AERMEC

la prima per il clima

ROOF-TOP UNITS R410A - Manual selection, installation and maintenance

RTE

GB

0510. 6180894_00

English

Index

General norms

This manual is an integral part of the documentation enclosed with the unit.
It must be preserved for future reference and must accompany the machine throughout its life.
The manual defines the purpose for which the machine has been built and establishes its correct installation and the limits of its use.

- This manual provides all the technical instructions and instructions for the installation of this unit and the main accident prevention regulations.

Read carefully and thoroughly all the information referred to in this manual. Pay particular attention to the usage instructions accompanied by the words "DANGER" or "WARNING" because, if not observed, they can cause damage to the machine and/or property and/or injury to people.

If any malfunctions are not included in this manual, contact the local After Sales Service immediately.

- AERMEC S.p.A. declines all liability for any damage due to improper use of the machine or the partial or superficial reading of the information contained in this manual.

- The installation and the maintenance must be done by expert and qualified personnel.

THE MANUFACTURER DECLINES ALL LIABILITY FOR DAMAGE TO THINGS OR INJURY TO PERSONS AND ANIMALS CAUSED BY THE FAILURE TO OBSERVE THE INSTRUCTIONS AND STANDARDS IN THIS MANUAL.
Even though during the design phase of the RTE unit adequate assessment of the risks was made, pay ATTENTION to the pictograms on the machine that helps the reading the manual by drawing the reader's attention rapidly to the risk situations that cannot be avoided or sufficiently limited by using measures and technical means of protection.

GENERAL HAZARD SIGNAL
Carefully adhere to all the indications next to the icon. Failure to comply with the instructions may generate hazardous situations with possible damage to the health of the operator and user in general.

DANGEROUS ELECTRICAL VOLTAGE SIGNAL
Carefully adhere to all the indications next to the icon.
The signal indicates components of the unit or, in this manual, specifies actions that could generate electrically-related risks.

GENERAL PROHIBITION SIGNAL
Carefully adhere to all the indications next to the icon that limit actions in order to guarantee better operator safety.

IT IS PROHIBITED TO CLEAN, OIL AND GREASE, repair or manually adjust parts in motion.

INFLAMMABLE MATERIAL.

MAIN WARRANTY CONDITIONS

- The warranty does not include payment for damage due to the incorrect installation of the unit by the installation engineer.
- The warranty does not include payment for damage due to the improper use of the unit by the user.
- The manufacturer does not consider itself liable for accidents to the user or the installer due to the incorrect installation or improper use of the unit.

The warranty is not valid when:
- the services and the repairs have been carried out by non-authorised personnel or companies;
- the unit has been repaired or modified in the past with non OEM spare parts;
- the unit has not been adequately maintained;
- if the instructions described in this manual have not been followed;
- if non-authorised modifications have been made.

Note:
The Manufacturer reserves the right at all times to make any modification for the improvement of its product and is not obliged to add these modification to machines of previous manufacture that have already been delivered or are being built.
The warranty conditions are any subject to the general sales conditions at the moment the contract is finalised.

Identification and description of unit

The RTE rooftop units are identified by means of a product identification code created by the selection program AERMECPro. A product identification code example is the following:

RTE150F001600000000000

For further information, please refer to the selection program.

UNITS DESCRIPTION

The "ROOF-TOP" units of the RTE series have been designed according to the precise requirements of the plant engineering field concerning the air-handling of big air volumes typical of facilities destined to "large-scale retail trade" (department stores and supermarkets) and to buildings designated to exhibitions, fairs and other industrial services. These units, generally installed on roofs or anyhow outdoor, offers chiefly the following advantages:

- Due to their outdoor installation, no serviceable areas are subtracted to the covered surface.
- Utmost modularity, therefore allowing to differentiate the air air-handling in distinct volumes and characteristics in compliance with the destination areas. (food department, clothing, etc.)
- Supply high ambient comfort levels by controlling, along with the temperature, also the Fresh, the filtering and the humidification or dehumidification of the air.
- The room noise level is maintained at low values thanks to the accurate soundproofing execution of the unit.

RTE units are equipped with an adhesive label that summarizes the main technical data such as model, heat output and cooling capacity, rated capacity of the air in recovery and extraction and electrical data.
For any future reference and for all communication with the AERMEC SpA must indicate the number.
In addition, each piece is accompanied by targhettta with weight and other information traceability.
The rating plate and the plate of the weight of the package are applied outside the main rooftop, on the side panel near the electrical panel inspected the same.
The plate of the weight of each package is applied externally on the panel additional inspections, or packaging.

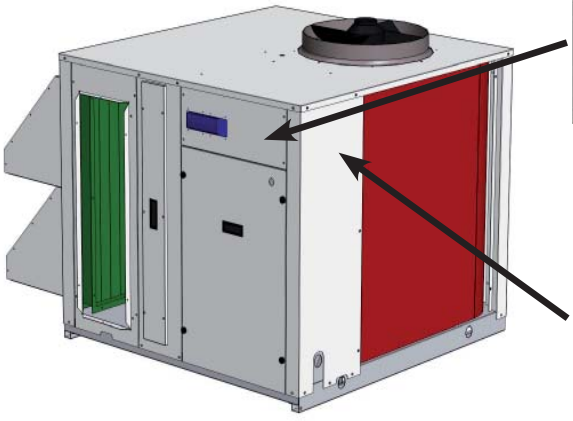
Components

The RTE rooftop units are all available in both versions cooling only and cooling + heat pump.

The RTE units are supplied complete with:

- Condensing unit with axial fans (6 poles) and scroll compressors
- Thermostatic valves, filters, sightglasses
- Synthetic corrugated filter G4 (EN779)
- Direct expansion coil with peraluman drain pan
- Forward curved blades centrifugal supply fans (025-050), directly coupled by trapezoidal belts with adjustable pitch pulley (080-200);
- Microprocessor controller with sensors and actuators
- Electric board

NOTE:
(1) Damper without actuators and recirculation damper upon request.



WARNING: Pay special attention to the conditions during installation and the positioning, of hydraulic/electrical connections, as well as of the electricity supply.
WARNING: Before any start-up of the unit (or after any long period of inactivity), it is extremely important that the oil in the compressor has been warmed up for at least 24 hours, by means of suitable crankcase heaters.

Available versions

RTE units are available in 9 different sizes.
In combination with several optional accessories available, the RTE models are configured to satisfy the most specific application requirements.
The table below shows how the commercial code is made up with the 22 fields representing the available options: For more information, refer to the program selection.

Drive configuration

Field 1, 2, 3	RTE		
Field 4, 5, 6	025 - 030 040 - 050 080 - 090 100 - 150 200		
Field 7	Version		
	F		Cooling only
	H		Heat punp
Field 8 (1)	Power supply		
	0	°	3~400V-50Hz
	V	TV1	1~230V-50Hz
	W	TV2	3~230V-50Hz
Field 9	Mixing box		
	0	°	Only recirculation
	SM		Two-way damper mixing box
	SM3		Three-way damper mixing box. For the varius type please refer to the descreiption of the accessories and their compatibility.
Field 10	Pressure switches		
	P		Filter pressure switches
Field 11	Heating coils		
	0		No coil
	1	BRT2	Two row water coil
	2	BRT3	Three row water coil
	3	BRE...	Electric battery. For the varius type please refer to the descreiption of the accessories and their compatibility.
Field 12	Coil execution		
	0		Coil CuAl
	A	BSP	Prepatinted aluminium coils
	B	BSR	Copper copper coils
	C	BSS	Tinned copper copper coils
Field 13	Air supply		
	0		Standard air supply
	S	MA	Upwards air supply
	G	MI	Downwards air supply
Field 14	0		
Field 15	*Pressure transducers*		
	T	TP	*Pressure transducers (standard in H version)*
Field 16	*Low temperature device*		
	B	DCPR	Pressure switch device
Field 17	Dehumidification and post-heating management kit		
	1	DP	Dehumidification and post-heating management kit
	2	FCH	Enthalpic freecooling
	3	PUC	Wiring for installation of humidification control device
	4	DP+FCH	Management dehumidification, heating and post free-cooling enthalpy
	5	PUC+FCH	
	6	PUC+DP	

(1) : Field 8 = TV1 Contact the company for models 025 - 030 - 02 - 050 - 080 - 090, not available for models 100 - 150 - 200

(1) : Field 8 = TV2 Contact the company for all models

Field 9: SM3I Not available for models 025 - 030 - 040 - 050

Field 13: MA e MI Not available for models 025 - 030 - 040 - 050

Field 17: FCH Only if there is a three-way mixing box and not available for models 025 - 030 - 040 - 050 - 080 - 090

