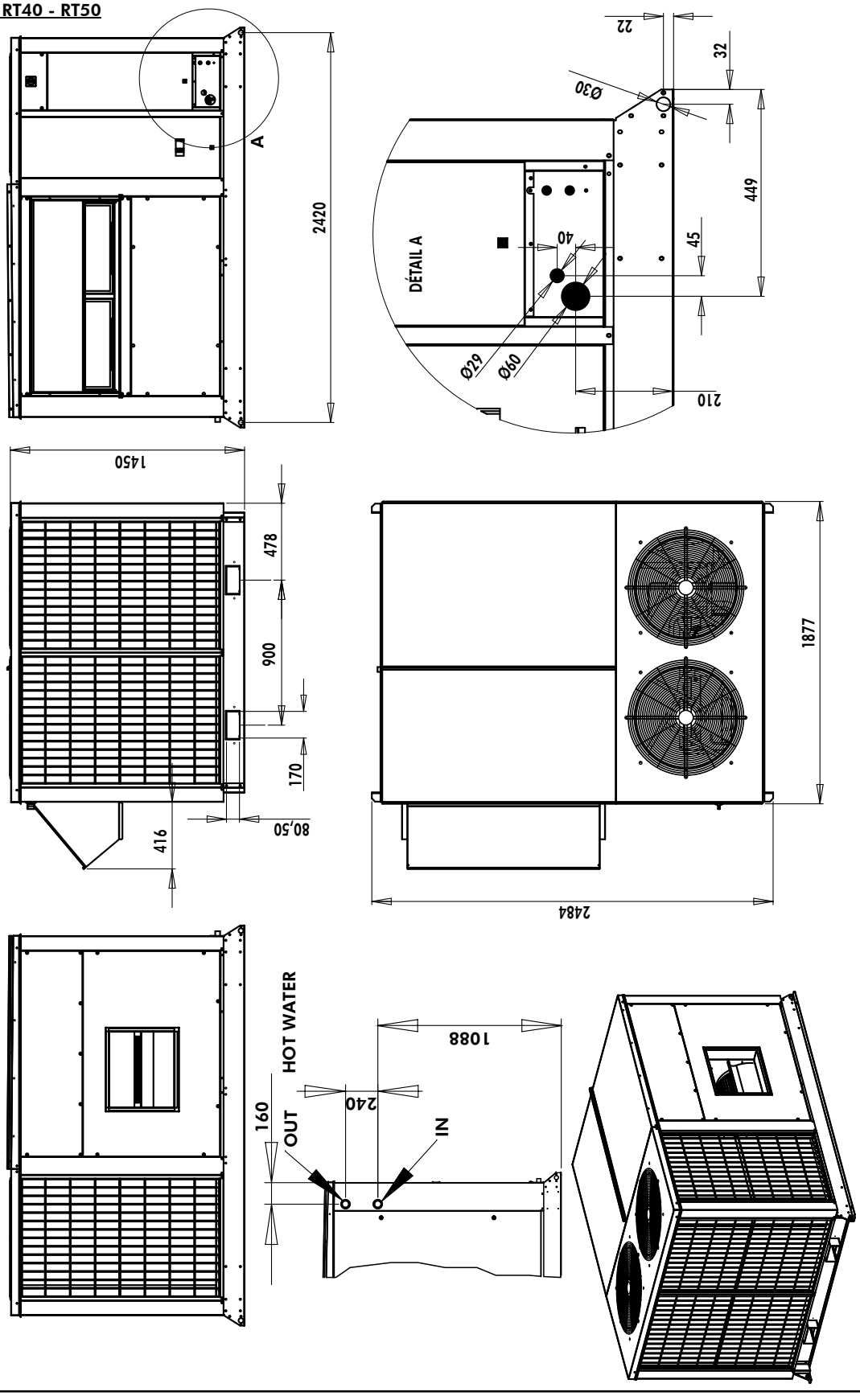
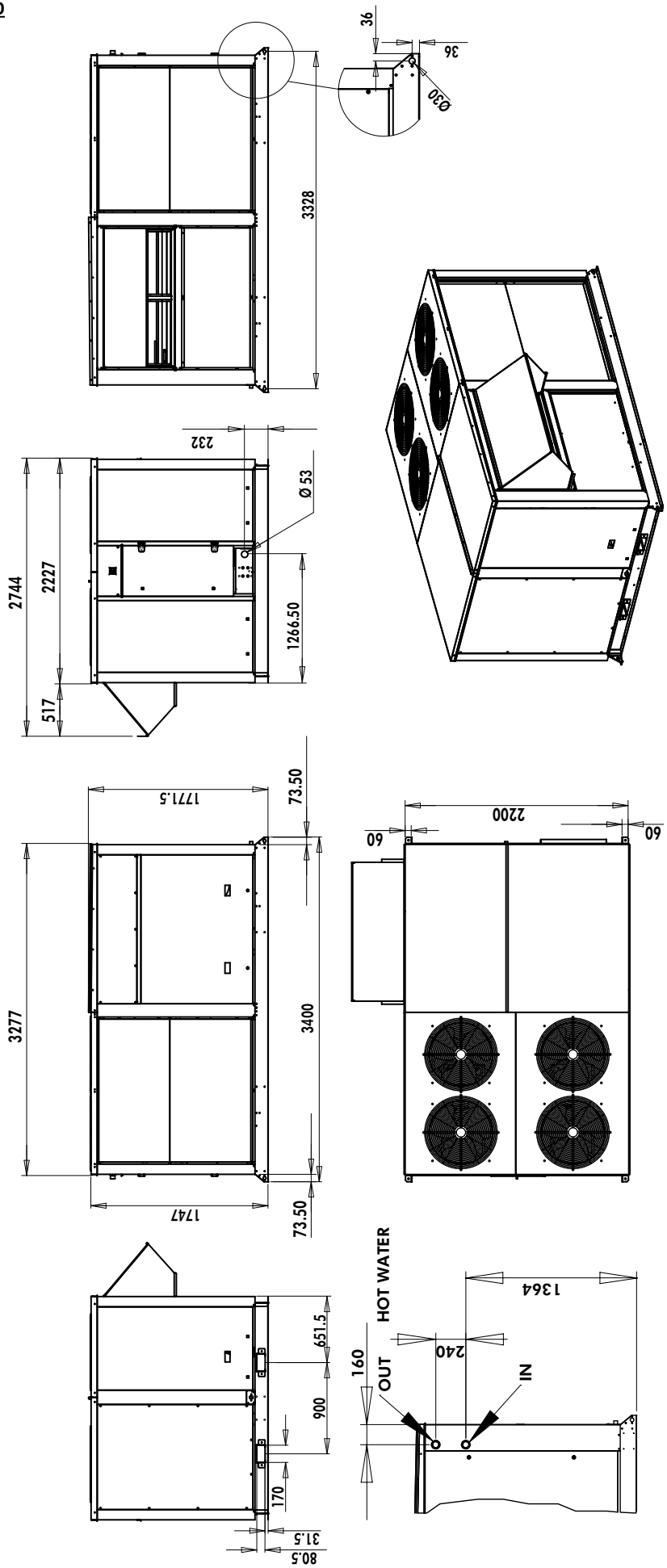
DIMENSIONES

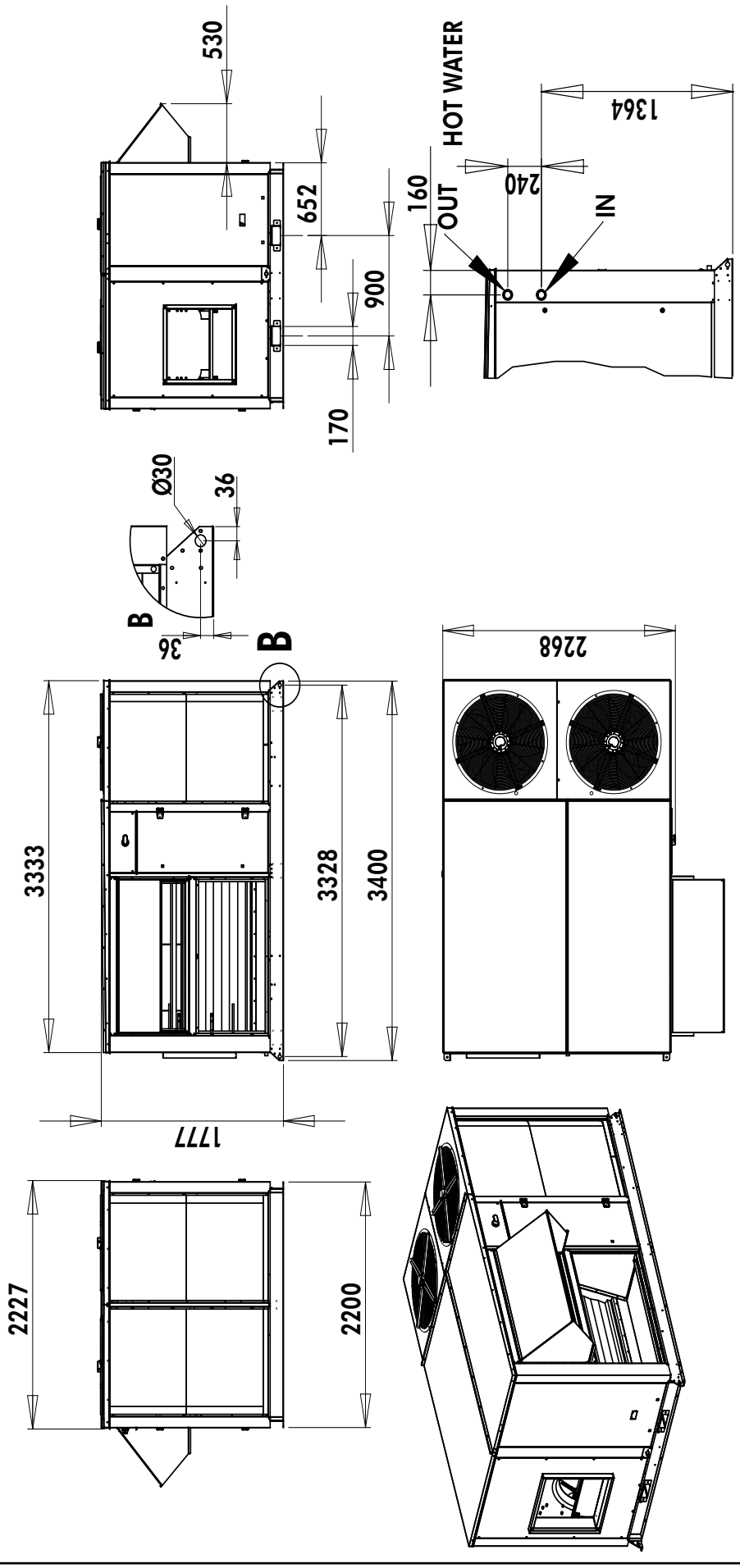
RT30 - RT40 - RT50



RT60 - RT70 - RT80



RT100 - RT110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HOT WATER
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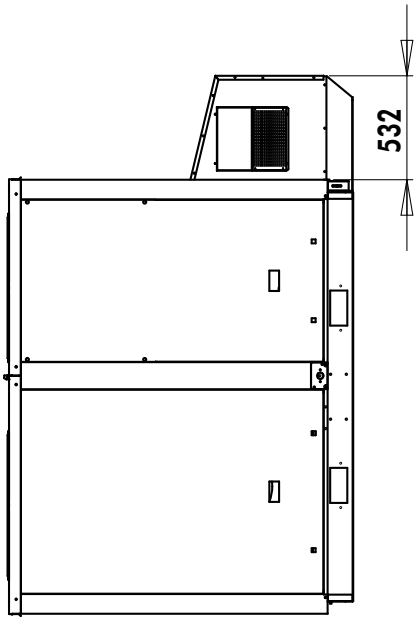
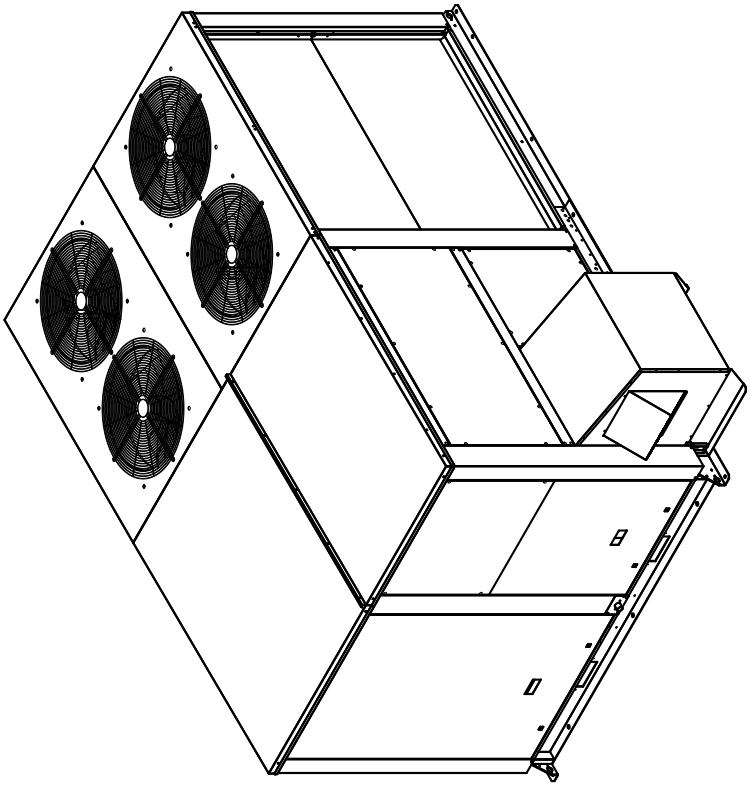
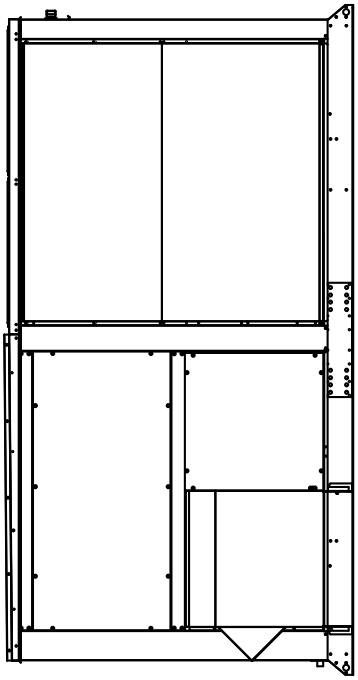
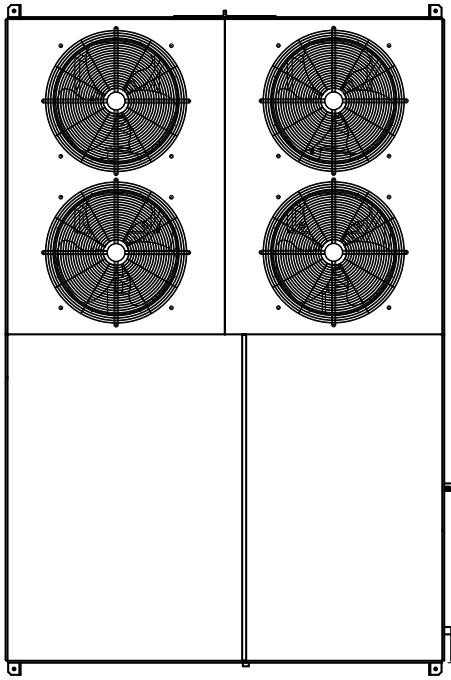
EXHAUST BLOWER

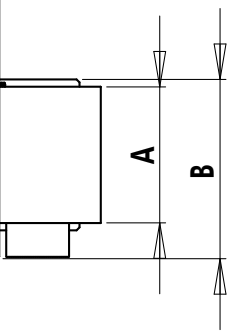






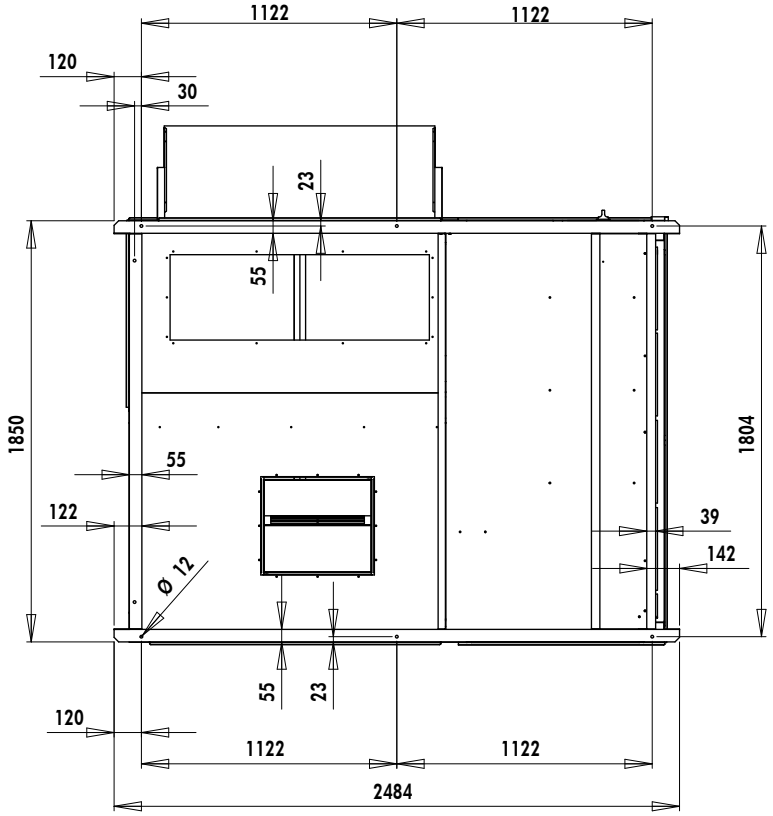


	RT30/40/50	RT60/110
A	642	690
B	828	910

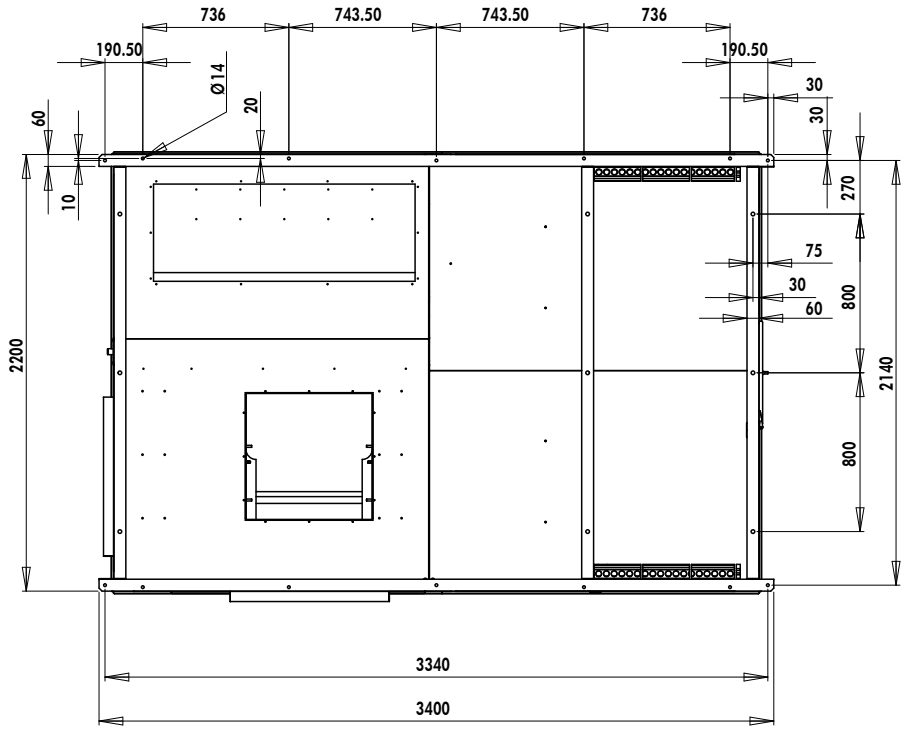


ATTACHMENT TO THE GROUND
FIXATION AU SOL
BEFESTIGUNG AM BODEN
FISSAGGIO AL SUOLO
FIJACIÓN EN EL SUELO

RT30 - RT40 - RT50

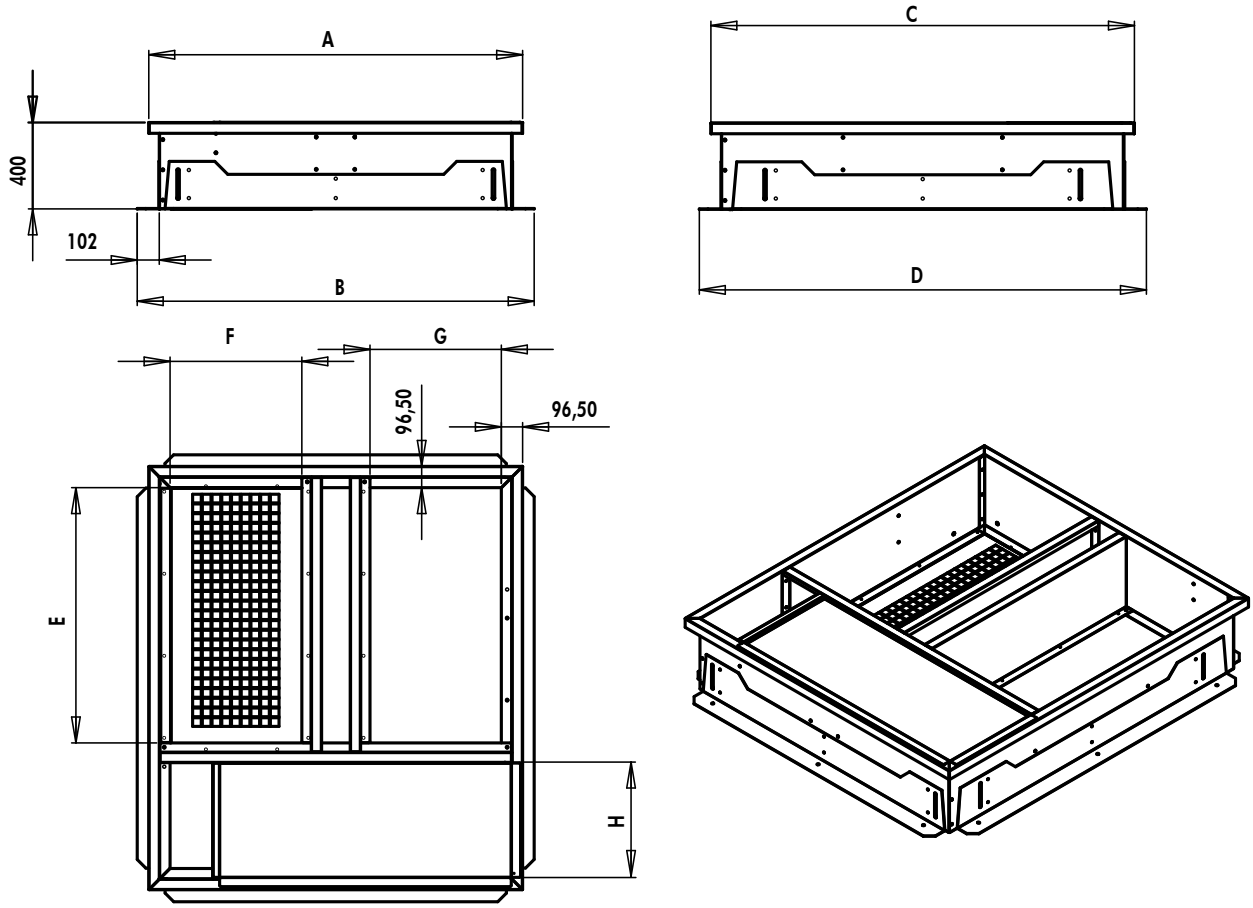


RT60 - RT70 - RT80 - RT100 - RT110



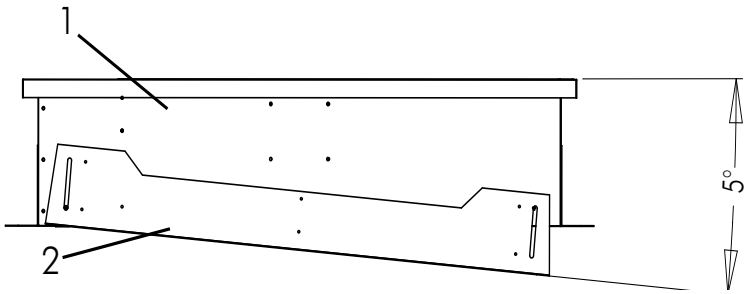
APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

ROOF CURB
COSTIERE
DACHRAHMEN
SCANALATURA PERIMETRALE
PETO



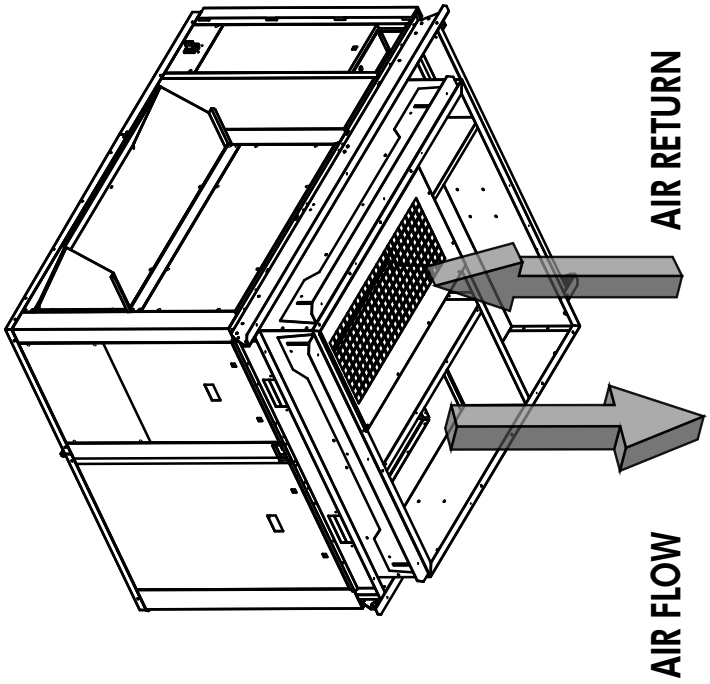
	A	B	C	D	E	F	G	H
RT30/40/50	1726	1837	1956	2069	1182	610	608	536
RT60/110	2061	2172	2273	2384	1458	579	834	573

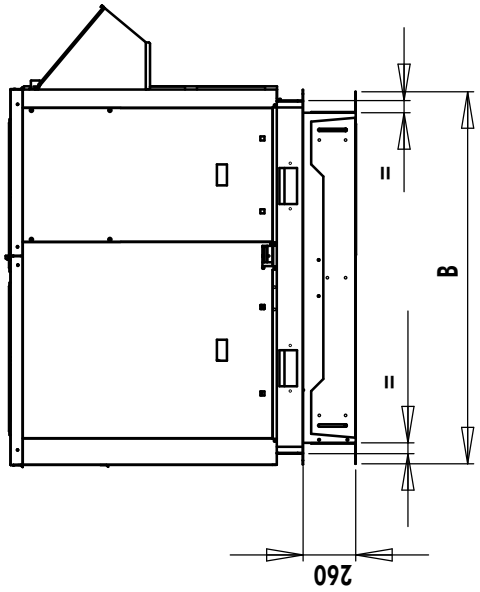
ADJUSTABLE VERSION
VERSION REGLABLE
VERSTELLBARE AUSFÜHRUNG
VERSIONE REGOLABILE
VERSIÓN AJUSTABLE

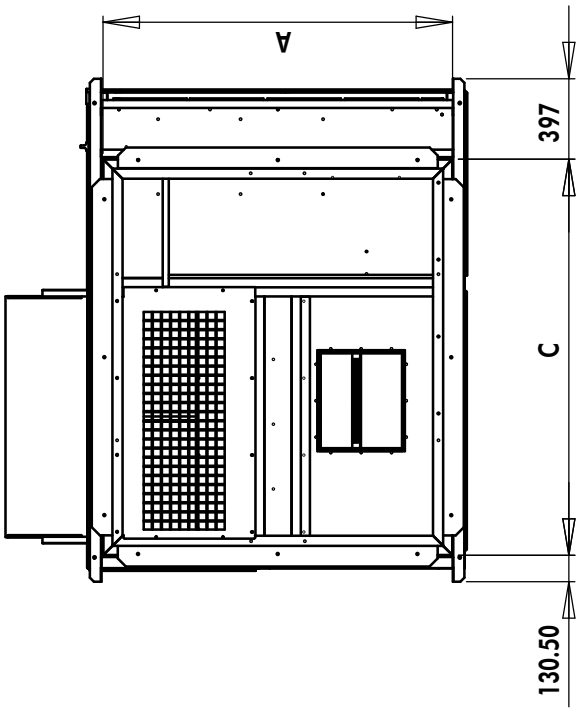


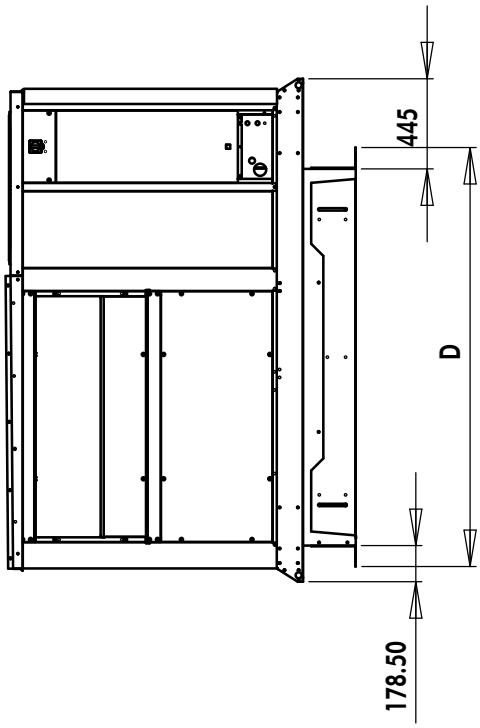
RIGIDLY WELD PARTS 2 TO PART 1 TO ENSURE A RIGID SINGLE-PIECE ASSEMBLY.
SOUDER RIGIDEMENT LES PIECES 2 SUR 1 POUR FAIRE UN ENSEMBLE MONOBLOC.
DIE TEILE 2 AUF 1 STARR AUFSCHWEISSEN, UM EINE FESTE EINHEIT ZU BILDEN.
SALDARE RIGIDAMENTE LE PEZZI 2 SUL PEZZO 1 AL FINE DI OTTENERE UN INSIEME MONOBLOCCO.
SOLDAR RÍGIDAMENTE LAS PIEZAS 2 SOBRE LA PIEZA 1 PARA CONSTITUIR UN CONJUNTO MONOBLOQUE.