PUC Provision for installation of humidification check not available for models 025 - 030 - 040 - 050 - 080 - 090

Field 17 : DP+FCH Only if there is a three-way mixing box and water or electric coil, not available for models 025 - 030 - 040 - 050 - 080 - 090

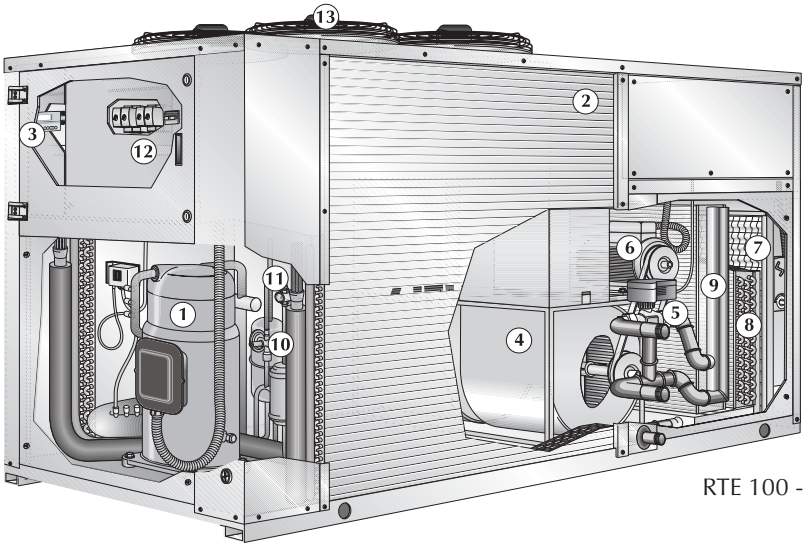
PUC+FCHOnly if there is a three-gate valve mixing box, not available for models 025 - 030 - 040 - 050 - 080 - 090

PUC+DP Only if there is a water or coil battery, not available for models 025 - 030 - 040 - 050 - 080 - 090

Field 18 : SQA not available for models 025 - 030 - 040 - 050 - 080 - 02

Field 18	VOC air quality probe		
	Q	SQA	VOC air quality probe
			Remote alarm (standard)
			Provision for installation of fire alarm (standard)
			Provision for installation of smoke detector (standard)
Field 19	Remote panel		
	P	PR2	Remote panel
	S	SSV	Super visor
	R	PR2+SSV	
Field 20	Protection grille		
	G	GP	Protection grille
Field 21			
	1	VT	Antivibrating mounts
	2	AVX	Spring antivibrating mounts
	3	RC	Roof curb
Field 22	O		No special request
	S		Units with at least one special request

MAIN COMPONENTS



RTE 100 - 200

Key
1 Compressor
2 Air side heat exchanger
3 Control keypad
4 Fan
5 Three-way valve
6 Fan motor
7 G4 Filter
8 Internal heat exchanger
9 Post heating coil
10 Dehydrator filter
11 Liquid indicator
12 Electric board
13 Fans

Description of components

Refrigerant circuit

COMPRESSOR
Hermetic scroll compressors, equipped with a crankcase heater as standard accessory.
The resistor is powered automatically when the unit pauses, provided the power supply is not turned off.

EXTERNAL HEAT EXCHANGER
Made of copper tubes and aluminium fins, fixed by mechanical expansion of tubes. High-efficiency type; grooved pipe and corrugated fins for heat pump, smooth pipe and turbo fins for cooling-only version.

INTERNAL HEAT EXCHANGER
Made of copper tubes and aluminium fins, fixed by mechanical expansion of tubes. High-efficiency type; grooved pipe and corrugated fins for heat pump, smooth pipe and turbo fins for cooling-only version.

LIQUID SEPARATOR (heat pump versions only)
Located on the compressor suction side to offer protection against possible returns of liquid refrigerant, flooded start-ups, and operation in the presence of liquid.

THERMOSTATIC VALVE
The valve, with equaliser at the evaporator outlet, regulates the gas flow to the evaporator according to the thermal load, ensuring a sufficient degree of superheating of intake gas.

DRIER FILTER
Mechanical filter made from ceramic and hygroscopic material, designed to capture impurities and all residual moisture in the cooling circuit.

LIQUID INDICATOR
Indicates the level of the refrigerant gas charge and the presence of moisture in the cooling circuit.

SOLENOID VALVE
Intervenes when the compressor is stopped to stop the flow of refrigerant gas to the evaporator.

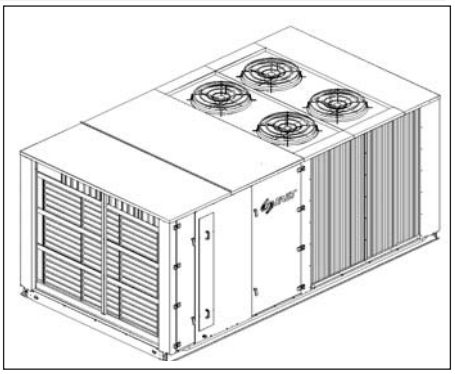
SUCTION SIDE LIQUID AND DISCHARGE GAS SHUT-OFF VALVES (cooling version only)
These valves intercept the flow of refrigerant to allow supplementary maintenance work.

REVERSE CYCLE VALVE (heat pump only)
Reverses the flow of refrigerant on changing from Summer to Winter operating mode and during defrosting cycles.

BY-PASS SOLENOID VALVE (heat pump only)
By-passes the thermostat valve during the defrosting cycle.

COOLING CIRCUIT SAFETY VALVE (080 - 200 only)
Set to 30 Bar, it intervenes to discharge excess pressure if the pressure level rises above normal .

UNIDIRECTIONAL VALVE (heat pump only)
Allows refrigerant to flow in only one direction.



Frame and fans

CONDENSING FAN ASSEMBLY
The axial fans are statically and dynamically balanced. The fan units are electrically protected with thermal-magnetic circuit breakers and mechanically protected with metal anti-intrusion grilles.

AIR-HANDLING FAN ASSEMBLY
Centrifugal fan with double inlet and forward blades for greater performance and quietness, balanced statically and dynamically, activated by three-phase motors coupled by trapezoidal belts and variable-pitch pulleys only for the models from 080 to 200, directly coupled for the models from 025 to 050, with manual control, with standard electronic device

SUPPORTING STRUCTURE
The construction type for the air handling side and for the condensing side is different according to the model:

- models 025,030,040,050: panels in peraluman with insulation on the air handling side with closed-cells expanded polyethylene (30 kg/m^3 density)
- models 080,090,100,150,200: sandwich panels in peraluman, external and internal, 25mm thickness with insulation in injected polyurethane foam (42 m3/h density) for side panels, for the roof of the air handling side.

Safety and control device

CONTROL KEYPAD AND DISPLAY BY THE UNIT
Gives complete control over the functions of the unit. For more information, refer to the user manual.

ELECTRIC PANEL
Includes power section, regulation of controls and safety devices. Compliant with CEI 60204-1 standards and Directives EMC 89/336/CEE and 92/31/CEE governing electromagnetic compatibility.

ANTI-FREEZE PROBE (only with BC accessory)
When the water temperature is +3°C the specific software, present in the control board, will open the 3-way dampers valve completely and set the hot water into circulation by means of an output digital signal.

PRESSURE SWITCHES
Positioned on the high and low sides of the refrigeration circuit. They cut off the functioning of the compressor in the case of abnormal operating pressures.

FLOW-METER (standard from model 080 to 200)
It ensures that water is circulating and, if it is not, shut's down the unit. For models from 025 to 050 it is only available with the electrical battery.

HIGH AND LOW PRESSURE TRANSDUCERS (optional for the cooling version only)
Placed on the high and low pressure sides of the cooling circuit, they allow to visualise the pressure values on the display.

DOOR LOCK DISCONNECTOR
For safety reasons it is only possible to access the electric panel after cutting off the power supply using the lever that opens the panel itself. This lever can be fastened with one or more locks during maintenance operations, to prevent power from being restored to the unit accidentally.

Regulation system

The structure of the microprocessor openominal regulator includes:

• one or two microprocessor-dedicated BASE CARDS for the executions of the regulation program. The base card is equipped with display, keyboard and LEDS to program the control parameters (setpoint) and the main operations from the user (ON/OFF, display of the controlled values, optional print-out).