RT30 - RT40 - RT50

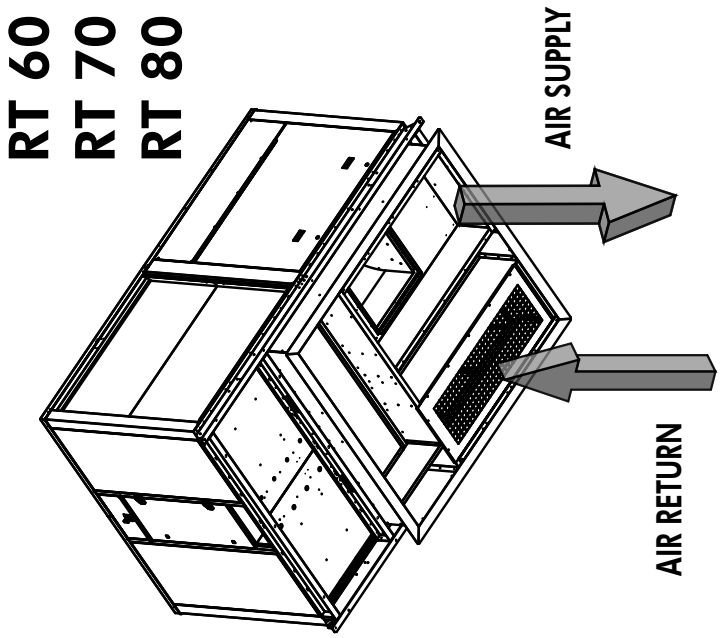


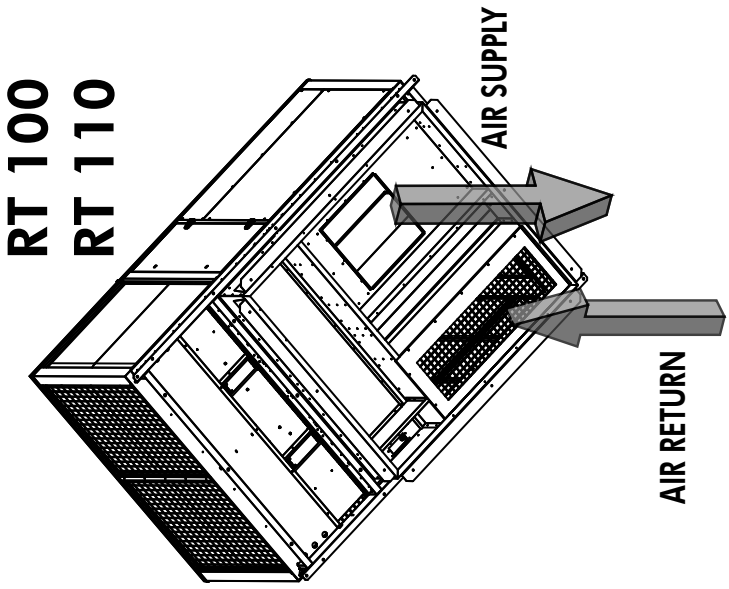


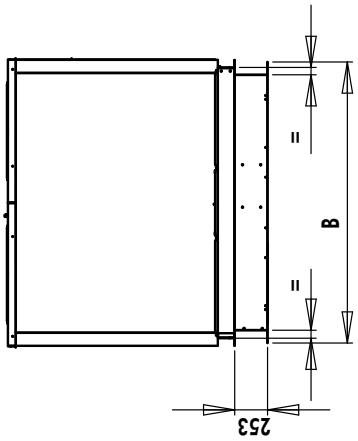


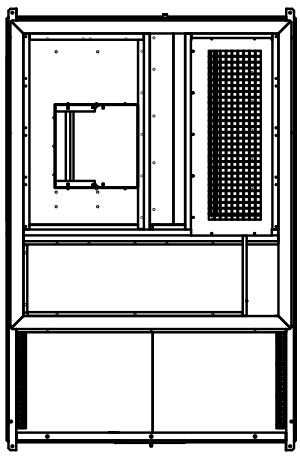


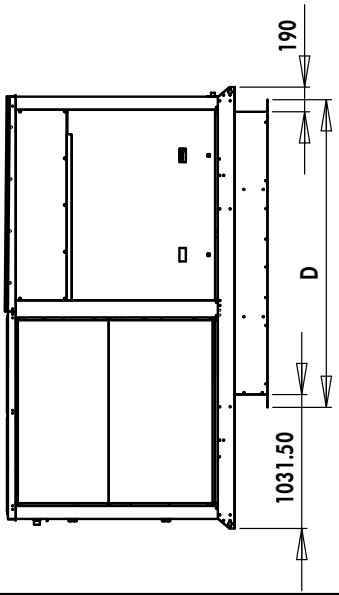
RT60 - RT70 - RT80 - RT100 - RT110



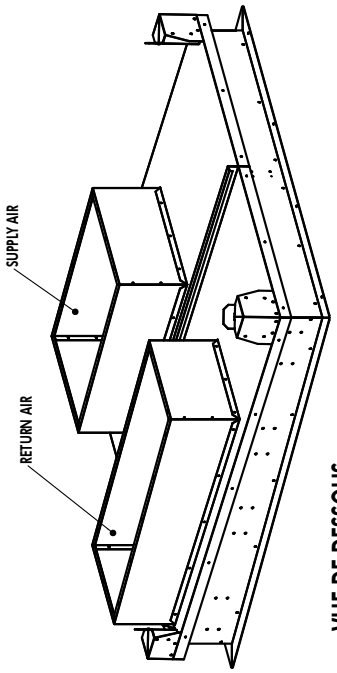




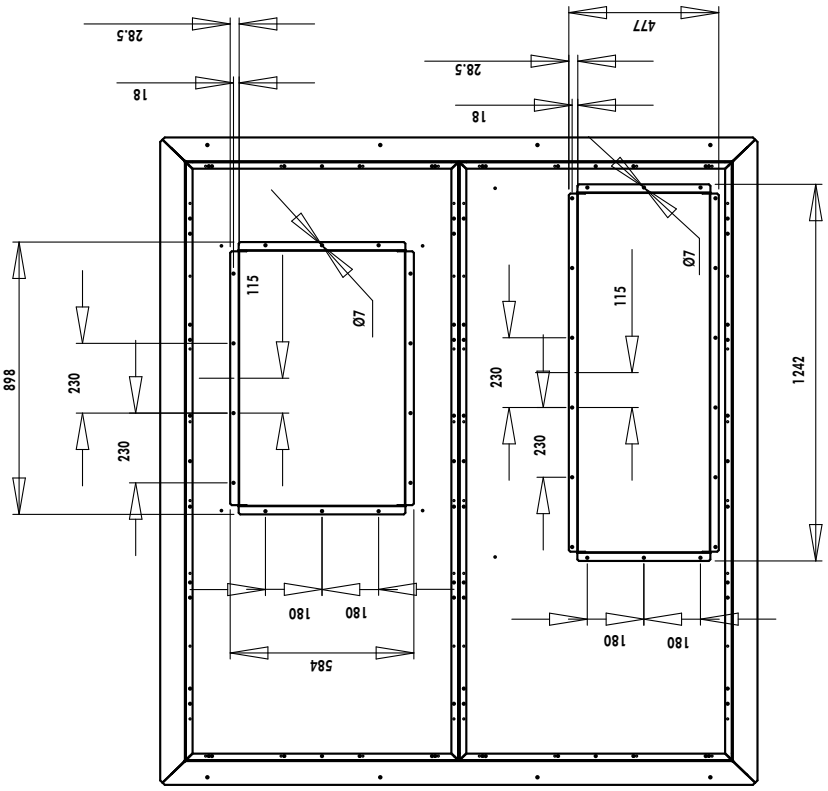


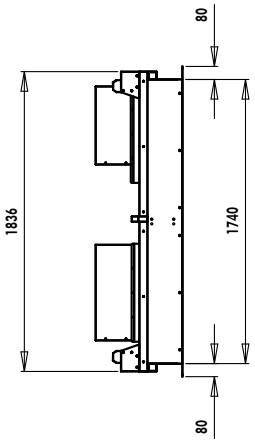


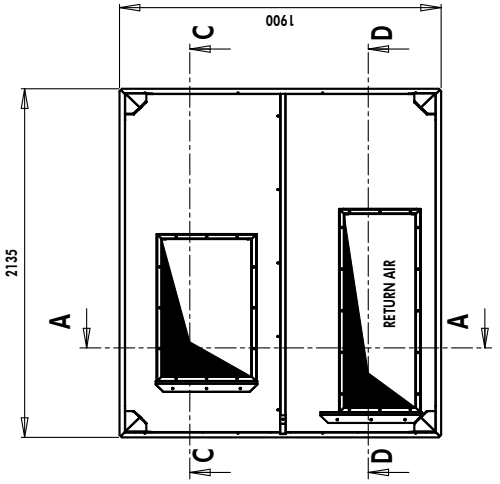
ERP RT30 - RT40 - RT50

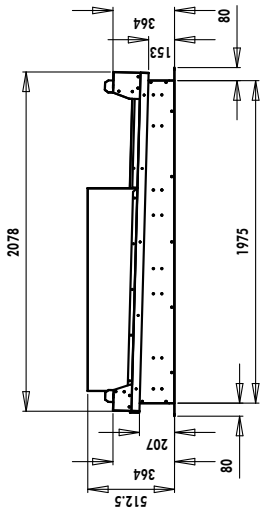


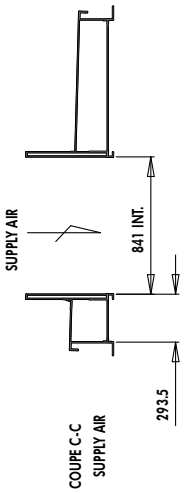
VUE DE DESSOUS

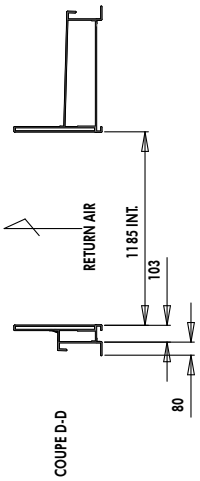


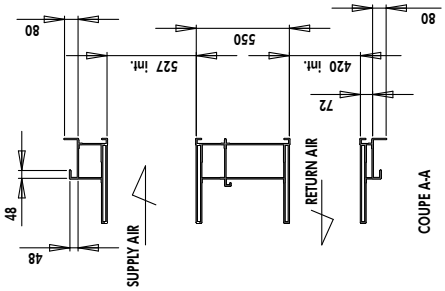


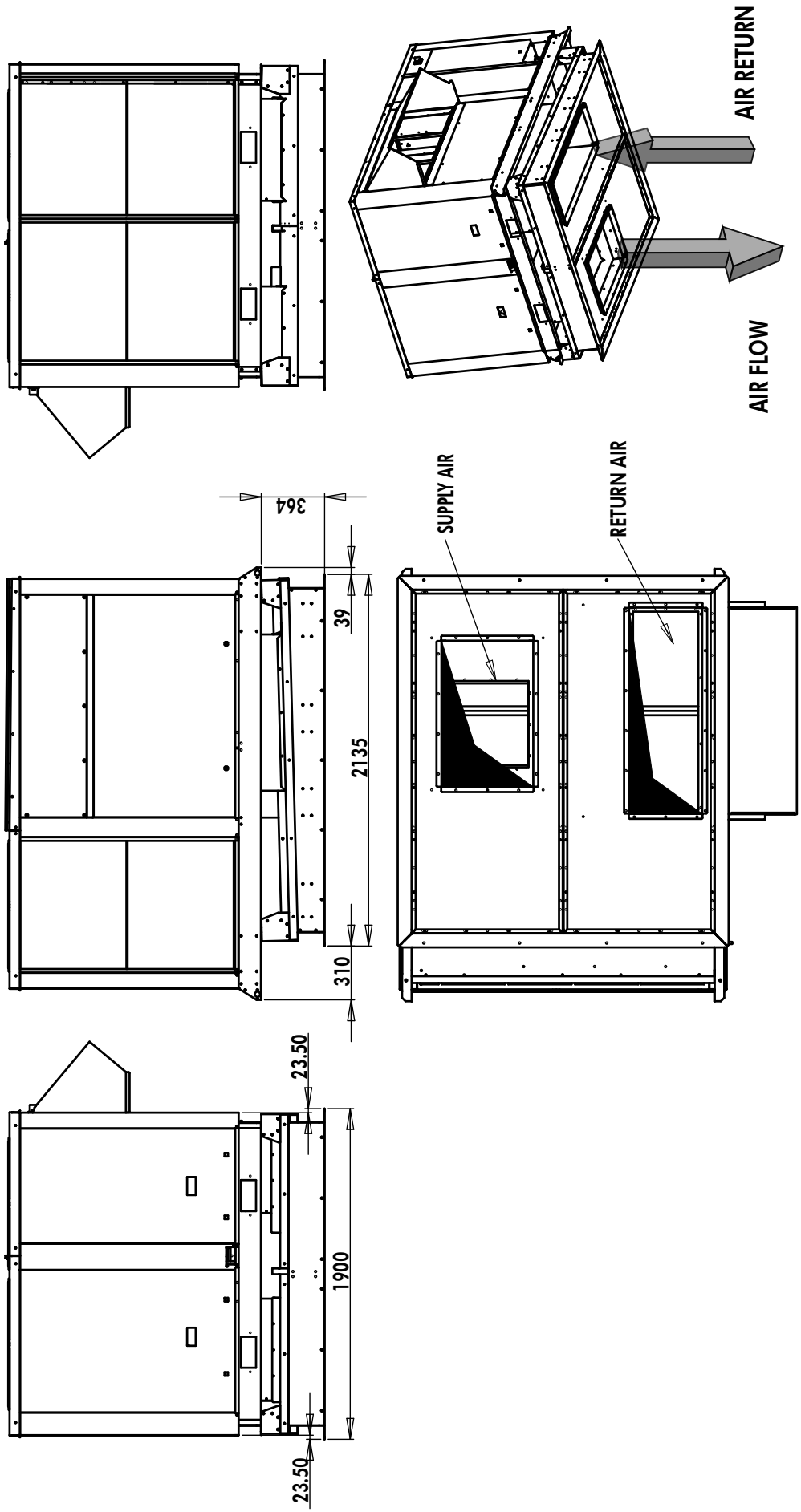




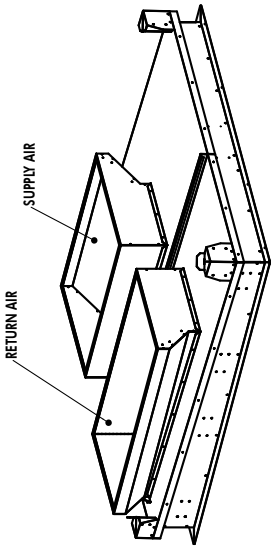


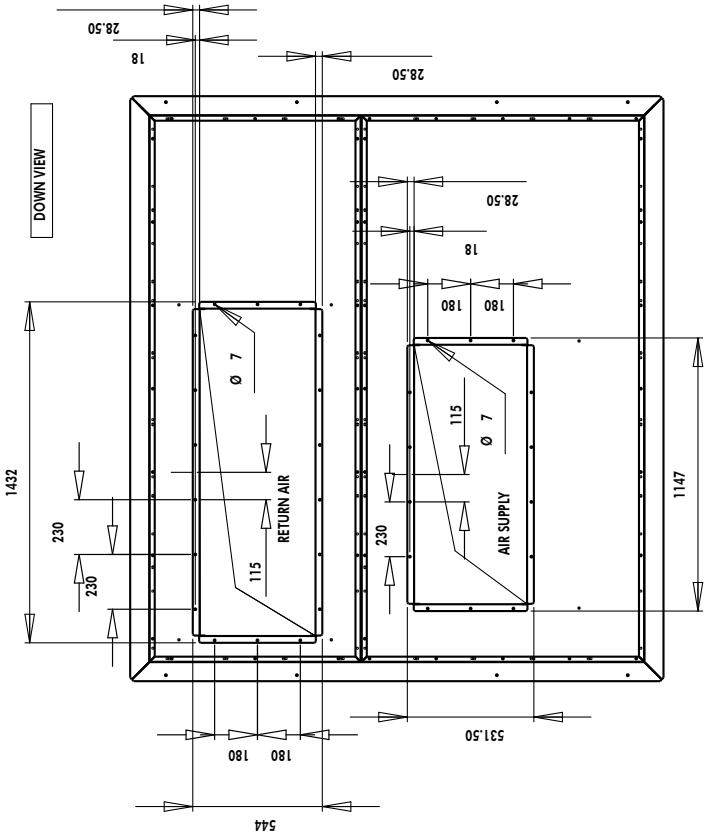


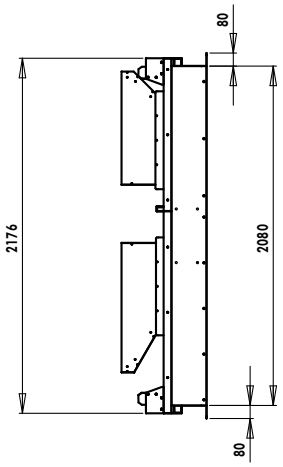


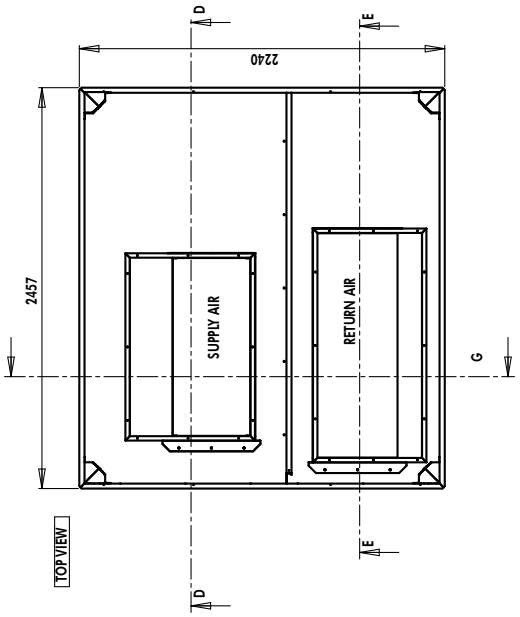

AIR RETURN
AIR FLOW
364
39
2135
310
SUPPLY AIR
RETURN AIR
23.50
1900
23.50

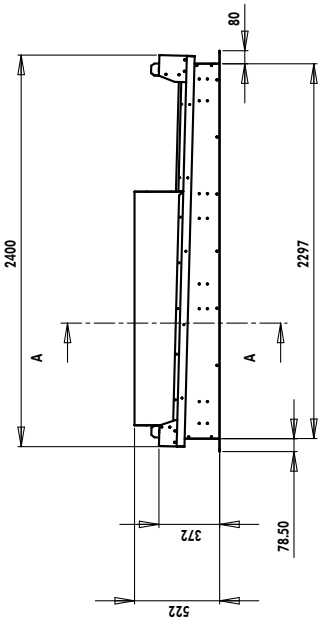
ERP RT60 - RT70 - RT80 - RT100 - RT110

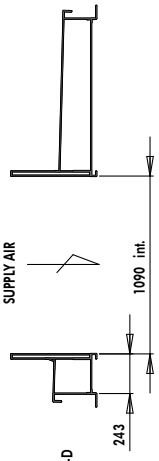


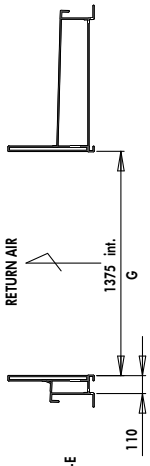


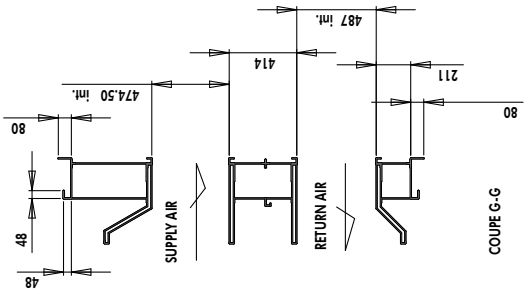


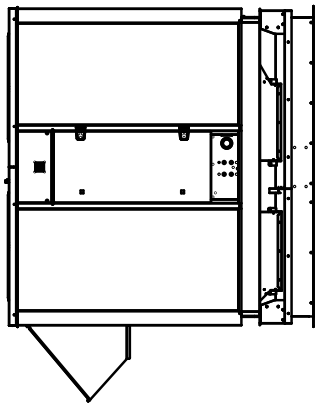


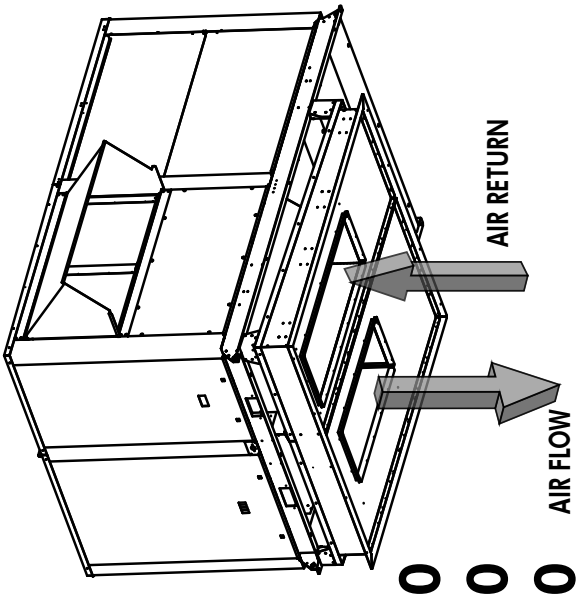




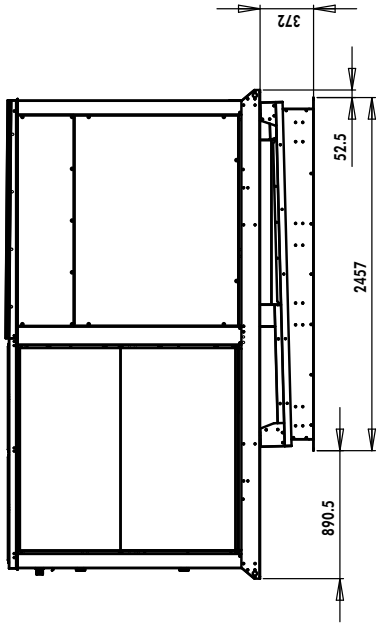


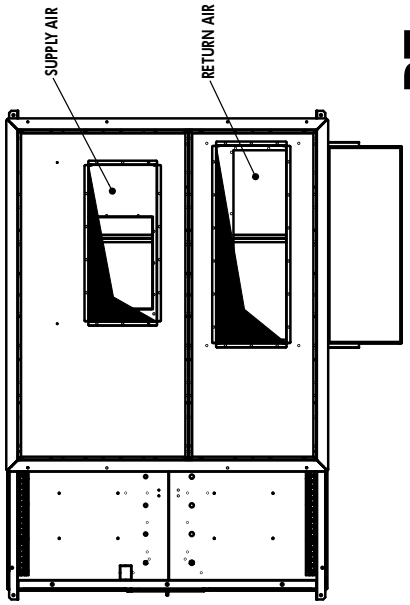


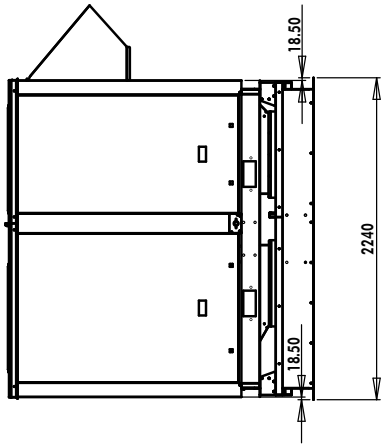


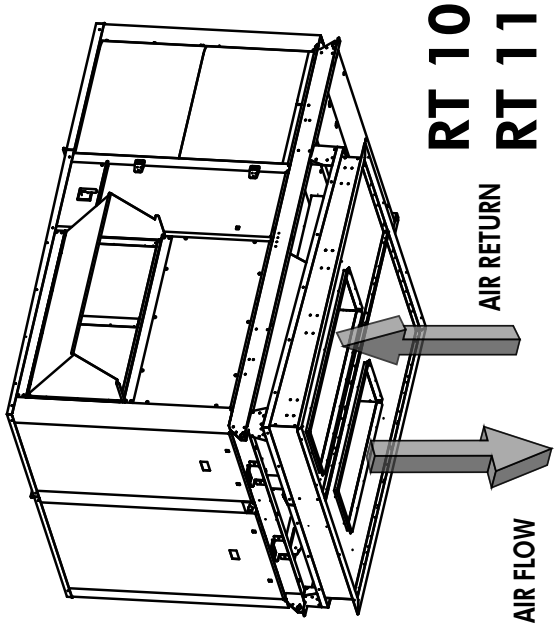


RT 60
RT 70
RT 80





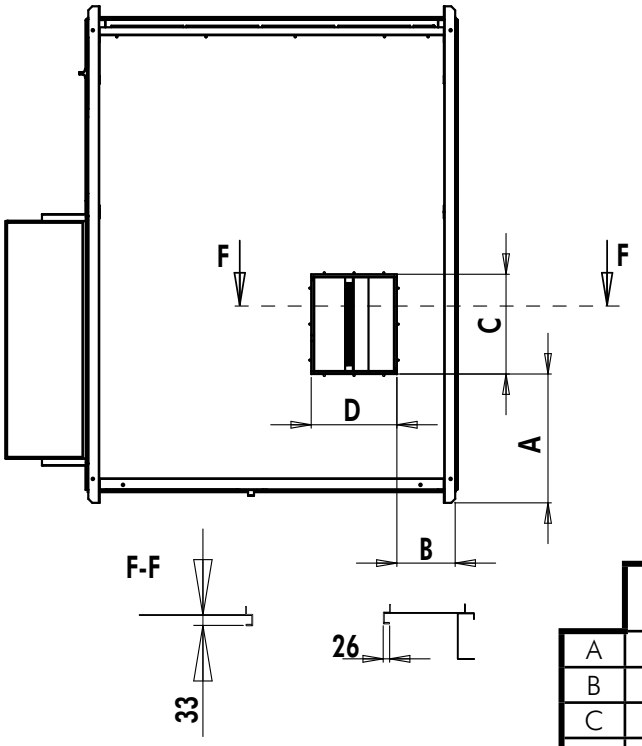


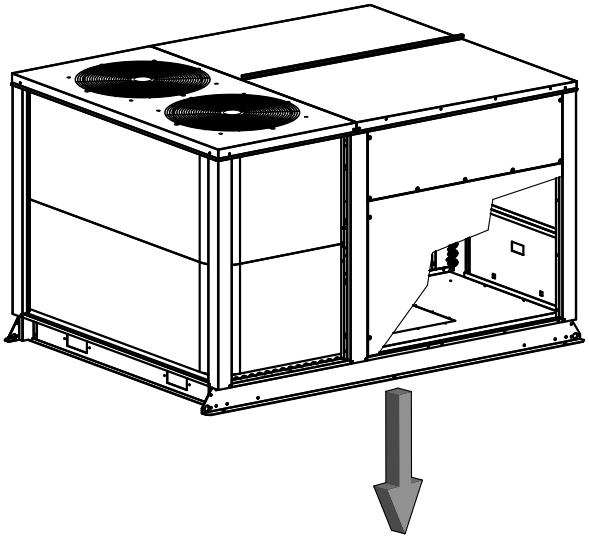


RT 100
RT 110

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

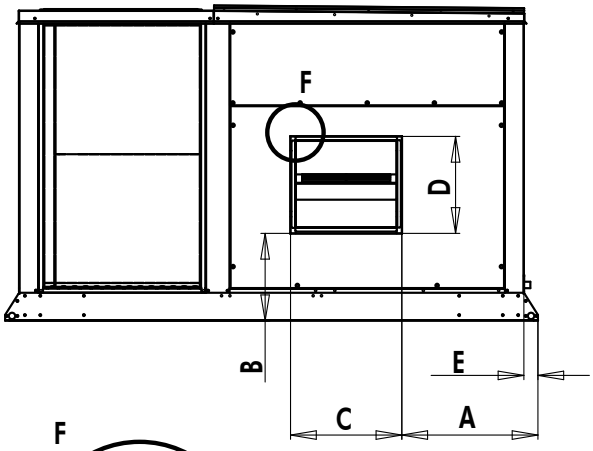
S1

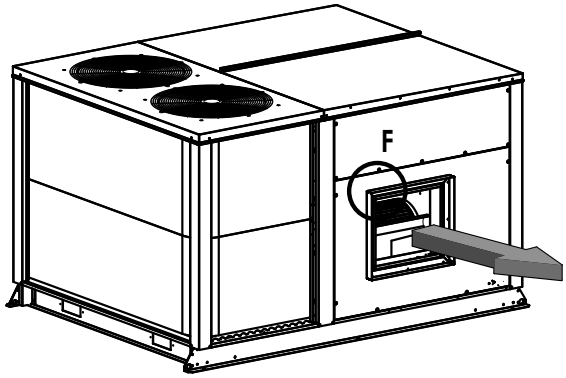


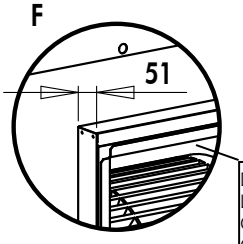


	RT30	RT40 RT50	RT60 RT70	RT80 RT100-RT110
A	668.5	645.5	737	738
B	296	295	325	328
C	453	497	574	641
D	453	430	574	641

S2





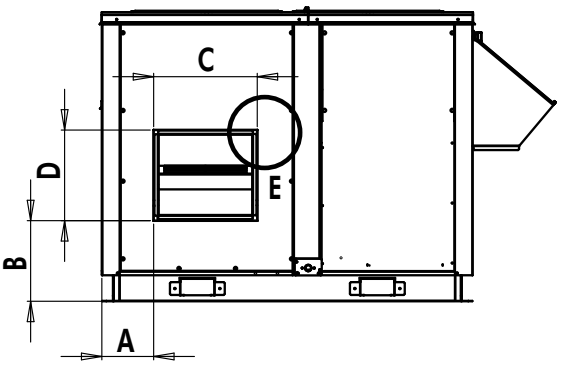


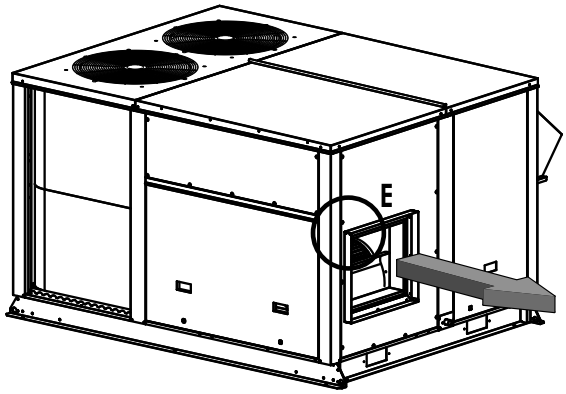
DELIVERED NOT INSTALLED
LIVRE NON INSTALLE