• The program is written on EPROMs while the parameters set are memorised in a permanent way on EEPROMs, enabling them to be maintained even when there is a no power supply (with out the need of a backup battery).

The base card also allows the connection with the local network consisting of several basic cards and several terminals. Every card can exchange information (any digital or analogue variation according to the application program) with a high transmission speed. It is possible to connect up to 16 units (cards and terminals) for a maximum of 5 rooftops in order to be able to share the information very quickly. The connection towards the supervision/remote assistance line according to the standard RS422 or RS485, is constructed through the optional serial card and the protocol of through the optional serial cards.

The connection of the terminal to the base card is not necessary for the controller to operate at full capacity, but it can only be used for the initial programming of the main parameters.

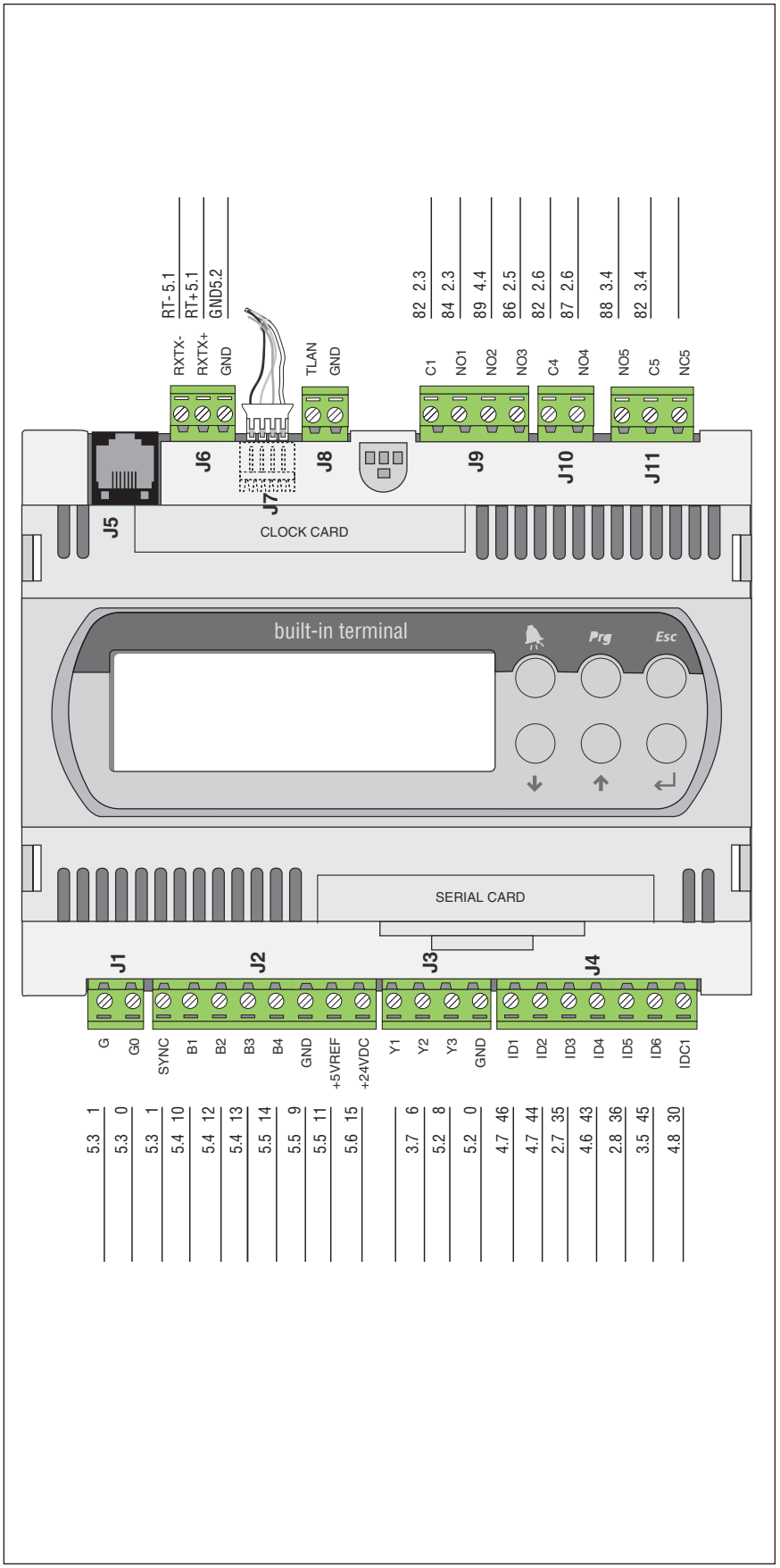
Thanks to the potential of the application program, the user terminal allows:

• To modify the main parameters optionally protected by a password

• To display the detected alarms and to signal them by means of a tone

• To display the active functions by means of LEDS

• To display all the measured values



Accessories

SM - TWO-WAY MIXING BOX
Including dampers actuators and weatherproof hoods.

SM3P -THREE-WAY MIXING BOX
Three-way mixing box with back intake and exhaust fan, including dampers actuators, weatherproof hoods and free-cooling temperature management.

SM3I - THREE-WAY MIXING BOX
Three-way mixing box with bottom intake and exhaust fan, including dampers actuators, weatherproof hoods and free-cooling temperature management.

SCSM - TWO-WAY MIXING BOX
Complete with spring return actuators and weatherproof hoods

SCSM3P – THREE-WAY MIXING BOX
Three-way mixing box, with exhaust fan and back intake, including spring return actuators, dampers, weatherproof hoods and management of the temperature free-cooling

SCSM3I – THREE-WAY MIXING BOX
Three-way mixing box, with exhaust fan and back intake, including spring return actuators, dampers, weatherproof hoods and management of the temperature free-cooling

P - FILTER PRESSURE SWITCH

BRT2 -TWO ROW WATER COILS
Two row water heating coils.

BRT3 -THREE ROW WATER COILS
Three row water heating coils.

BRE - ELECTRIC BATTERIES
Electric batteries. Select BRE accessory on the follow compatibility table.

TP - PRESSURE TRANSDUCERS
Standard on all models in heat pump version.

DCPR - LOW TEMPERATURE DEVICE
Extends the operating range of the rooftop, both in the summer cycle (minimum outside air temperature to 10 ° C), and in the winter with heat pump (maximum temperature of outside air to 25 ° C). It also makes the operation very quiet at part load. An electronic control varies the speed of the condensing vantilatori according to condensing pressure, which has a special transducer, ensuring proper supply to the thermostatic valve. his accessory ensures the correct operation at external temperatures lower than 20 °C down to – 10 °C. It consists of an electronic control card which adjusts fan speed according to the condensation pressure read by accessory TP2 (high pressure transducer, supplied in conjunction with accessory DCPX) in order to keep the pressure sufficiently high to supply the thermostat valve correctly.

DP - MANAGEMENT KIT FOR DEHUMIDIFICATION AND POST HEATING
Kit for the management of the dehumidification and post heating. It can be combined with the PUC (Humidification
Contact) accessory.

FCH - ENTHALPIC FREE-COOLING
Only for models 100, 150, 200 with three-way mixing box.
It can be combined with:
- DP accessory (post heating and dehumidification management kit) only with a three-way mixing box and water or electric battery.
- PCU accessory (Humidification contact) only with three-way mixing box.

PUC - HUMIDIFICATION CONTACT
Only for models 100, 150 and 200. Humidification ON/OFF contact (normally open). In this case the units is complete with a humidity probe placed in the ambient air exhaust. Moreover, together with it, a humidity probe is supplied to be placed downstream the humidification section.

SQA
Air quality probe.
Only for models 100, 150 and 200.

PR2 - REMOTE CONTROL PANEL
Allows to perform the rooftop command operations at the distance .

GP - PROTECTION GRILLE
Protects the external coil from accidental impact and prevents access to the area underneath where compressors and refrigerant circuit are placed.

VT - RUBBER ANTI-VIBRATION MOUNTS
Rubber vibration damper mounts. Select model VT on the compatibility table.

AVX - SPRING ANTI-VIBRATION MOUNTS
Spring vibration damper mounts. Select model AVX on the compatibility table.

RC
Roof-curb
Only for models 080, 090, 100, 150 and 200.

ATTENTION: the control of the standard configuration is however capable of managing the following accessories, even if added on in a second moment: SM, PF, SSV (supervisor), PR2, TP. Any other accessory implies the change of the control board. Regardless of the type of control, it is always possible to supply in a second moment the accessories GP, VT, AVX, RC.