GELIEFERT NICHT INSTALLIERT
CONSEGNATO NON INSTALLATO
SUMINISTRADO NO INSTALADO

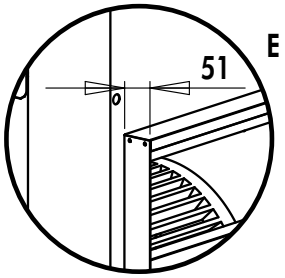
	RT30	RT40 RT50	RT60 RT70	RT80 RT100-RT110
A	593	528	627	705
B	391	365	434	460
C	601	601	648	715
D	537	534	648	715
E	65.5	65.5	73.5	73.5

APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

S3

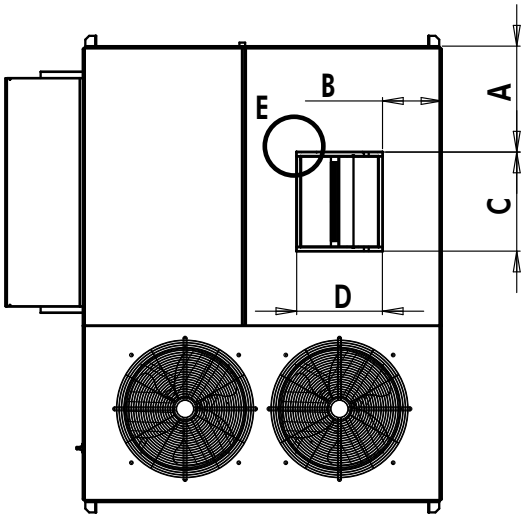


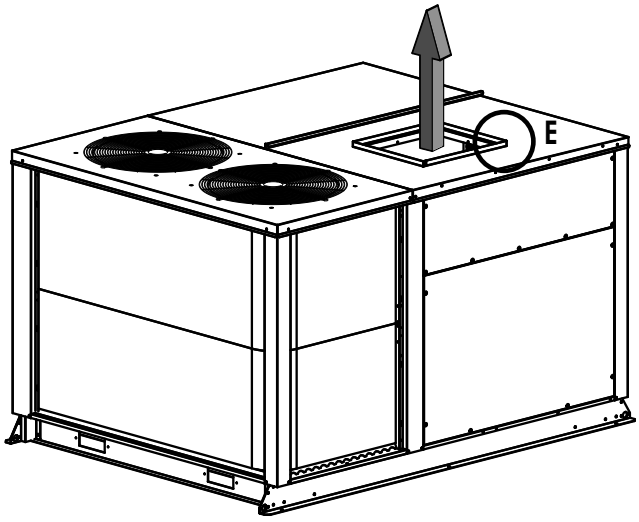


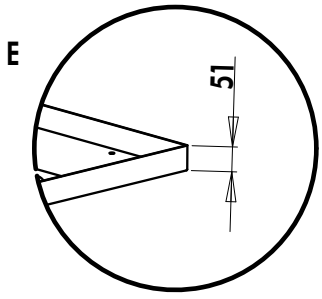


	RT30		RT40 RT50		RT60 RT70		RT80 RT100-RT110	
		hot water		electrical heater		electrical heater		electrical heater
A	158	122	122	158	219	219	219	219
B	321	360	360	321	436	460	460	460
C	714	601	601	714	648	715	715	715
D	612	534	534	612	648	715	715	715

S4

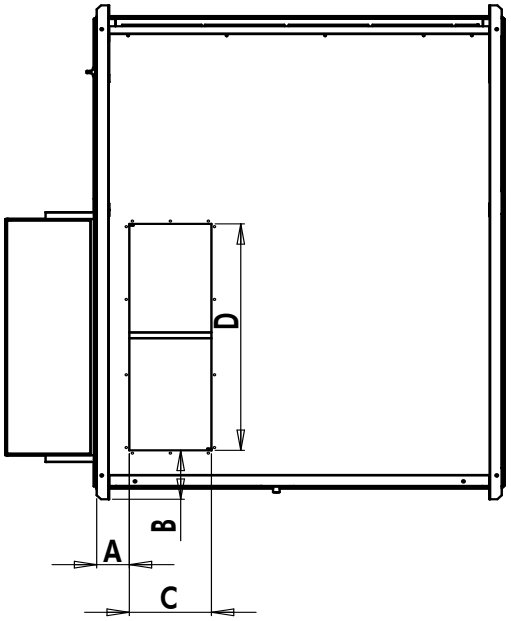


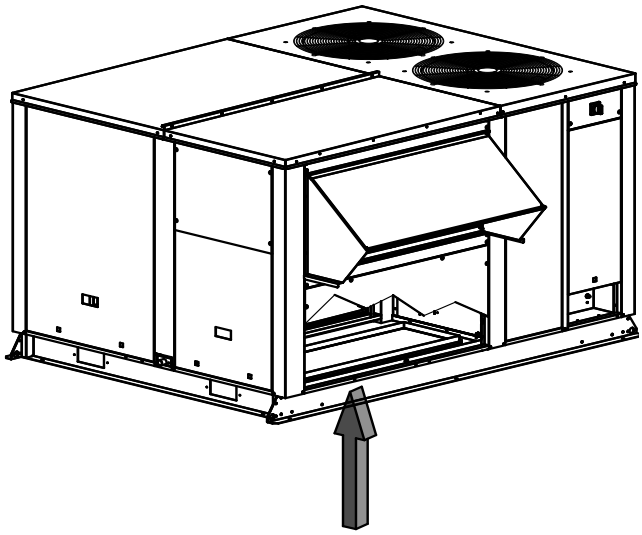




	RT30	RT40 RT50	RT60 RT70	RT80 RT100-RT110
A	562	530	630	632
B	290	258	330	263
C	601	601	648	715
D	534	534	648	715

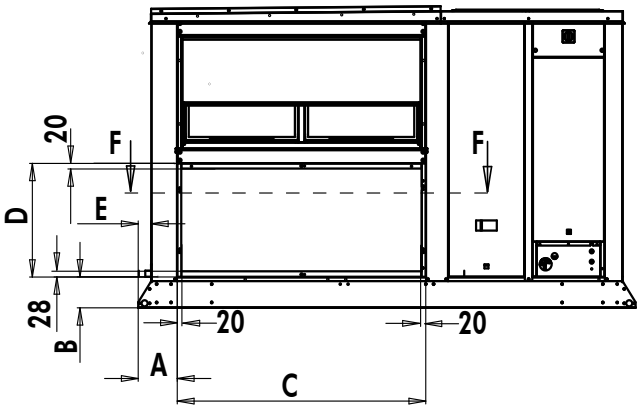
R1

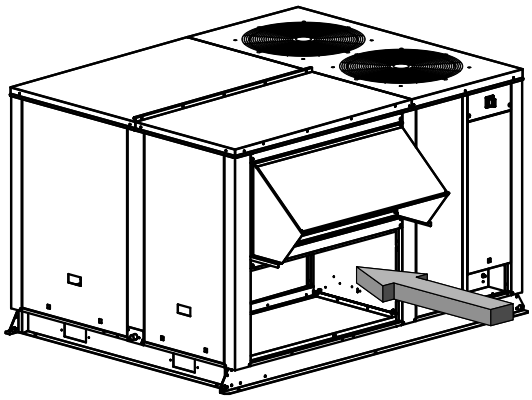




	RT30/50	RT60/110
A	157	142
B	220	249
C	310	485
D	1181	1358

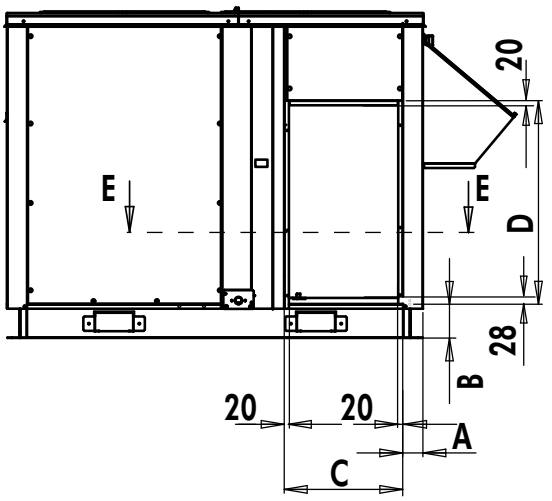
R2

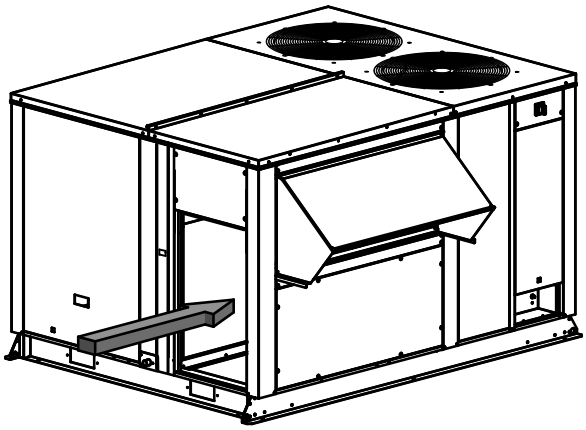


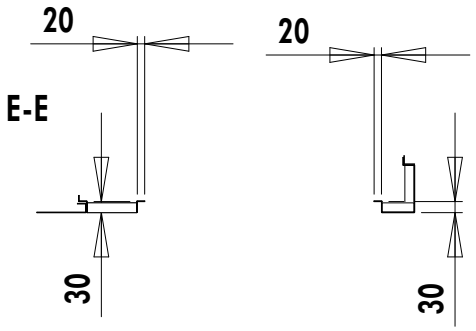


	RT30/50	RT60/110
A	195	150
B	150	150
C	1241	1420
D	553.5	703.5
E	65.5	73.5

R3

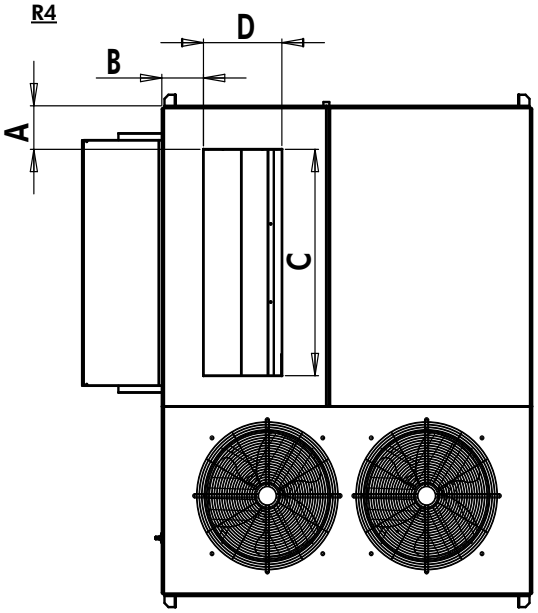


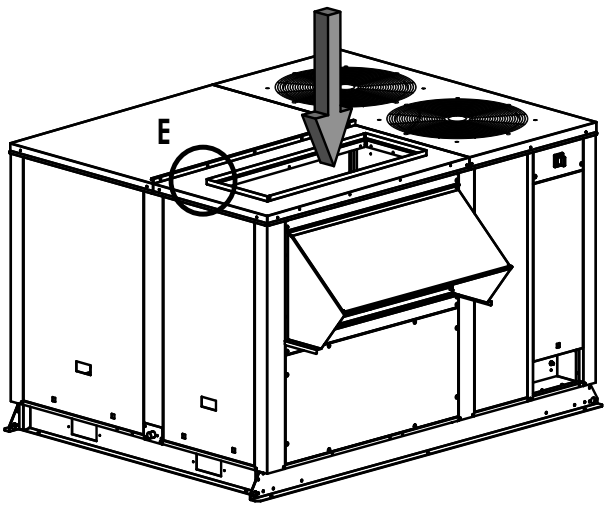


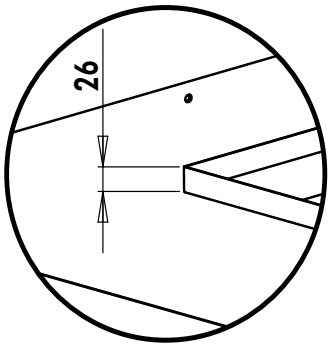


	RT30/50	RT60/110
A	90	100
B	150	150
C	412	514.5
D	892	1352

R4







	RT30/50	RT60/110
A	180	180
B	40	40
C	1139	1359
D	439	532

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

C1 : Compressor 1
C2 : Compressor 2
CD1 : Condenser 1
CD2 : Condenser 2
EV1 : Evaporator 1
EV2 : Evaporator 2
FC1 : Propellor fan 1
FC2 : Propellor fan 2
FS : Centrifugal fan
HP1 : Condensing Pressure Tap 1
HP2 : Condensing Pressure Tap 2
DF1 : Drier Filter 1
DF2 : Drier Filter 2
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 : 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