ACCESSORIES COMPATIBILITY TABLE

	Available accessories								
Mod.	**025**	**030**	**040**	**050**	**080**	**090**	**100**	**150**	**200**
SM	•	•	•	•	•	•	•	•	•
SM3P	•	•	•	•	•	•	•	•	•
SM3I					•	•	•	•	•
SCSM	•	•	•	•	•	•	•	•	•
SCSM3P	•	•	•	•	•	•	•	•	•
SCSM3I					•	•	•	•	•
PF	•	•	•	•	•	•	•	•	•
BRT2	•	•	•	•	•	•	•	•	•
BRT3	•	•	•	•	•	•	•	•	•
(4) **BRE103**		•	•	•	•				
BRE106		•	•	•	•				
BRE109		•	•	•	•				
BRE107						•	•		
BRE112						•	•		
BRE118						•	•		
BRE212							•	•	•
BRE218							•	•	•
BRE224							•	•	•
BRE236							•	•	•
TP	•	•	•	•	•	•	•	•	•
DCPR	•	•	•	•	•	•	•	•	•
DP	•	•	•	•	•	•	•	•	•
(1) **DP+FCH**							•	•	•
(2) **PUC+FCH**							•	•	•
(3) **PUC+DP**							•	•	•
FCH							•	•	•
PUC							•	•	•
SQA							•	•	•
PR2	•	•	•	•	•	•	•	•	•
GP	•	•	•	•	•	•	•	•	•
VT	•	•	•	•	•	•	•	•	•
AVX	•	•	•	•	•	•	•	•	•
RC					•	•	•	•	•

(1) Only if a three-way mixing box and water or electric coil are present

(2) Only with three-way mixing box

(3) Only if a water or coil battery is present

(4) BRE103 = electric batteries, the first number indicates the stages, the last two digits the capacity (ex. : 1 stage, 3 kW)

Cooling only F (standard) R 410A

RTE		025F	030F	040F	050F	080F	090F	100F	150F	200F
(1) Cooling capacity	kW	10,5	12,4	15,7	18,5	23,6	27,9	37,1	45,2	52,3
(1) Sensible nominal cooling capacity	kW	6,7	8,2	10,1	11,9	15,5	18,1	24,1	30,7	34,0
(1) Cooling imput power	kW	2,4	2,8	3,3	3,9	5,3	6,0	7,9	10,6	12,1
(1) Cooling absorbed power	A	4,7	5,0	5,8	7,2	10,4	11,6	15,3	19,1	24,5
E.E.R. *	F	3,5	3,5	3,6	3,5	3,4	3,5	3,8	3,4	3,4

Condensing system section

Compressor

Compressor type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Number / circuit	n.ro	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Capacity control steps	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Starting current	A	40	46	43	49	101	99	96	96	198
Refrigerant charge R 410A	Kg	To call AERMEC S.p.A. technical office								

Fan

Number x Installed power	n.ro x kW	1 x 0,15	1 x 0,15	1 x 0,25	1 x 0,25	1 x 0,52	1 x 0,52	4 x 0,15	4 x 0,15	4 x 0,15
Air flow	m^3/h	3500	3500	4800	6200	8000	8000	14000	14000	14000

Air handling section

Evaporator

Number	n°	1	1	1	1	1	1	1	1	1

Fan

Nominal air flow	m^3/h	1500	1900	2400	2900	4000	4500	6000	8000	9000
Number	n°	1	1	1	1	2	2	2	2	2
Total installed power	kW	0,47	0,55	0,80	1,00	0,98	1,17	1,31	1,90	2,47
Prevalence guaranteed	Pa	200								

Air filters

Thickness	mm	50	50	50	50	50	50	50	50	50
Efficiency		G4	G4	G4	G4	G4	G4	G4	G4	G4

Hot water heating coil (accessory) BRT2

(3) Number of rows	n°	2	2	2	2	2	2	2	2	2
Capacity	kW	16,3	19,2	22,5	25,5	36,1	39,0	57,0	68,9	74,4
Water flow rate	l/h	1440	1690	1980	2250	3180	3440	5020	6070	6550
Pressure drop	kPa	16	24	32	40	44	52	32	44	52

Hot water heating coil (accessory) BRT3

(3) Number of rows	n°	3	3	3	3	3	3	3	3	3
Capacity	kW	22,5	27,0	32,2	37,1	52,1	56,8	81,8	100,4	109,3
Water flow rate	l/h	1980	2380	2840	3270	4590	5000	7150	8850	9630
Pressure drop	kPa	24	36	48	60	57	66	39	57	66

Electrical power

Type	V/ph/Hz	400/3 + N/50

Operating limits

Maximun external temperature	°C	46	46	46	46	46	46	46	46	46
Maximun internal temperature	°C	30	30	30	30	30	30	30	30	30
Minumum internal temperatur	°C	18	18	18	18	18	18	18	18	18
Minimum airflow for the handling section	m^3/h	1375	1615	2120	2500	3285	3610	5045	6672	7595

Sizes base version

Height	mm	1032	1038	1038	1038	1172	1188	1500	1500	1500
Detph	mm	1175	1175	1175	1175	1240	1800	1510	1510	1510
Length	mm	1154	1155	1155	1155	1804	1240	2710	2710	2710
Net weight F vers	Kg	235	250	270	285	435	450	650	675	735

(1) Referring to:
Ambient air 27 °C/ 50% r.h.
Outside air 35 °C

(2) Referring to:
Ambient air 20 °C
Outside air 7 °C bs / 70% U.R.

(3) Referring to:
Ambient air 20 °C
Water 80/70 °C

* Energy index refers to the cooling circuit

Heats pump H (standard)

RTE		025F	030F	040F	050F	080F	090F	100F	150F	200F
(1) Total nominal cooling capacity	kW	10,4	12,3	15,4	18,4	23,6	27,6	36,7	44,7	51,8
(1) Sensible nominal cooling capacity	kW	6,7	8,1	9,6	11,9	15,4	18,5	25,5	29,2	34,3
(1) Cooling input capacity	kW	2,4	2,9	3,3	3,9	5,3	6,1	8,0	10,7	12.2
(1) Chooling input current	A	4,7	5,1	5,8	7,3	10,5	11,7	15,4	19,2	24,6
E.E.R.*		3,4	3,4	3,5	3,5	3,4	3,5	3,7	3,4	3,4

Performance H version

(2) Heating capacity	kW	11,0	12,4	16,1	18,4	24,2	27,9	37,0	46,6	53,2
(2) Heating input capacity	kW	2,5	2,6	3,6	3,7	5,1	5,6	7,5	9,7	10,9
(2) Chooling input current	A	4,8	4,55	6,1	6,8	9,9	11,0	14,5	17,5	22,9
C.O.P.*		3,5	3,8	3,5	3,7	3,7	3,8	4,0	3,9	3,9

Condensing system Section

Compressor

Compressor type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Number / circuit	n.ro	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
Capacity control steps	%	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100	0 - 100
Starting current	A	40	46	43	49	101	99	96	96	198
Refrigerant charge R 410 A	Kg	To call AERMEC S.p.A. technical office								

Fan

Number x Installed power	n.ro x Kw	1 x 0,15	1 x 0,15	1 x 0,25	1 x 0,25	1 x 0,52	1 x 0,52	4 x 0,15	4 x 0,15	4X0,15
Air flow	m³/h	3500	3500	4800	6200	8000	8000	14000	14000	14000

Air handling section

Evaporator

Number	n°	1	1	1	1	2	2	2	2	2

Fan

Nominal air flow	m³/h	1500	1900	2400	2900	4000	4500	6000	8000	9000
Number	n°	1	1	1	1	2	2	2	2	2
Total installed power	kW	0,47	0,55	0,80	1,00	0,98	1,17	1,31	1,90	2,47
Prevalence guaranteed	Pa	200								

Air filters

Thickness	mm	50	50	50	50	50	50	50	50	50
Efficiency		G4	G4	G4	G4	G4	G4	G4	G4	G4

Hot water heating coil (accessory) BRT2

Number of rows	n°	2	2	2	2	2	2	2	2	2
(3) Capacity	kW	16,3	19,2	22,5	25,5	36,1	39,0	57,0	68,9	74,4
Water flow rate	l/h	1440	1690	1980	2250	3180	3440	5020	6070	6550
Pressure drop	kPa	16	24	32	40	44	52	32	44	52

Hot water heating coil (accessory) BRT3

Number of rows	n°	3	3	3	3	3	3	3	3	3
(3) Capacity	kW	22,5	27,0	32,2	37,1	52,1	56,8	81,8	100,4	109,3
Water flow rate	l/h	1980	2380	2840	3270	4590	5000	7150	8850	9630
Pressure drop	kPa	24	36	48	60	57	66	39	57	66

Electrical power

Type	V/ph/Hz	400/3 + N/50

Operating limits

Maximum external temperature in cooling mode	°C	46	46	46	46	46	46	46	46	46
Maximum internal temperature in cooling mode	°C	30	30	30	30	30	30	30	30	30
Minimum internal temperature in cooling mode	°C	18	18	18	18	18	18	18	18	18
Minimum external temperature in h. p. functioning	°C	-10	-10	-10	-10	-10	-10	-10	-10	-10
Maximum external temperature in h. p. functioning	°C	20	20	20	20	20	20	20	20	20
Minimum intenal temperature in h. p. functioning	°C	10	10	10	10	10	10	10	10	10
Minimum airflow for the handling section	m³/h	1375	1615	2120	2500	3285	3610	5045	6672	7595

Sizes base version

Height	mm	1032	1038	1038	1038	1172	1188	1500	1500	1500
Detph	mm	1175	1175	1175	1175	1240	1800	1510	1510	1510
Length	mm	1154	1155	1155	1155	1804	1240	2710	2710	2710
Net weight	Kg	245	260	280	300	455	470	690	710	770

(1) Referring to:
Ambient air 27 °C / 50% R.H.
Outside air 35 °C

(2) Referring to:
Ambient air 20 °C
Outside air 7 °C bs / 70% R.H.

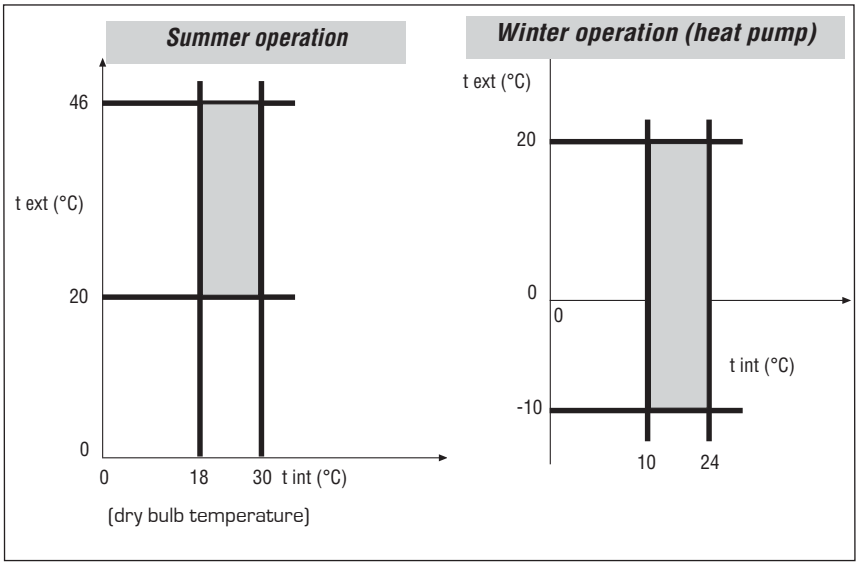
(3) Referring to:
Ambient air 20 °C
Water 80/70 °C

* Energy index refers to the cooling circuit

Operating limits

In the standard configuration, the units are not suitable for installation in places with saline atmospheres. Maximum limits for water flow rate to the heat echanger are shown in the pressure drop graph. Operating limits are shown in the side diagram.

N.B: If you wish to operate the unit outside the limits indicated in the diagram, please contact AERMEC R&D Departement.
Should the unit be positioned in particularly windy areas windbreak barriers must be arranged for in order to prevent DCPX device malfunction.



Model		025	030	040	050	080	090	100	150	200
Maximum external temperature in cooling mode	°C	46	46	46	46	46	46	46	46	46
Minimum external temperature in cooling mode	°C	20	20	20	20	20	20	20	20	20
Maximum internal temperature in cooling mode	°C	30	30	30	30	30	30	30	30	30
Minimum internal temperature in cooling mode	°C	18	18	18	18	18	18	18	18	18
Minimum external temperature in heat pump function	°C	-10	-10	-10	-10	-10	-10	-10	-10	-10
Maximum external temperature in heat pump function	°C	20	20	20	20	20	20	20	20	20
Maximum internal temperature in heat pump function	°C	24	24	24	24	24	24	24	24	24
Minimum internal temperature in heat pump function	°C	10	10	10	10	10	10	10	10	10

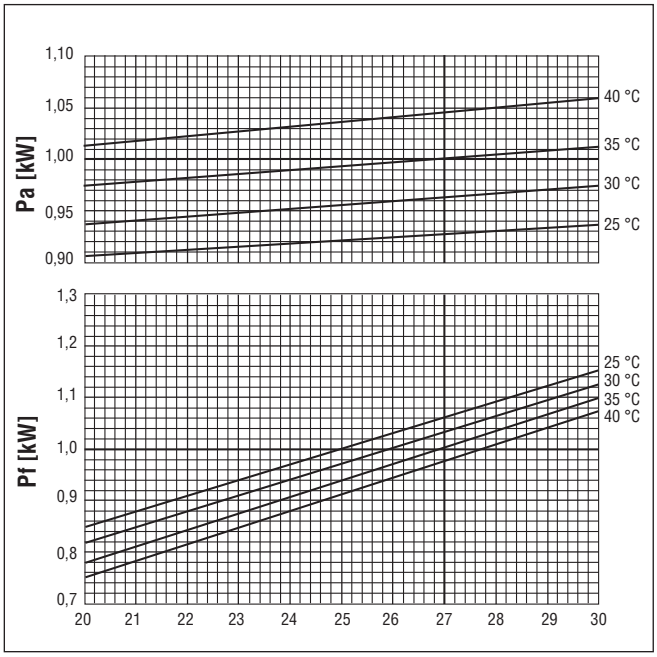
NOTA: Le dimensioni riportate sono comprensive dell'unità base.

Cooling capacity and total input power

The cooling capacity and electrical input power in conditions other than the nominal conditions are obtained by multiplying the nominal values (Pf, Pa) by the respective corrective coefficients (Cf, Ca).
The diagram below gives the correction factors to be applied to rooftop units during cooling. For each curve, the diagram shows the external air temperature which it refers to.

KEY	
Pf	Cooling Capacity
Pa	Absorbed power fan excluded
Cf	Corrective coefficient for cooling capacity
Ca	Corrective coefficient for heanting capacity
d.b.	Dry bulb
R.H.	Relative humidity

TABLE1 CORRECTIVE COEFFICIENTS FOR COOLING CAPACITY AND INPUT POWER



The data in table 1 refer to the nominal air flow rate **(Wn)**.
For air flow values **(W)** other than the nominal value use the cooling capacity correction factors given in the following chart.
The input power is not significantly affected by variations in the flow rate.

CORRECTIVE COEFFICIENTS FOR THE W DIFFERENT FROM THE NOMINAL VALUE					
W/Wn	0,8	0,9	1	1,1	1,2
Cf	0,967	0,985	1	1,013	1,024

NOTA: I pesi riportati sono comprensivi dell'unità base (BAS) e seguono il flusso dell'aria.

Thermal capacity and total input power

The heating capacity and the absorbed electric power in conditions either than the nominal ones, can be obtained by multiplying the nominal values (Pt, Pa) with their respective correction factors (Ct, Ca).
The following diagram makes it possible to obtain the corrective co-efficients; indicated next to is the outside temperature with dry bulb with variable relative humidity , in accordance with the data shown in the table below.
Capacities do not include defrosting periods.