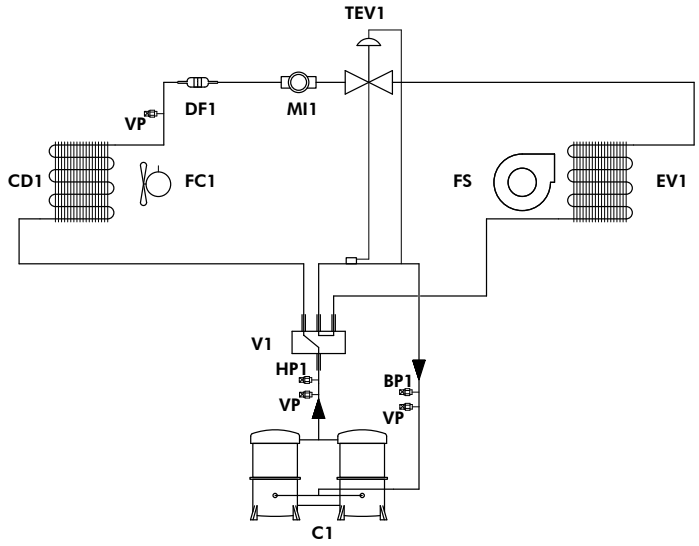
C1 : Kompressor 1
C2 : Kompressor 2
CD1 : Verflüssiger 1
CD2 : Verflüssiger 2
EV1 : Verdampfer 1
EV2 : Verdampfer 2
FC1 : Axialventilator 1
FC2 : Axialventilator 2
FS : Zentrifugalventilator
HP1 : Druckanschlussstelle Hochdruck 1
HP2 : Druckanschlussstelle Hochdruck 2
DF1 : Wasserabscheidungsfilter 1
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 : Compressore 1
C2 : Compressore 2
CD1 : Condensator 1
CD2 : Condensator 2
EV1 : Evaporatore 1
EV2 : Evaporatore 2
FC1 : Elicoidale ventilatore 1
FC2 : Elicoidale ventilatore 2
FS : Centrifugo ventilatore
HP1 : Presa di pressione HP 1
HP2 : Presa di pressione HP 2
DF1 : Filtro disidratatore 1
DF2 : Filtro disidratatore 2
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

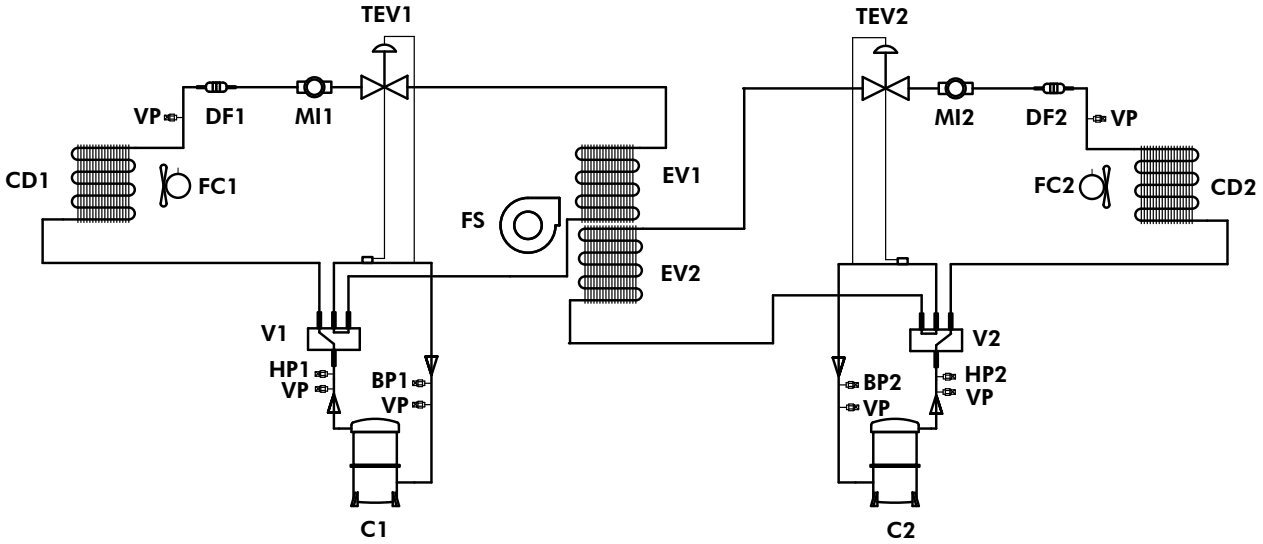
C1 : Compresor 1
C2 : Compresor 2
CD1 : Condensador 1
CD2 : Condensador 2
EV1 : Evaporador 1
EV2 : Evaporador 2
FC1 : Helicoidal ventilator 1
FC2 : Helicoidal ventilator 2
FS : Centrifugo ventilator
HP1 : Toma de presión AP 1
HP2 : Toma de presión AP 2
DF1 : Filtro deshumidificador 1
DF2 : Filtro deshumidificador 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

APPENDIX / ANNEXE / ANLAGE / ALLEGATO / ANEXO

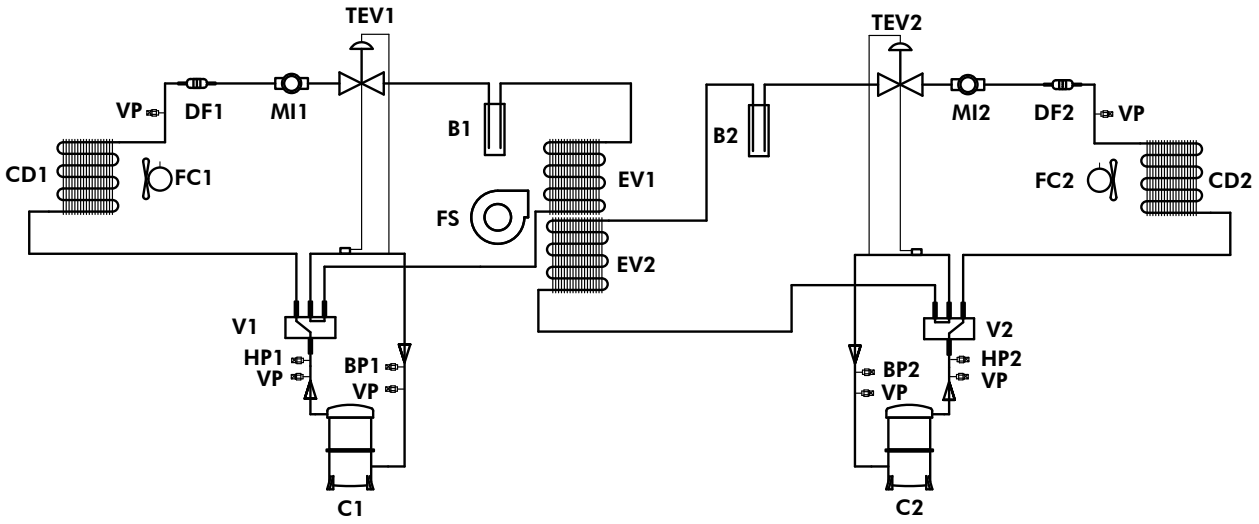
RTH30 - RTH40 - RTH50



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.

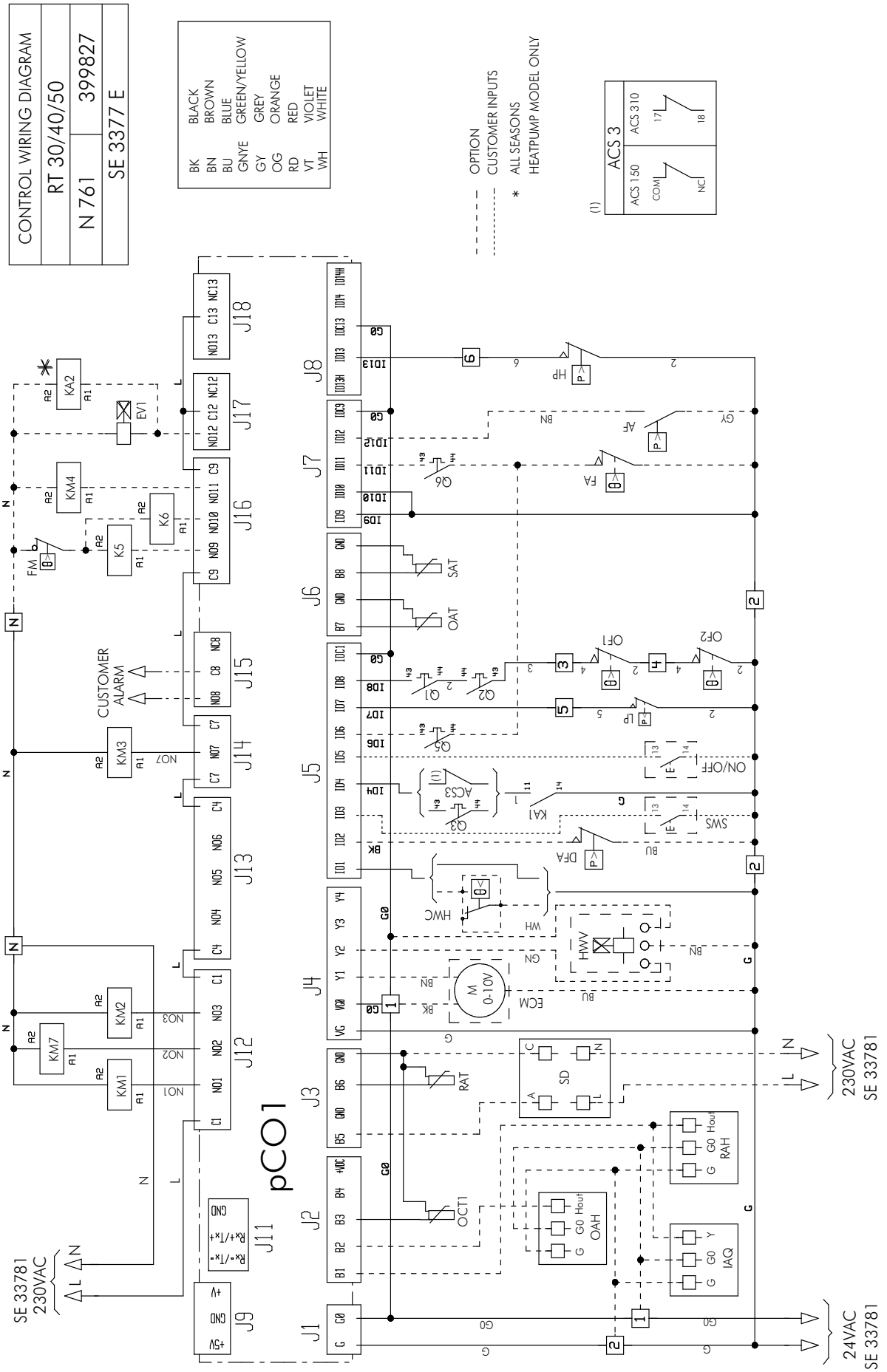
VOR JEDEM EINGRIFF AN DEN ANSCHLUßKÄSTEN UNBEDINGT DAS GERÄT ABSCHALTEN!

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

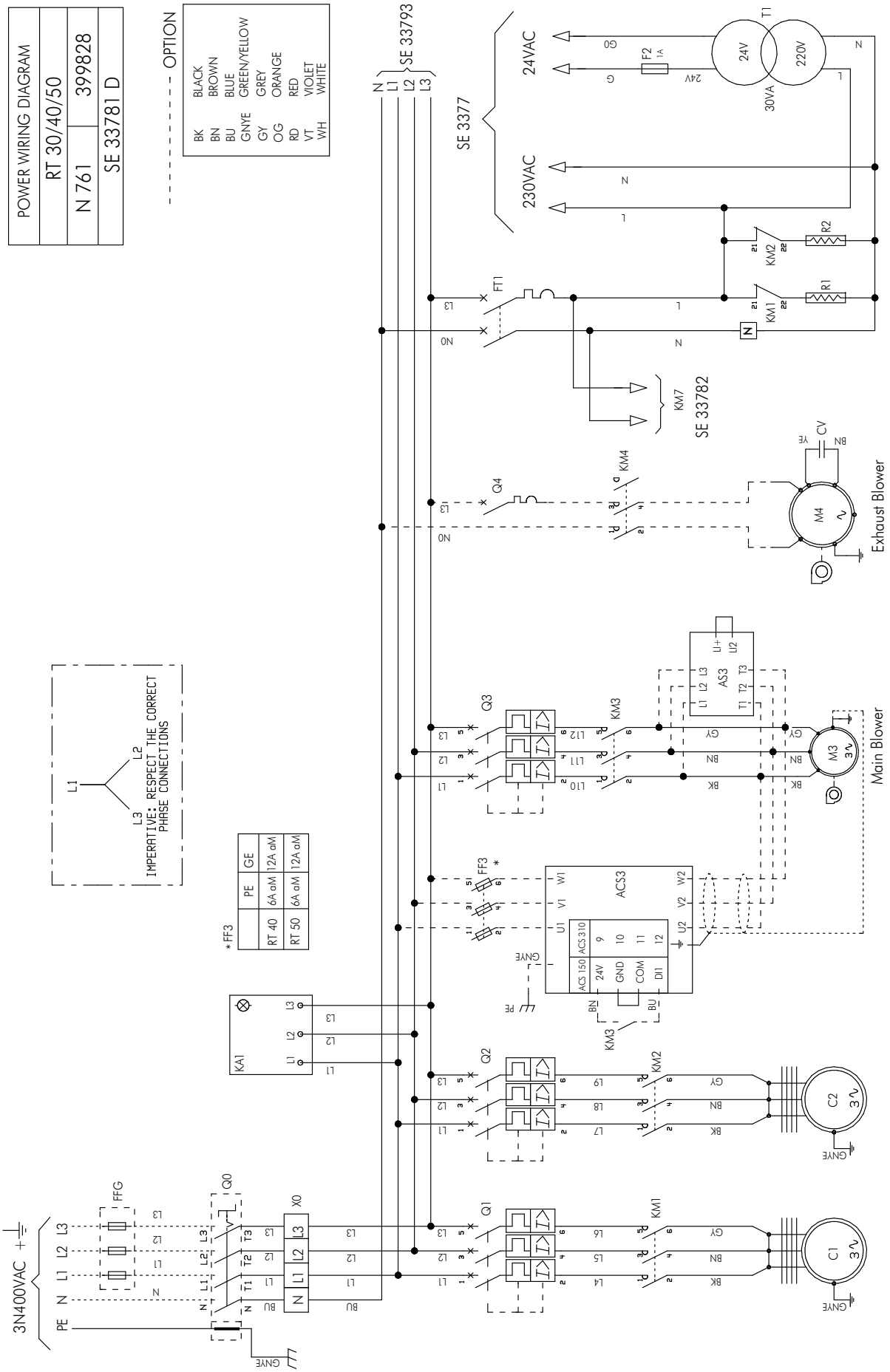
PUESTA FUERA DE TNESIÓN OBLIGATORIA ANTES DE CUALQUIER INTERVENCIÓN EN LAS CAJAS ELÉCTRICAS!

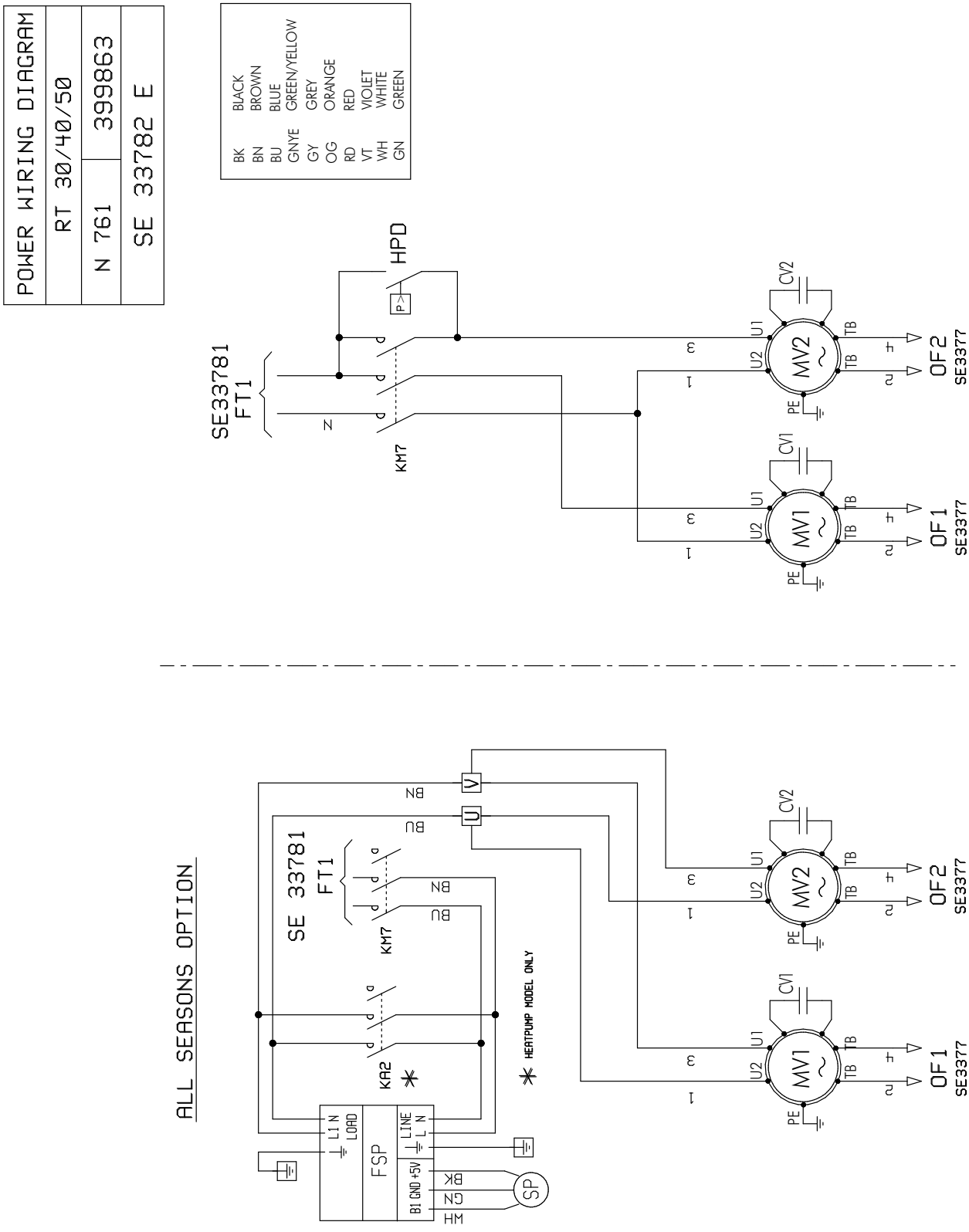
RT30 - RT40 - RT50

CONTROL



POWER


POWER WIRING DIAGRAM
RT 30/40/50
N 761
399828
SE 33781 D
OPTION
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
SE 33793
SE 3377
24VAC
230VAC
SE 33782
Exhaust Blower
Main Blower
IMPERATIVE: RESPECT THE CORRECT PHASE CONNECTIONS
3N400VAC
KA1
KM1
KM2
KM3
KM4
KM7
Q0
Q1
Q2
Q3
Q4
FT1
FF3
FFG
X0
T1
F2
R1
R2
CV
M3
M4
C1
C2
AS3
ACS3


POWER WIRING DIAGRAM
RT 30/40/50
N 761
399863
SE 33782 E
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
GN GREEN
HPD
SE33781
FT1
KM7
CV2
MV2
OF2
SE3377
CV1
MV1
OF1
SE3377
ALL SEASONS OPTION
SE 33781
FT1
KA2
HEATPUMP MODEL ONLY
FSP
SP

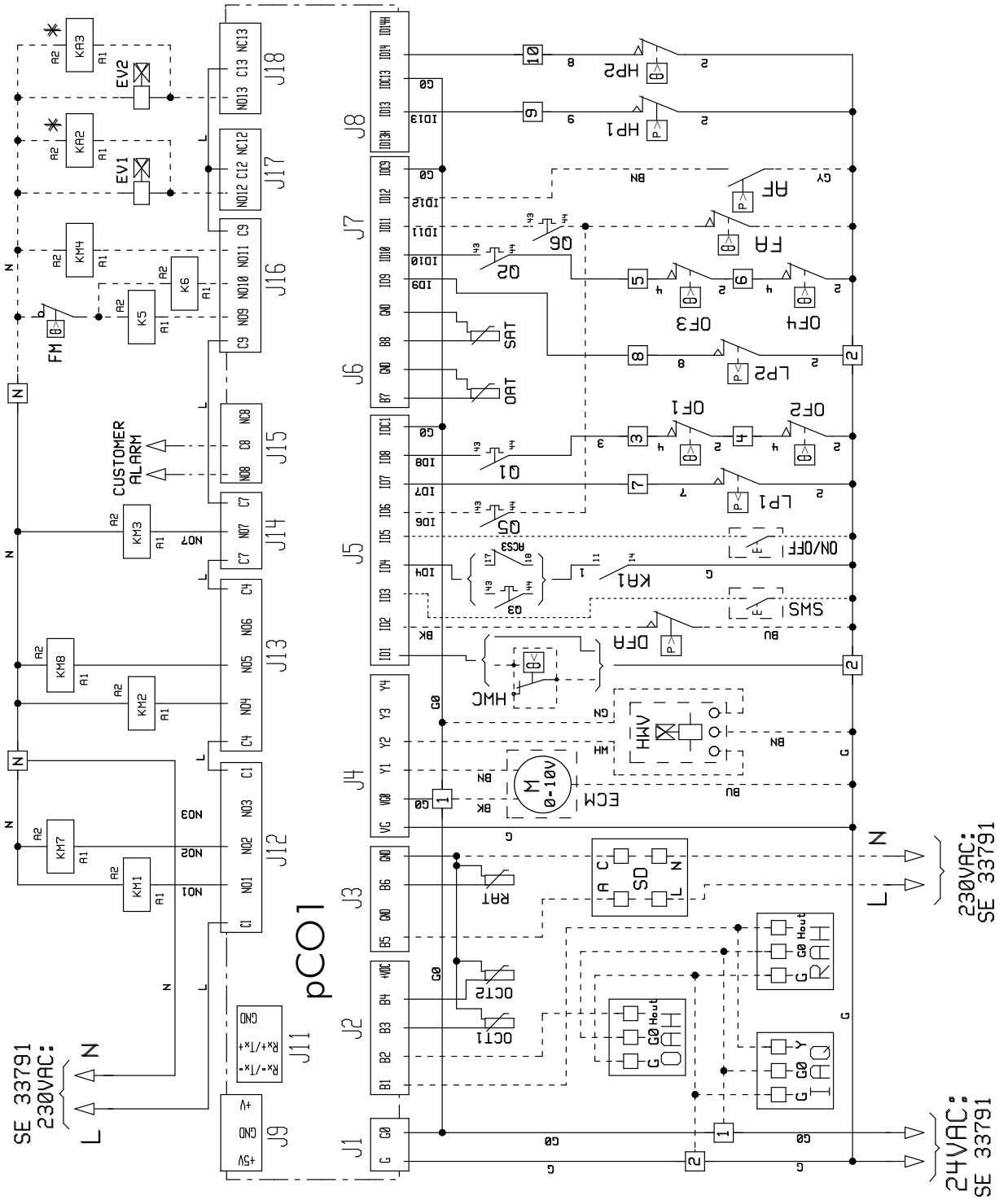
RT60 - RT70 - RT80

CONTROL

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

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

OPTION
CUSTOMER INPUTS
ALL SEASONS
* HEATPUMP MODEL ONLY



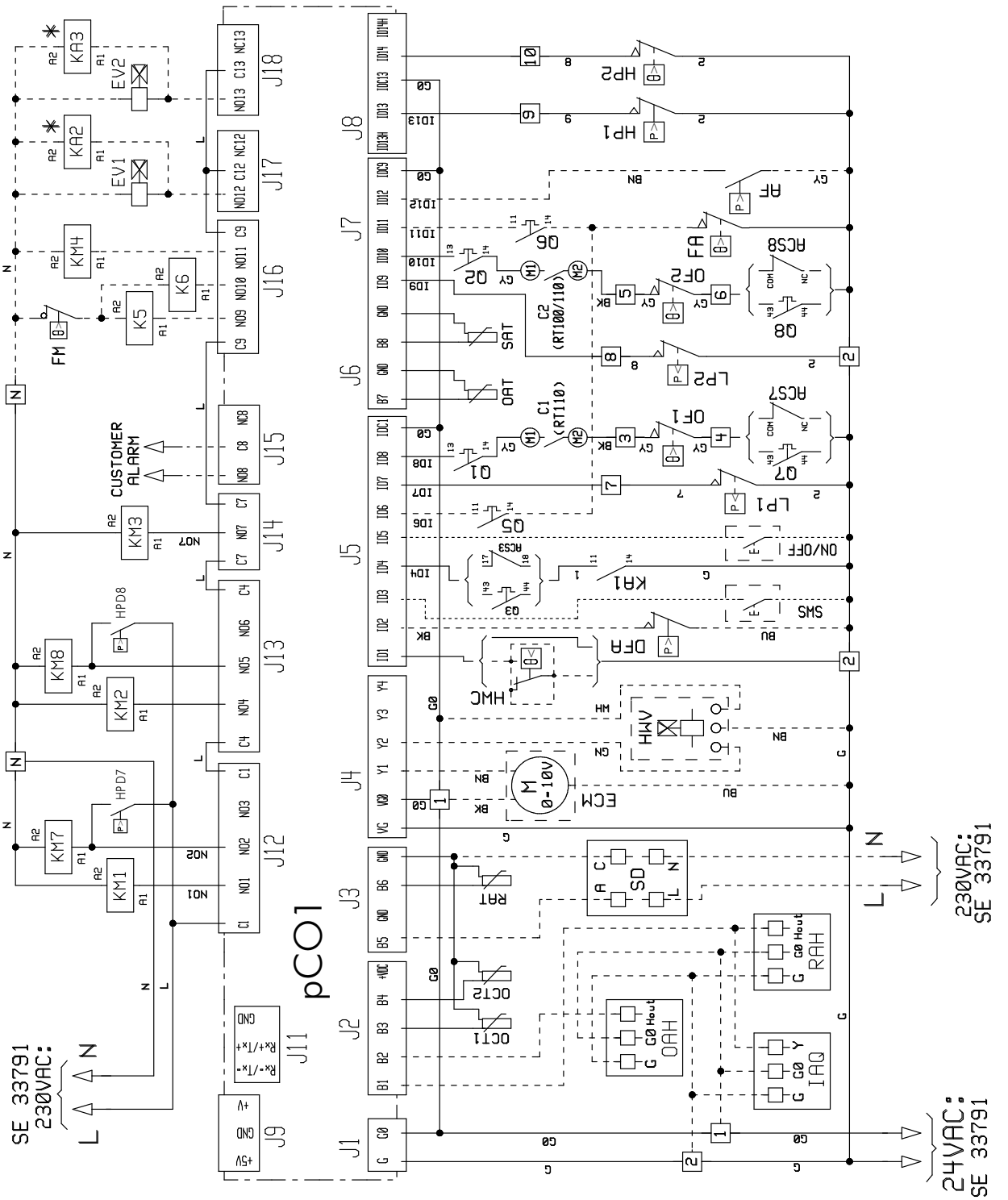
RT100 - RT110

CONTROL

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

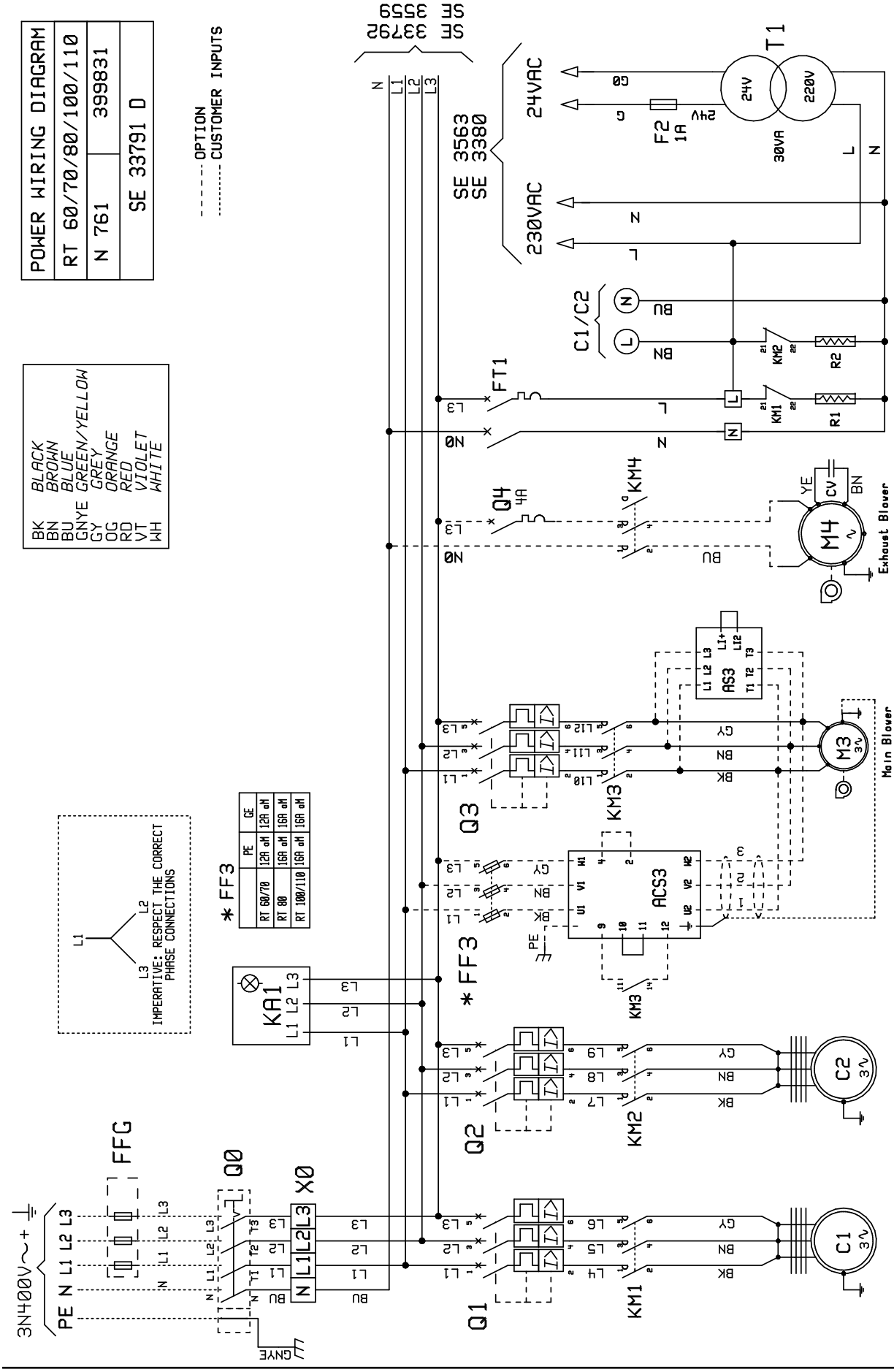
BK	BLACK
BN	BROWN
BU	BLUE
GNYE	GREEN/YELLOW
GY	GREY
OG	ORANGE
RD	RED
VT	VIOLET
WH	WHITE

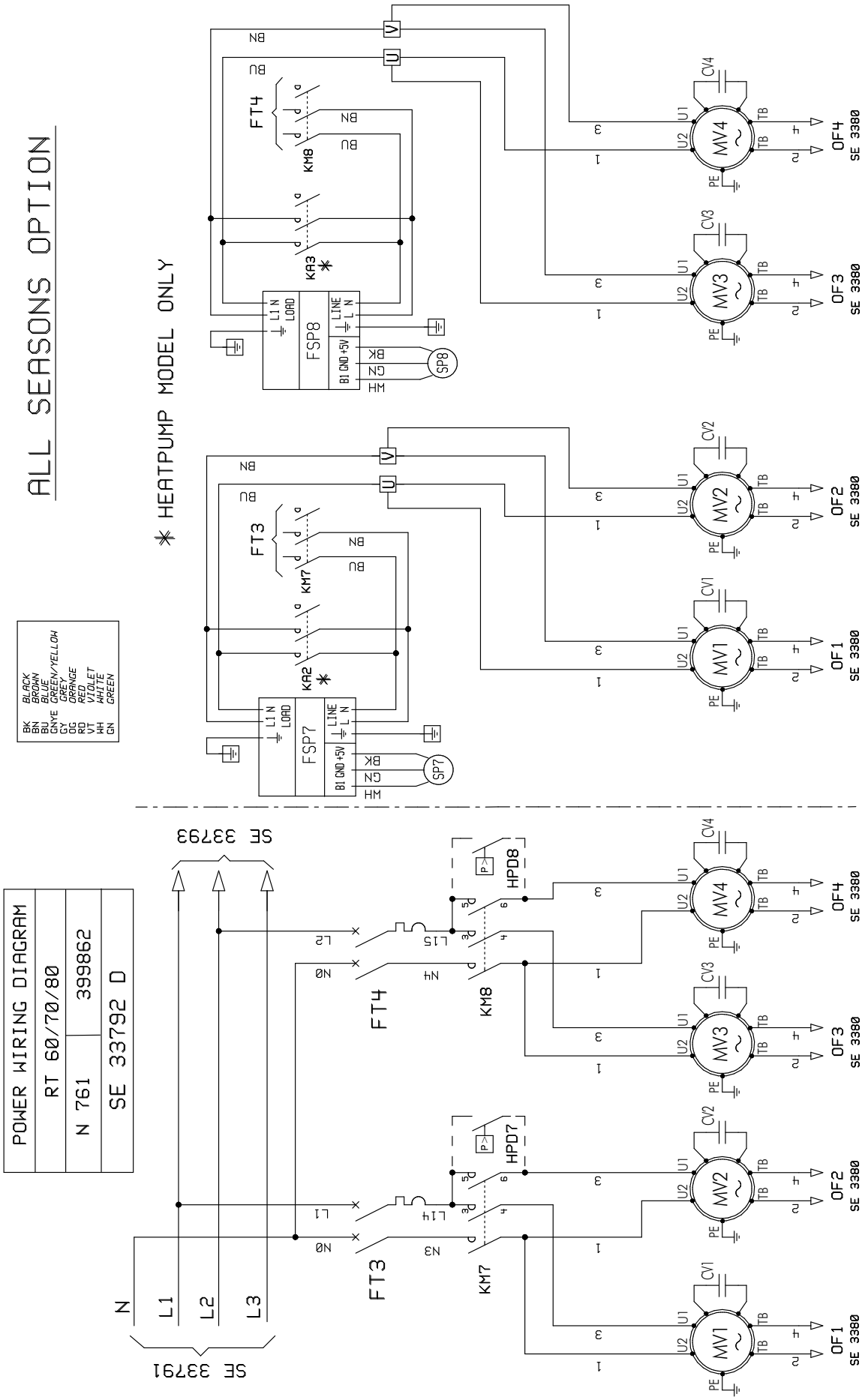
OPTION
CUSTOMER INPUTS
ALL SEASONS
* HEATPUMP MODEL ONLY