KEY	
Pt	Cooling Capacity
Pa	Absorbed power fan excluded
Ct	Corrective coefficient for cooling capacity
Ca	Corrective coefficient for heanting capacity
b.s.	Dry bulb
Te	d.b. temperature of the air to be treated

Variation of the total performances on the RTE units as the relative humidity varies maintaining the dry bulb temperature constant

VARIABLE RELATIVE HUMIDITY					
U.R. %	30	40	50	60	70
Coef. corr (°C)	0.89	0.94	1.00	1.06	1.12

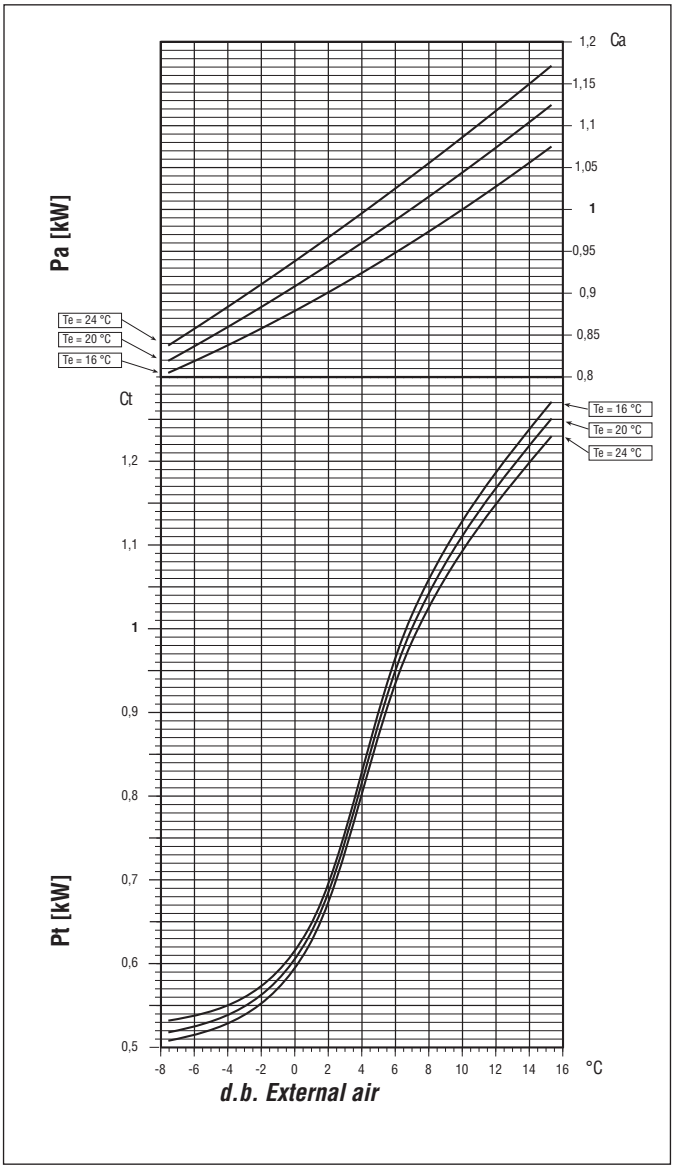
Variations of the sensible capacities on the RTE units as the relative humidity varies keeping the dry bulb temperature constant:

VARIABLE RELATIVE HUMIDITY					
U.R. %	30	40	50	60	70
Coef. corr (°C)	1.23	1.11	1.00	0.89	0.79

Example: if RTE090F supplies 22,0 kW tot. cooling cap. and 16,5 kW sensible cool. cap. at 27°C and 50% R.H.;
Then at 27°C and 40% R.H. it will supply respectively: 22,0x0,94=20,7 kW and 16,5x1,11=18,3 kW.

WARNING Reductions in the outdoor unit air flow are not permitted in heat pump operation.

TABLE2 CORRECTIVE COEFFICIENTS FOR HEATING CAPACITY AND ABSORBED POWER FOR H VERSION



In the heat pump performance table the y-axis shows a temperature that refers to the following table

Temp. on y axis	°C	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16
Temp. B.S. D.B. Temp. °C	°C	-8	-6	-4	-2	0	2	4	6	8	10	12	14	16
Umid. Rel. Rel. Humid.	%	90	90	85	80	75	75	70	70	70	65	65	65	65

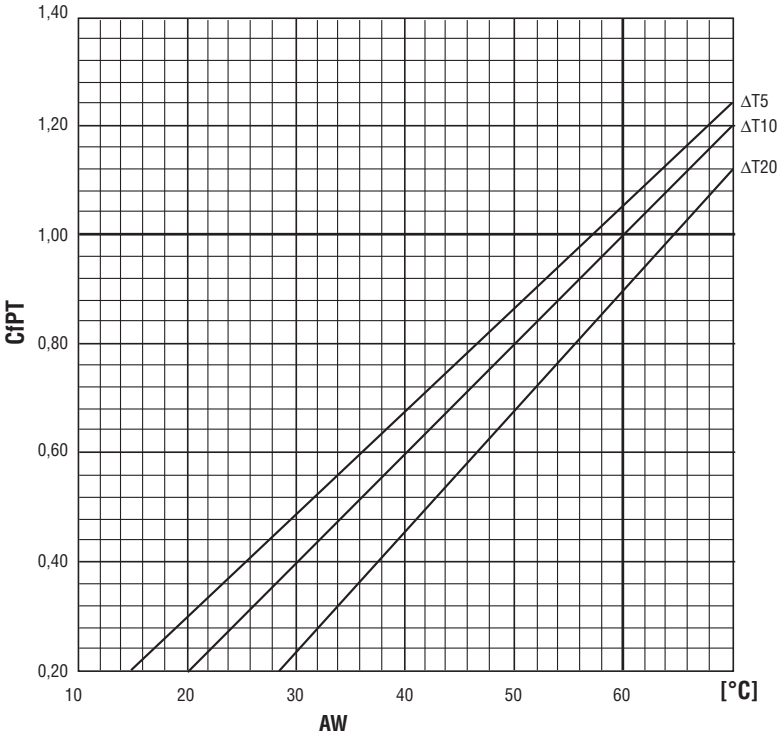
Heating coil

The RTE units can be equipped with water heating coils (accessory) with actuated three-way modulating valve.
The operation data of the water heating coils are summarised in the following table for all the sizes, both for two and three rows coils.

KEY	
CfPT	**Corrective coefficient**
AW	**Water temperature difference on input- air on input [°C]**
[T]	**Water thermal drop [°C]**

Correction coefficients for the water heating coils:
Example:
the performance of the hot water coil installed on a RTE 040 that functions in the the following design conditions needs to be known:
·Temperature of the available heating water: 70 °C;
Ambient temperature 22 °C;
·Thermal drop in the water to be respected: DT20=20K .
In accordance with the data shown in the technical data sheet, the coil supplies 32.2 kW with air at 20°C and water 80/70°C.
The temperature difference between the water on input into the coil and the treated air is 70-22=48 K DAW
From the diagram it is Pta=0.63
Thus the coil, at the new operating conditions, can supply 32.2x0.63=20.3 kW.

TABLE 3 PERFORMANCES OF WATER HEATING COILS

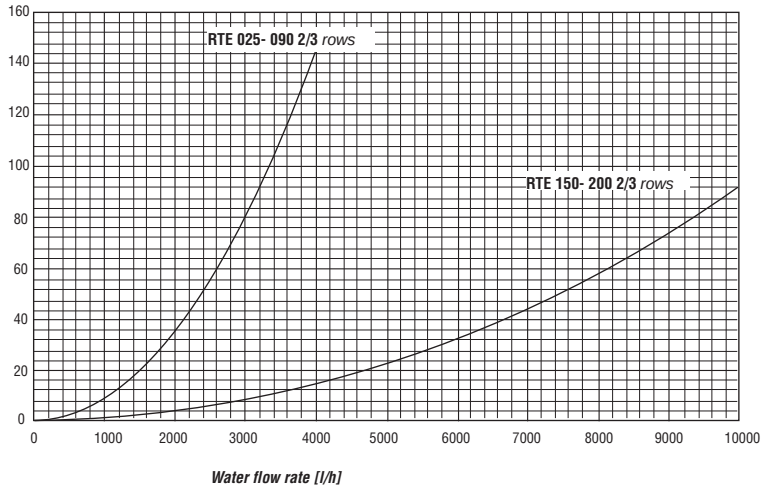


Pressure drop

TABLE 4WATER COIL PRESSURE DROP

NOTE

This graph shows the pressure drop on the water side of the heating coils of the RTE units from 025 to 200. Please note that even though there are two types of coil for each size (2 or 3 rows), they are sized so that the pressure drop is the same at the same water flow rate.
The pressure drops shown in the graph also include those due to the three-way valves, therefore they also refer to the pressure differences measured between the inlet and the outlet mouth of the Rooftop.