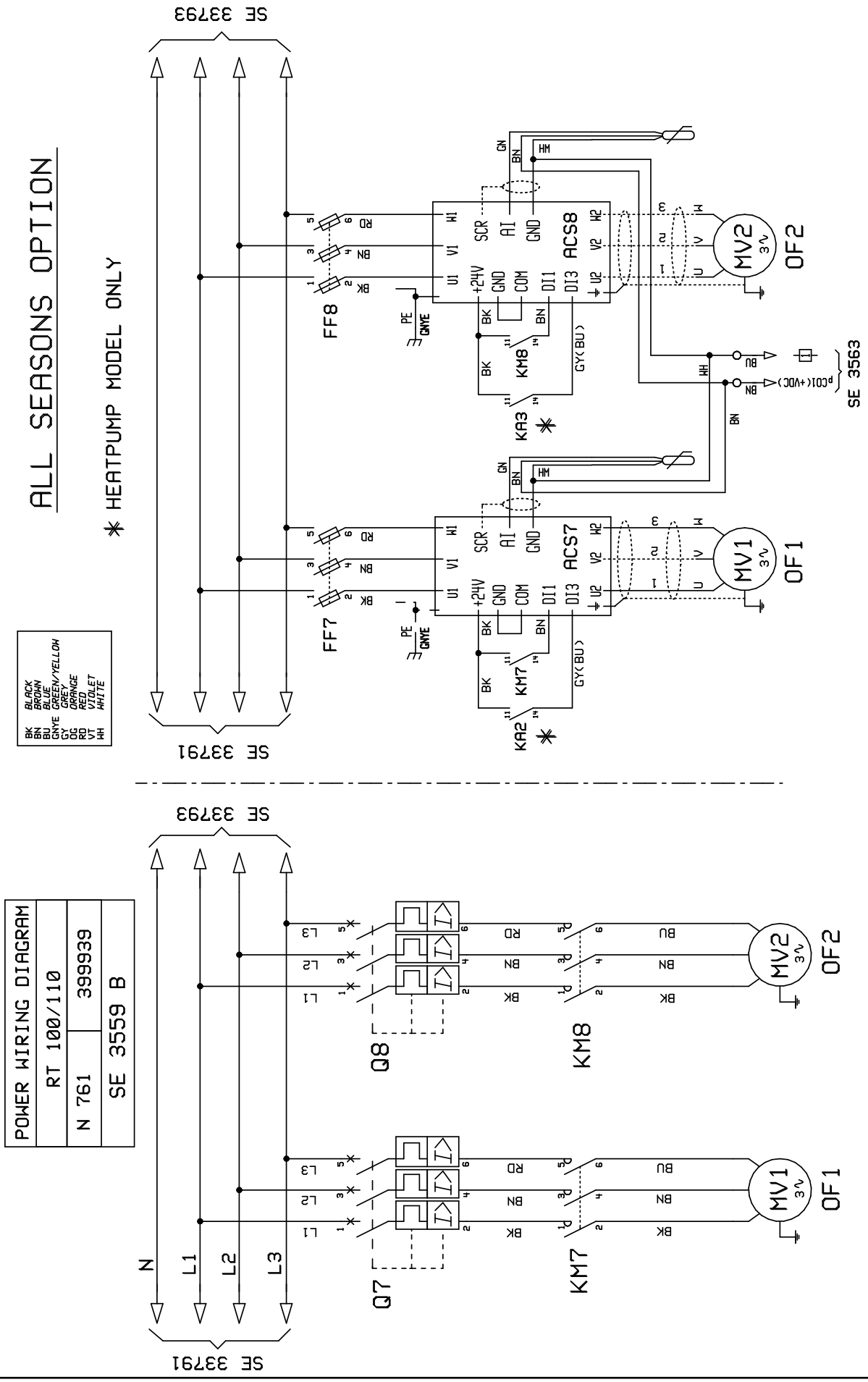


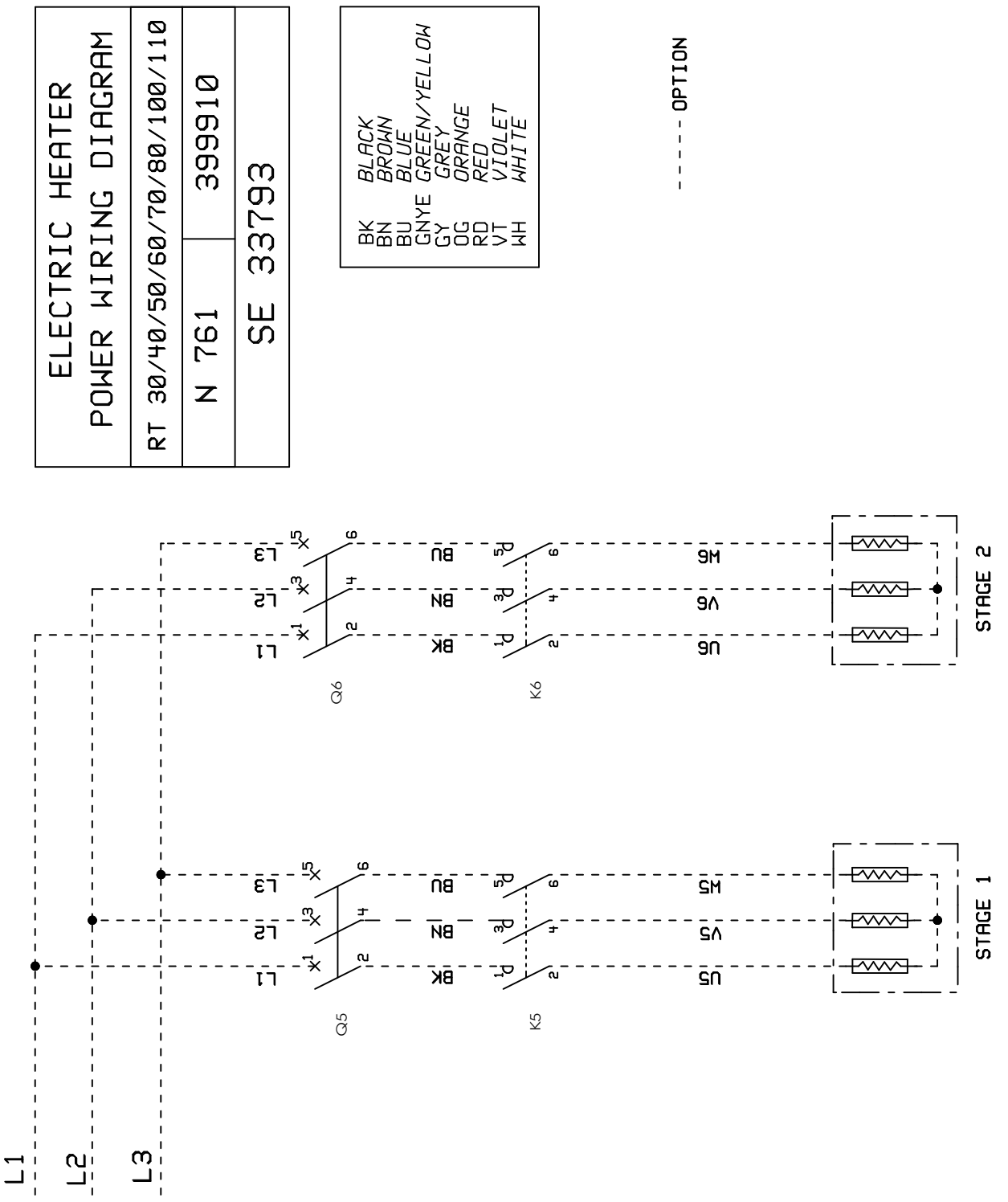
RT60 - RT70 - RT80 - RT100 - RT110

POWER




POWER WIRING DIAGRAM
RT 60/70/80
N 761 399862
SE 33792 D
ALL SEASONS OPTION
* HEATPUMP MODEL ONLY
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
GN GREEN
SE 33793
SE 33791
N
L1
L2
L3
FT4
FT3
KM8
KM7
HPD8
HPD7
FSP8
FSP7
SP8
SP7
KA3
KA2
MV1
MV2
MV3
MV4
CV1
CV2
CV3
CV4
OF1
OF2
OF3
OF4
SE 3380


POWER WIRING DIAGRAM
RT 100/110
N 761
399939
SE 3559 B
ALL SEASONS OPTION
* HEATPUMP MODEL ONLY
SE 33793
SE 33791
N
L1
L2
L3
Q8
Q7
KM8
KM7
MV2
MV1
OF2
OF1
FF8
FF7
ACS8
ACS7
KA3
KA2
KM8
KM7
SE 3563
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VI VIOLET
WH WHITE

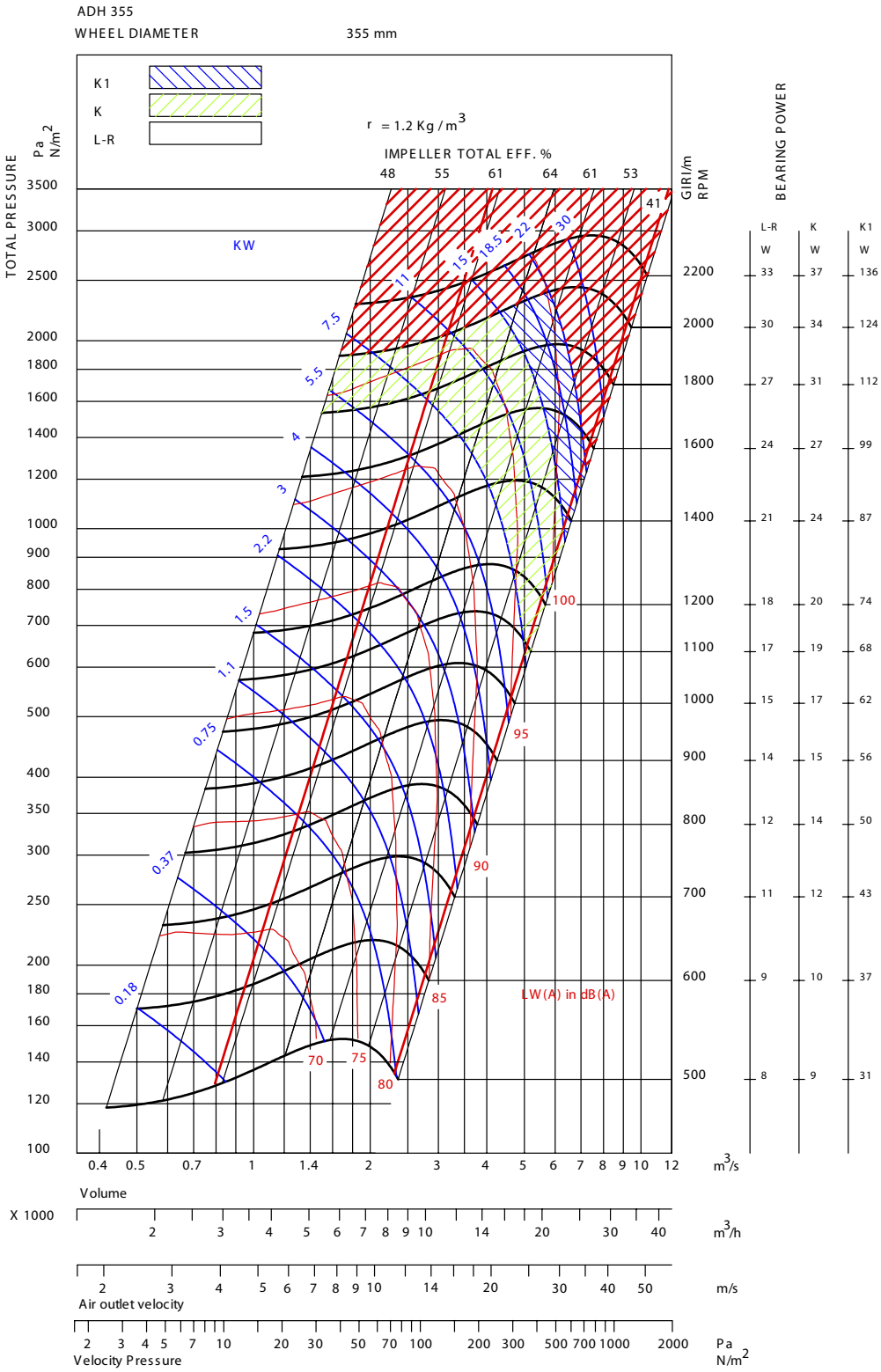

ELECTRIC HEATER
POWER WIRING DIAGRAM
RT 30/40/50/60/70/80/100/110
N 761
399910
SE 33793
BK BLACK
BN BROWN
BU BLUE
GNYE GREEN/YELLOW
GY GREY
OG ORANGE
RD RED
VT VIOLET
WH WHITE
----- OPTION
L1
L2
L3
Q5
Q6
K5
K6
STAGE 1
STAGE 2

AERAULIC ADJUSTMENT
CARACTERISTIQUES AERAULIQUES
REGELUNG DES LÜFTERSYSTEMS
REGOLAZIONE DEL SISTEMA DI TRATTAMENTO DELL'ARIA
AJUSTE DEL ISTEMA AEROLICO

VENTILATEUR CENTRIFUGE

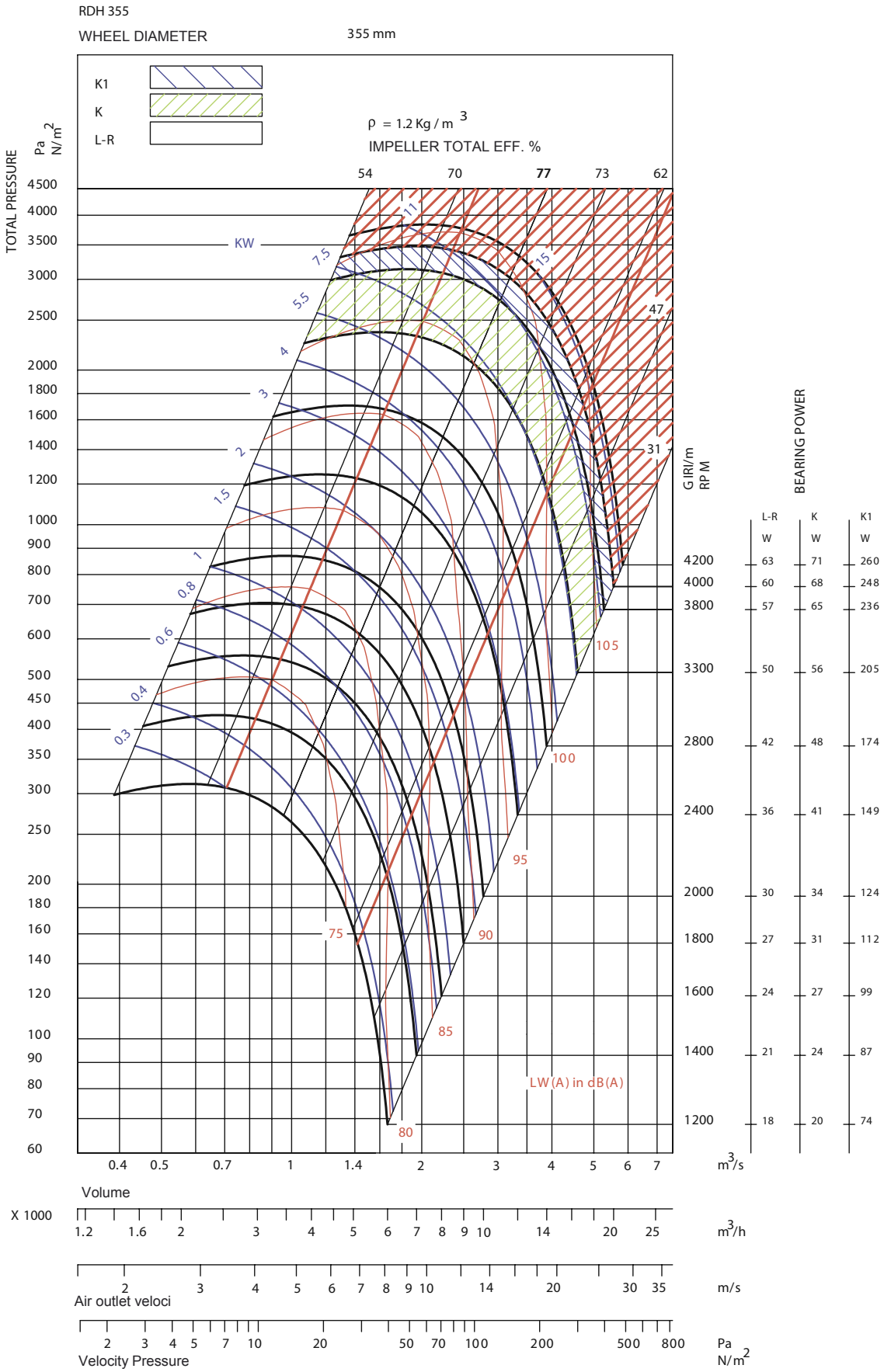
RT30

ADH355



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.

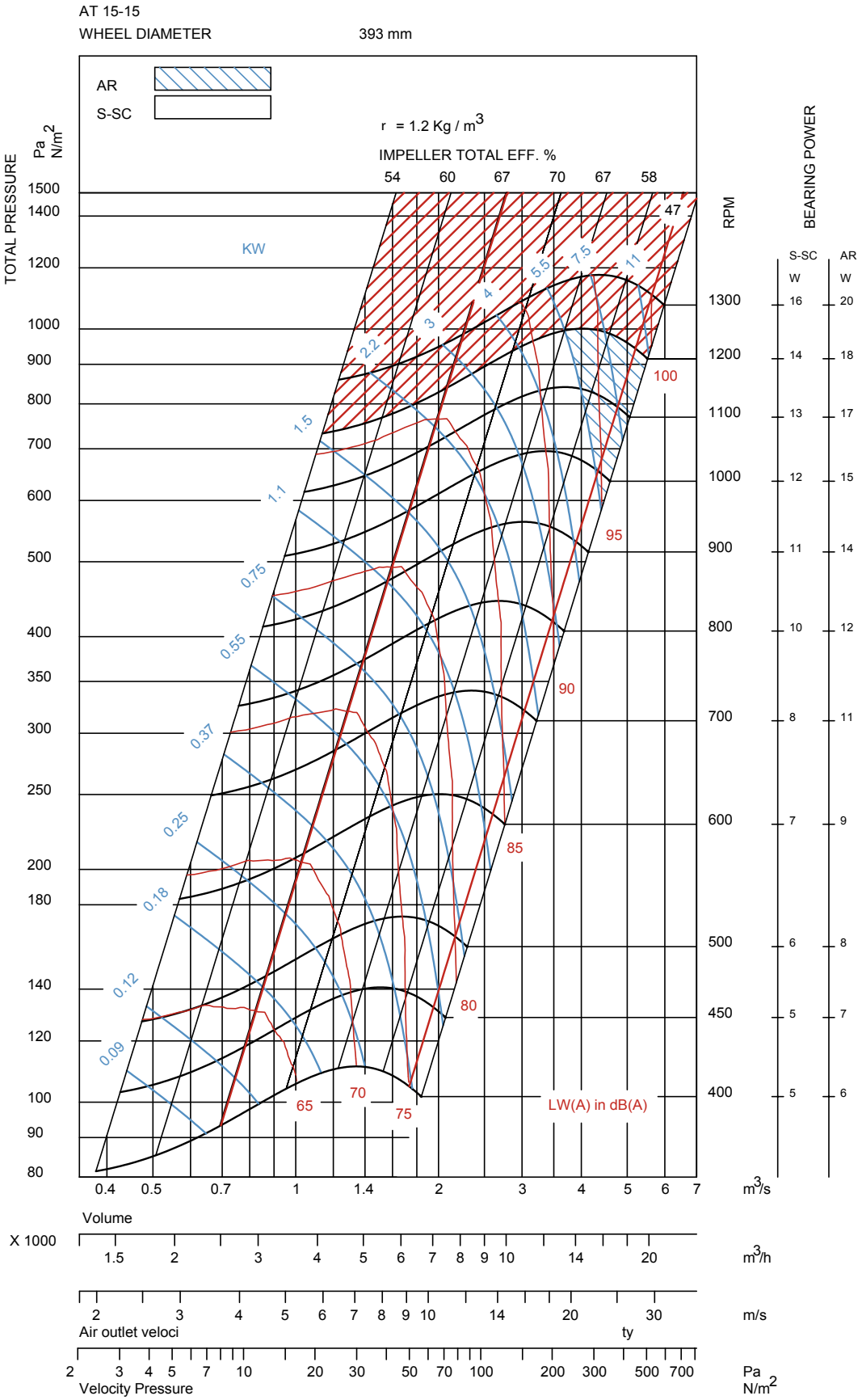
RDH355



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 lesses.
The AMCA Certified Ratings Seal applies to Air Performance only.

RT40 - RT50

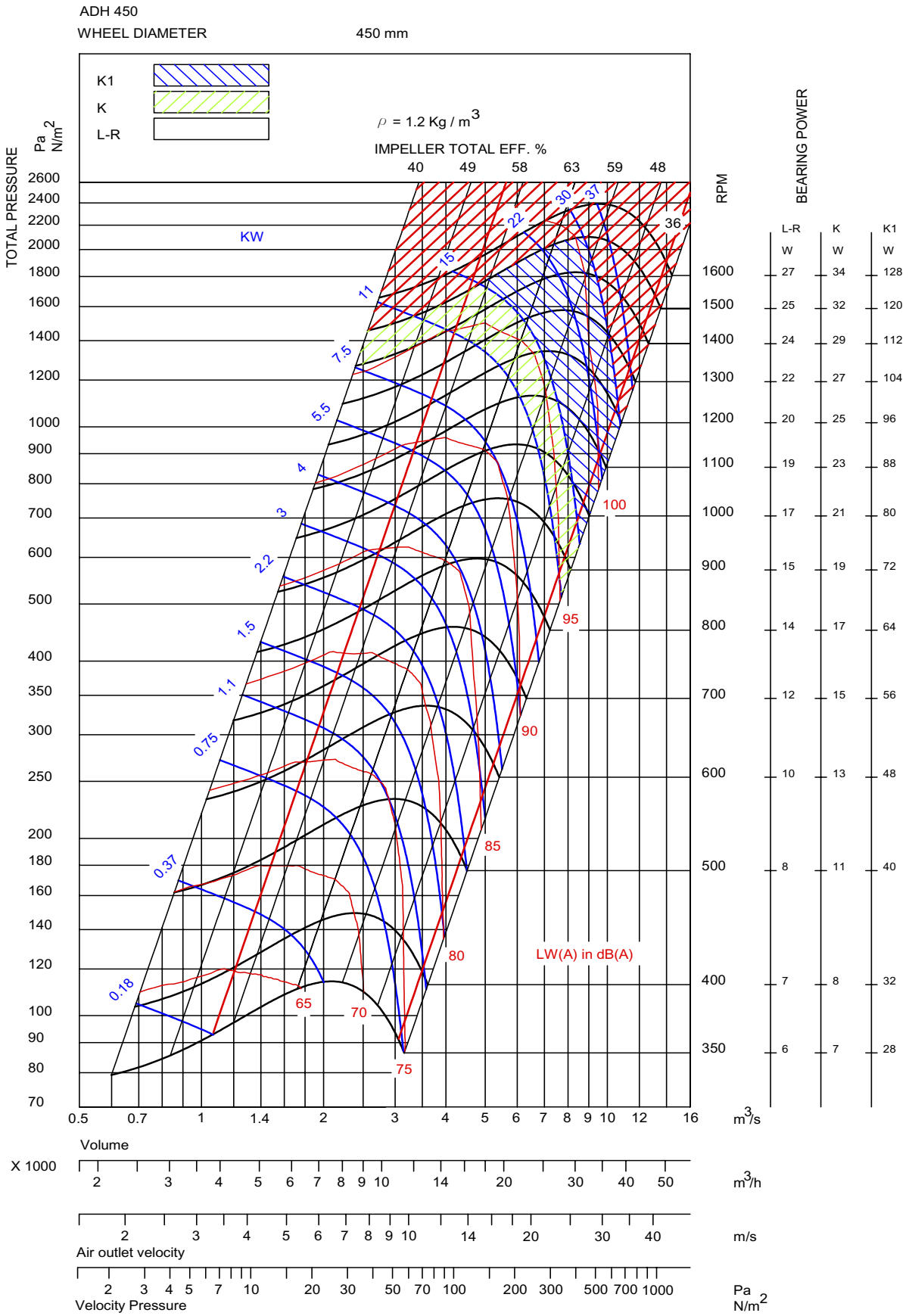
AT15-15



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 lesses.
The AMCA Certified Ratings Seal applies to Air Performance only.

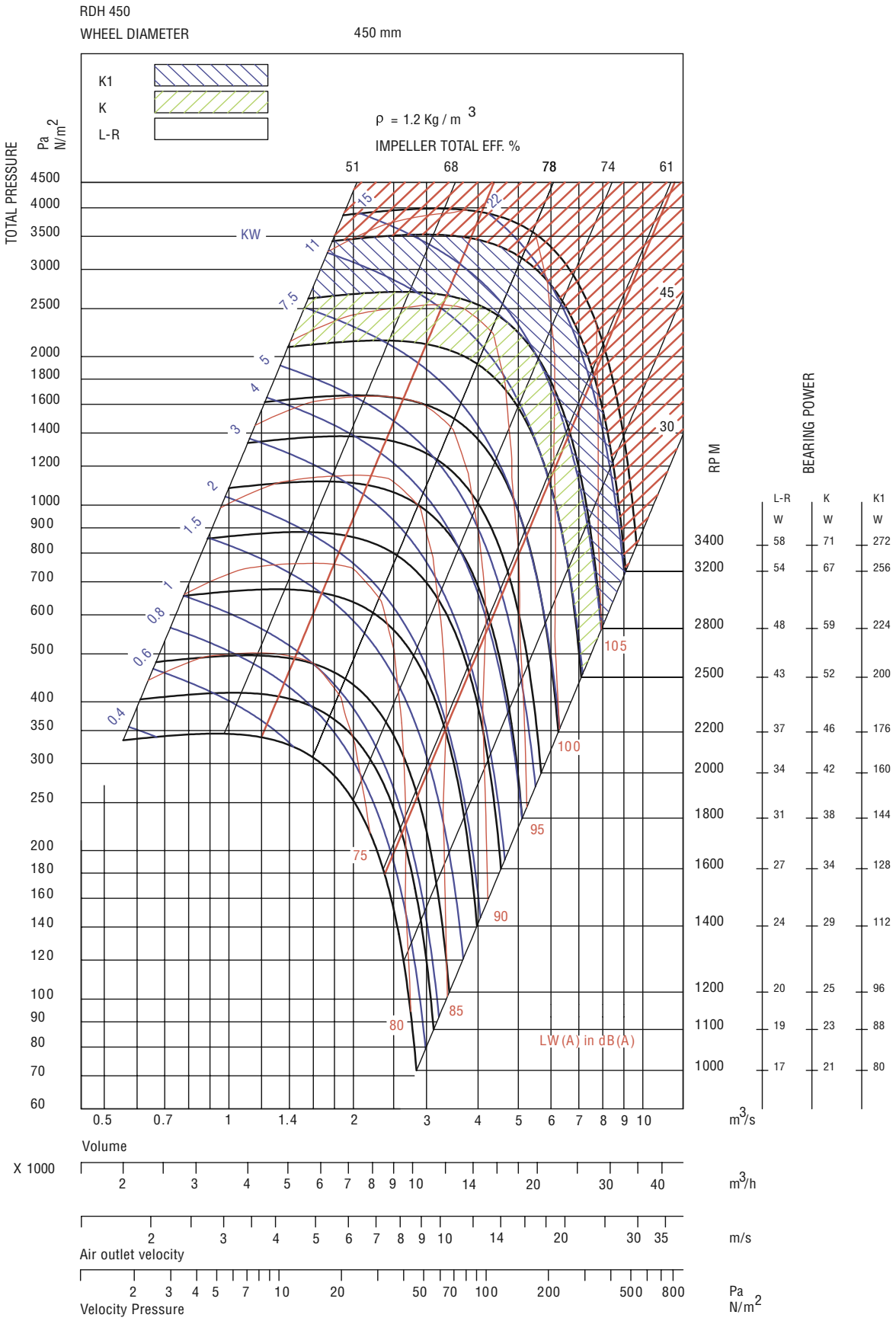
RT60 - RT70

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.

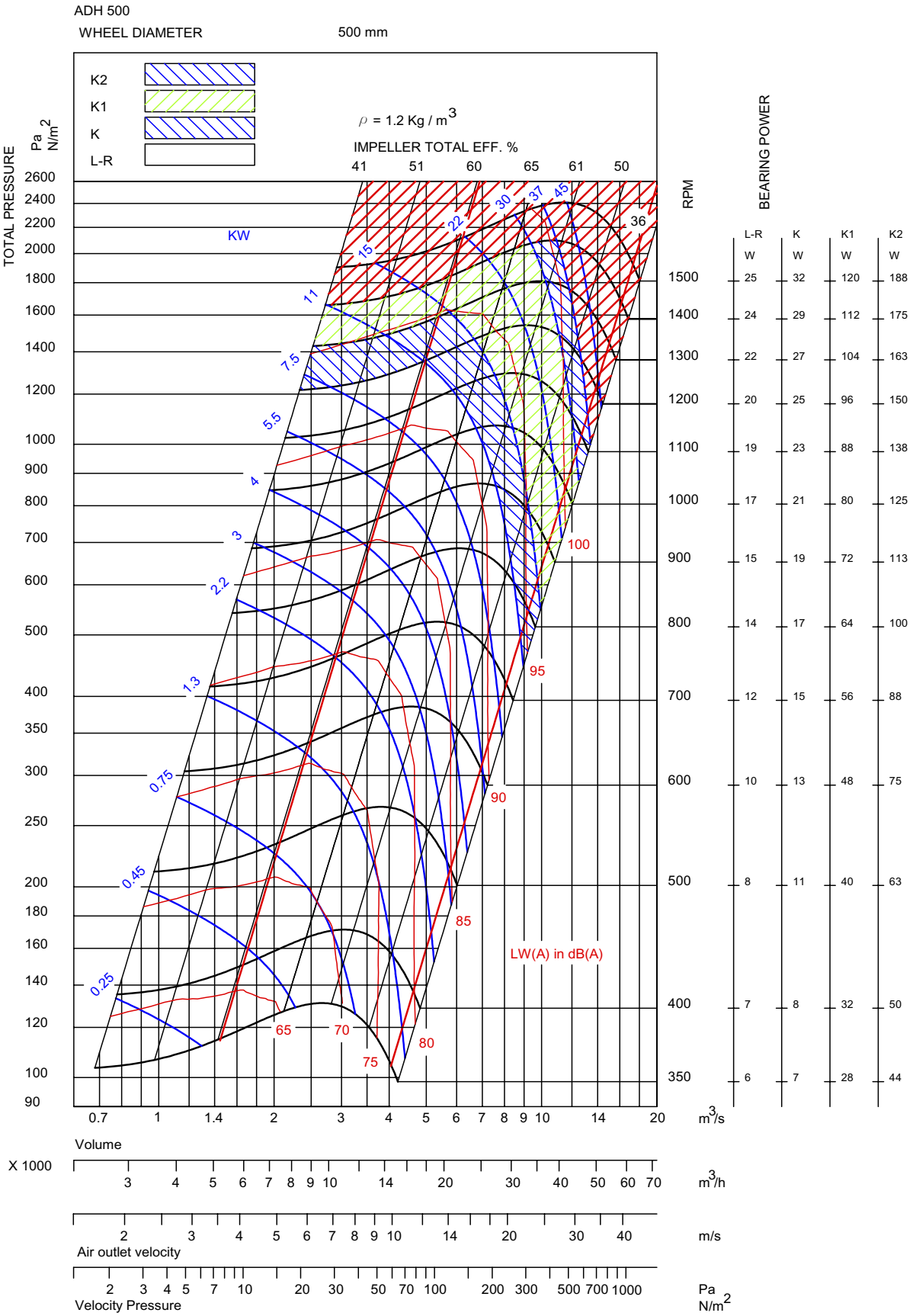
RDH450



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.

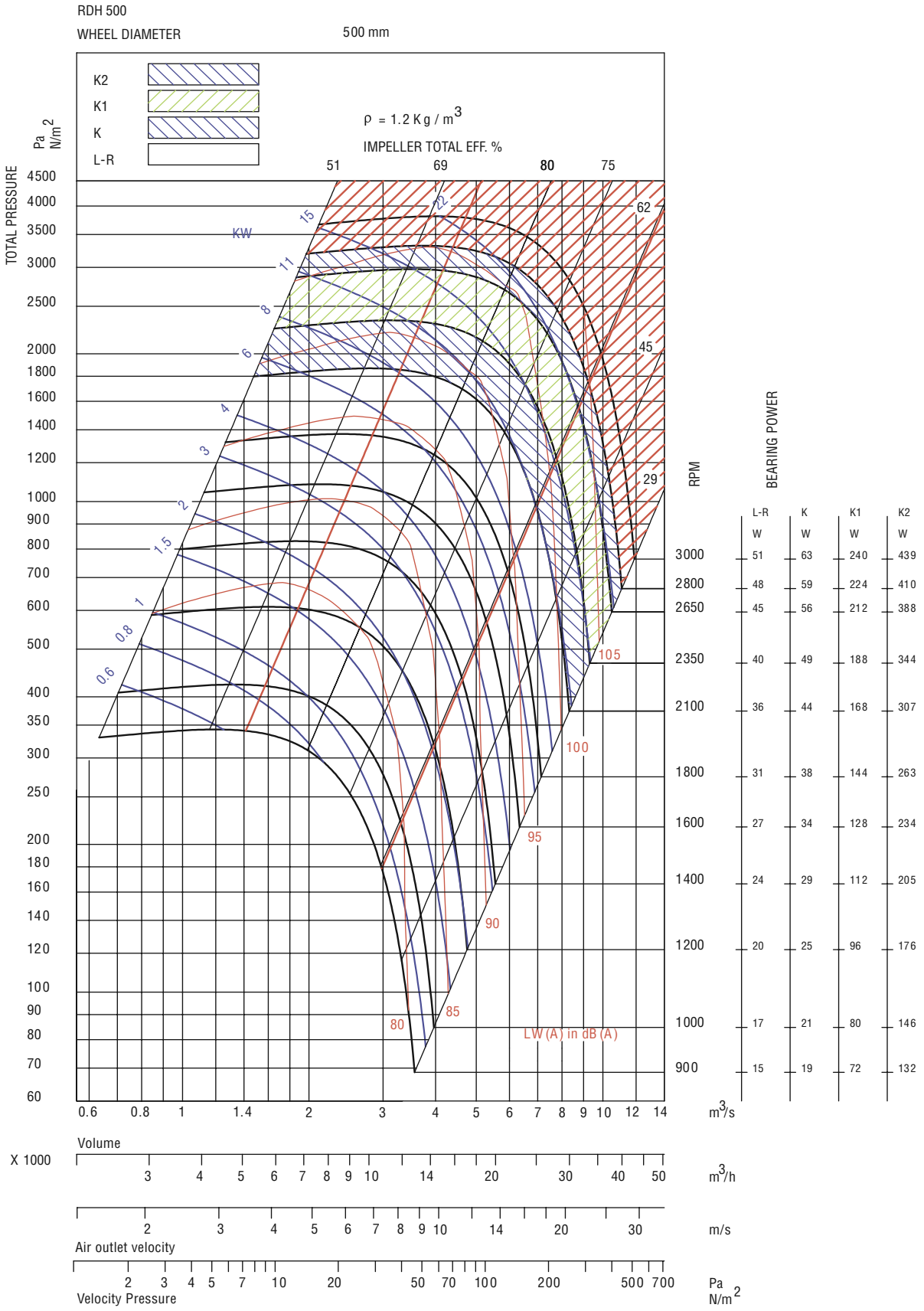
RT80 - RT100 - RT110

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 appl ies 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

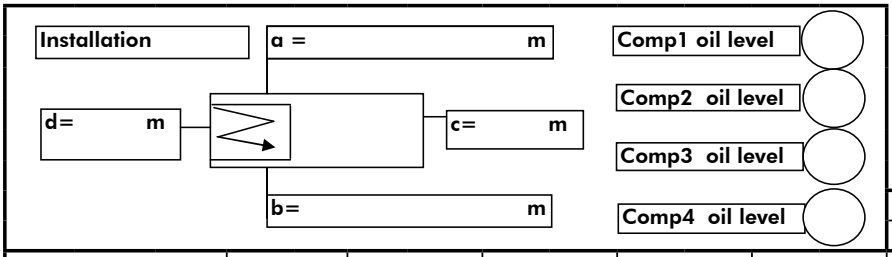
ALL OPERATIONS, SAFETY MAINTENANCE AND RECOMMANDATIONS HAVE BEEN EXPLAINED TO THE USER

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

THIS DOCUMENT IS MANDATORY TO START UNIT WARRANTY

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

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



R407C	R410

Software version

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

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

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

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

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

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

Dichiarazione CE di conformità

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

Declaración CE de conformidad

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

RT 30 - 40 - 50 - 60 - 70 - 80 - 100 -110

MACHINERY DIRECTIVE 2006 / 42 / EEC
LOW VOLTAGE DIRECTIVE (DBT) 2006 / 95 / EEC
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE 2004 / 108 / EEC
PRESSURISE EQUIPMENT DIRECTIVE (DESP) 97 / 23 / EEC
SUB-MODULE A CATEGORY I: RT30 - RT40
SUB-MODULE A1 CATEGORY II: RT50 - RT60 - RT70 - RT80 - RT100 - RT110
NOTIFIED BODY: TÜV RHEINLAND – 62 BIS, AVENUE HENRI GINOUX– 92120 MONTROUGE - FRANCE
THE PRODUCTS ARE PROVIDED WITH CE 0035 MARKING OF CONFORMITY

DIRECTIVE MACHINES 2006 / 42 / C.E.E.
DIRECTIVE BASSE TENSION (DBT) 2006 / 95 / C.E.E.
DIRECTIVE COMPATIBILITE ELECTROMAGNETIQUE 2004 / 108 / CEE
DIRECTIVE DES EQUIPEMENTS SOUS PRESSION (DESP) 97 / 23 C.E.E.
SOUS-MODULE A CATEGORIE I : RT30 - RT40
SOUS-MODULE A1 CATEGORIE II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110
AVEC SURVEILLANCE PAR LE TÜV RHEINLAND – 62 BIS, AVENUE HENRI GINOUX– 92120 MONTROUGE - FRANCE
LES PRODUITS SONT FOURNIS AVEC LE MARQUAGE DE CONFORMITE CE 0035

RICHTLINIE MASCHINEN 2006 / 42 / EG
RICHTLINIE NIERDERSPANNUNG (DBT) 2006 / 95 / EG
RICHTLINIE ELEKTROMAGNETISHE VERTRÄGLICHKEIT 2004 / 108 / EG
RICHTLINIE FÜR AUSRÜSTUNGEN UNTER DRUCK (DESP) 97 / 23 / EG
UNTER MODUL A, KATEGORIE I : RT30 - RT40
UNTER MODUL A1, KATEGORIE II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110
MIT KONTROLLE DURCH DEN TÜV RHEINLAND – 62 BIS, AVENUE HENRI GINOUX– 92120 MONTROUGE - FRANCE
DIE PRODUKTE WERDEN MIT DER MARKIERUNG CONFORMITE CE 0035 GELIEFERT.

DIRETTIVA MACHINE 2006 / 42 / CEE
DIRETTIVA BASSA TENSIONE (DBT) 2006 / 95 / CEE
DIRETTIVA COMPATIBILITA ELETTROMAGNATICA 2004 / 108 / CEE
DIRETTIVA DEGLI IMPIANTI SOTTO PRESSIONE (DESP) 97 / 23 / CEE
SOTTOMODULO A, CATEGORIA I : RT30 - RT40
SOTTOMODULO A1, CATEGORIA II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110
CON SUPERVISION POR EL TÜV RHEINLAND – 62 BIS, AVENUE HENRI GINOUX– 92120 MONTROUGE - FRANCE
I PRODOTTI SONO FORNITI CON LA MARCATURA DI CONFORMITE CE 0035.

DIRECTIVA MAQUIAS 2006 / 42 / CEE
DIRECTIVA BAJA TENSION (DBT) 2006 / 95 / CEE
DIRECTIVA COMPATIBILIDAD ELECTROMAGNETICA 2004 / 108 / CEE
DIRECTIVA DE LOS EQUIPOS A PRESION (DESP) 97 / 23 / CEE
BAJA MODULO A, CATEGORIA I : RT30 - RT40
BAJA MODULO A1, CATEGORIA II : RT50 - RT60 - RT70 - RT80 - RT100 - RT110
CON SORVEGLIANZA DAL TÜV RHEINLAND – 62 BIS, AVENUE HENRI GINOUX– 92120 MONTROUGE - FRANCE
LOS PRODUCTOS SE PROPORCIONAN CON EL MARCADO DE CONFOR CE 0035.

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

EN 60 204-1
EN 61 000-3-11
EN 378-2
EN 61 000-6-2
EN 61 000-3-12
EN 61 000-6-4
EN 378-1

A Tillières sur Avre
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