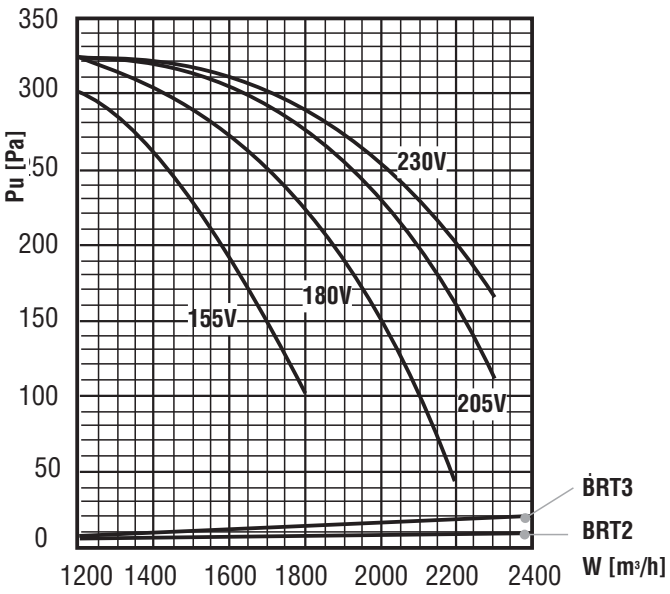
AIR FLOW

The RTE units have one or two double-inlet centrifugal fans with forward blades balanced statically and dynamically; for the models from 025 to 050 they are directly coupled, from the model 080 to 200 coupled by means of trapezoidal belts and adjustable pulleys. The fan assembly is supported by rubber dampers.
The motors are three-phase with caged rotor, protection class IP55, single pole.
The belt pulleys are fitted with tapered collector and are balanced statically and dynamically.

TABLE 5AIR FLOW SUPPLY FAN

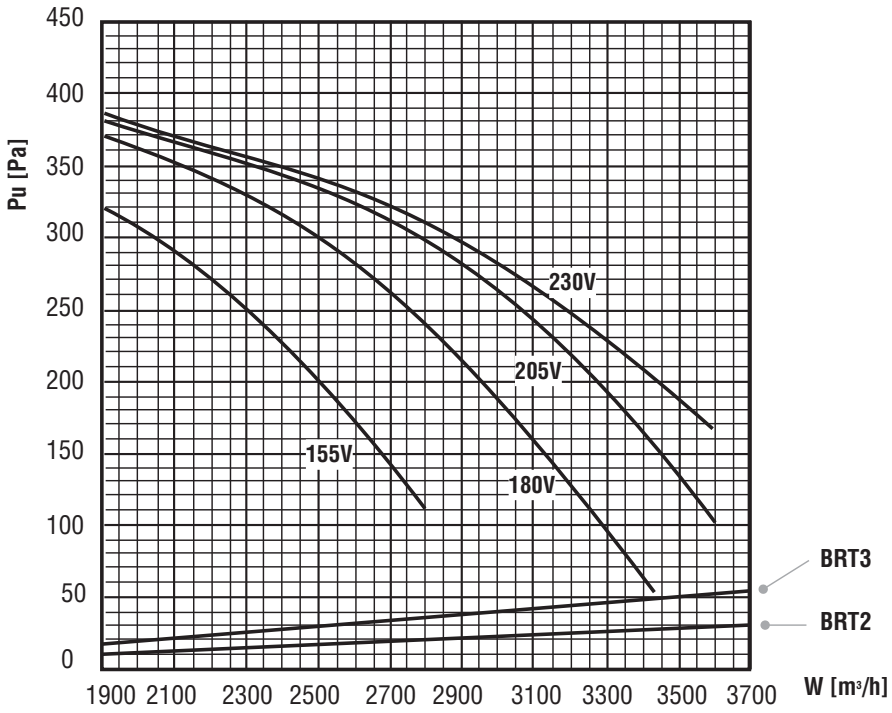
SUPPLY FAN STATIC PRESSURE
RTE 025 - 030

KEY	
Pu	Available static pressure
W	Total air flow
BRT2	Two-rows coil pressure drop
BRT3	Three-rows coil pressure drop



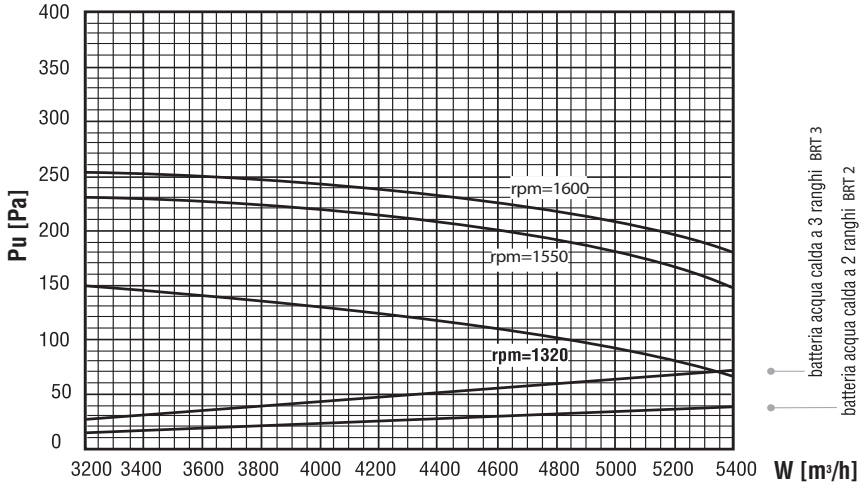
SUPPLY FAN STATIC PRESSURE
RTE 040 - 050

KEY	
Pu	Available static pressure
W	Total air flow
BRT2	Two-rows coil pressure drop
BRT3	Three-rows coil pressure drop



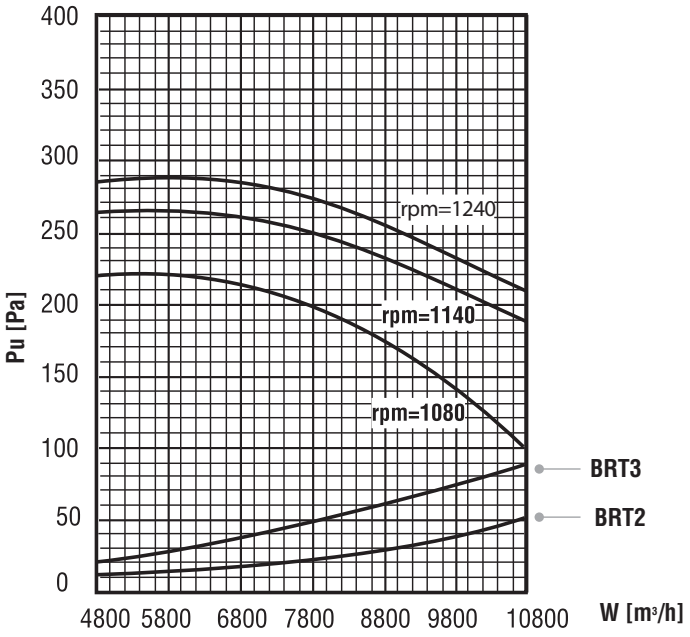
SUPPLY FAN STATIC PRESSURE
RTE 080 - 090

KEY	
Pu	Available static pressure
W	Total air flow
BRT2	Two-rows coil pressure drop
BRT3	Three-rows coil pressure drop



SUPPLY FAN STATIC PRESSURE
RTE 100 - 200

KEY	
Pu	Available static pressure
W	Total air flow
BRT2	Two-rows coil pressure drop
BRT3	Three-rows coil pressure drop



VARIATION OF THE MOTOR RPM

To set the ventilation static pressure to the installation requirements, the speeds of the fans may be regulated.
Proceed as follows:
- remove the inspection panel;
- loosen the nuts securing the motor to its mounting assembly;
- remove the drive belt;
- loosen the lock by means of a wrench and turn the mobile part of the pulley to obtain the required diameter;
- tighten the lock;
- replace the belt, adjust its tension and fasten the motor nuts;
- replace the inspection panel.

Each rotations of the mobile part pulley corresponds to a variation of approx. 30 rpm in the fan speed.
For accurate setting check the fan shaft speed with a suitable instrument.
The units are normally supplied with pulley regulated to obtain the following speeds:

MODEL:	025	030	040	050	080	090	100	150	200
Rpm	-	-	-	-	1548	1600	1110	1180	1240

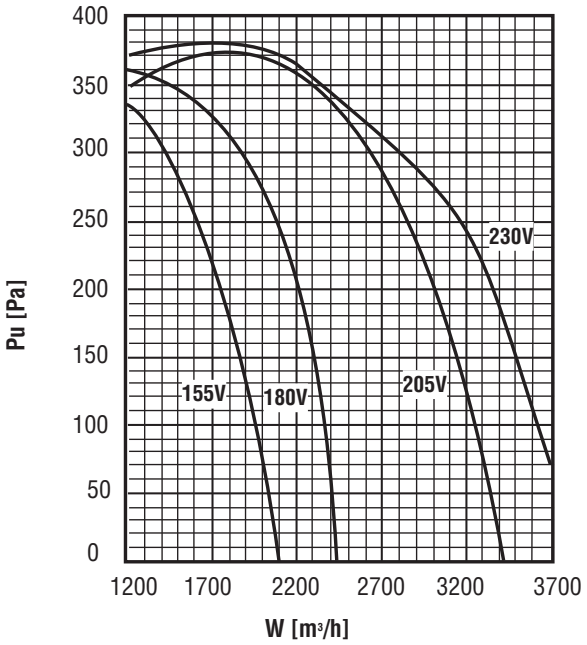
TABLE6 RETURN FAN

The RTE units may be equipped with return fan sections with three-way mixing box (accessory); here below the available static pressure curves are shown.

RETURN FAN PRESSURE

RTE 025 - 050

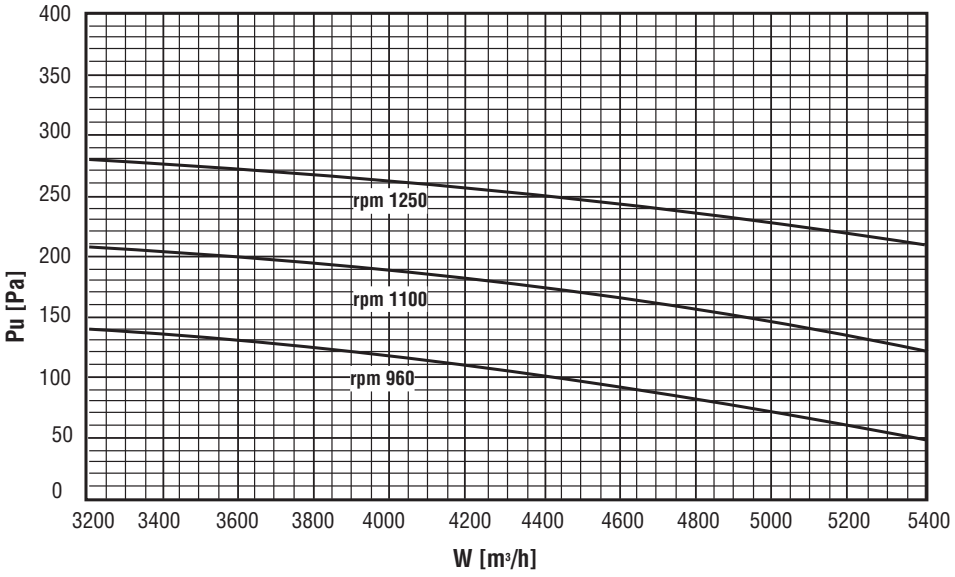
KEY	
Pu	Available static pressure
W	Total air flow



RETURN FAN PRESSURE

RTE 080 - 090

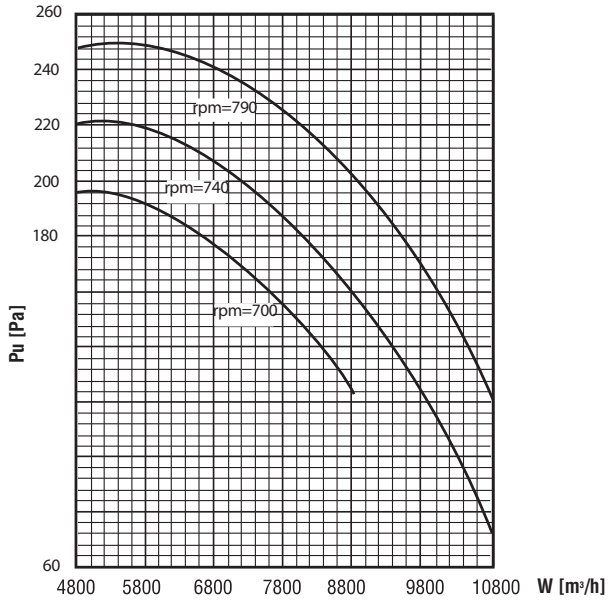
KEY	
Pu	Available static pressure
W	Total air flow



RETURN FAN PRESSURE

RTE 100 - 150 - 200

KEY	
Pu	Available static pressure
W	Total air flow



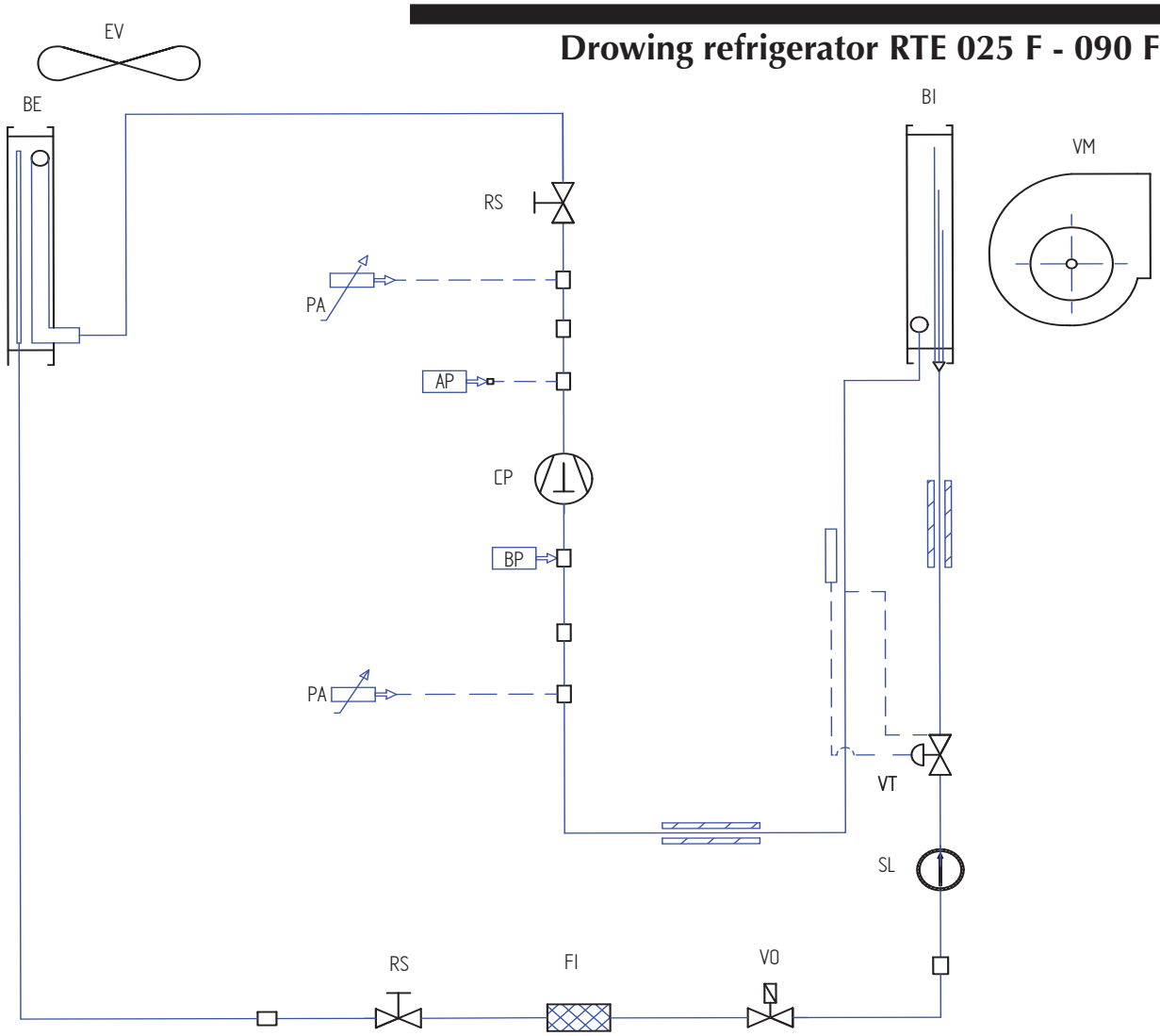
List of pressure equipment - Directive PED 97/23 CE

The table alongside shows the list of pressure equipment and form mounted on the roof-top RTL, according to Directive 97/23 CE PED module A1.

COMPONENT	MODULE
Compressor	D1
Coil	A
Four way valve	Excluded (art. 3.3)
Liquid receiver	D1
High pressor switch	B+D
Safety valve high pressure side	B+D
Safety valve low pressure side	B+D

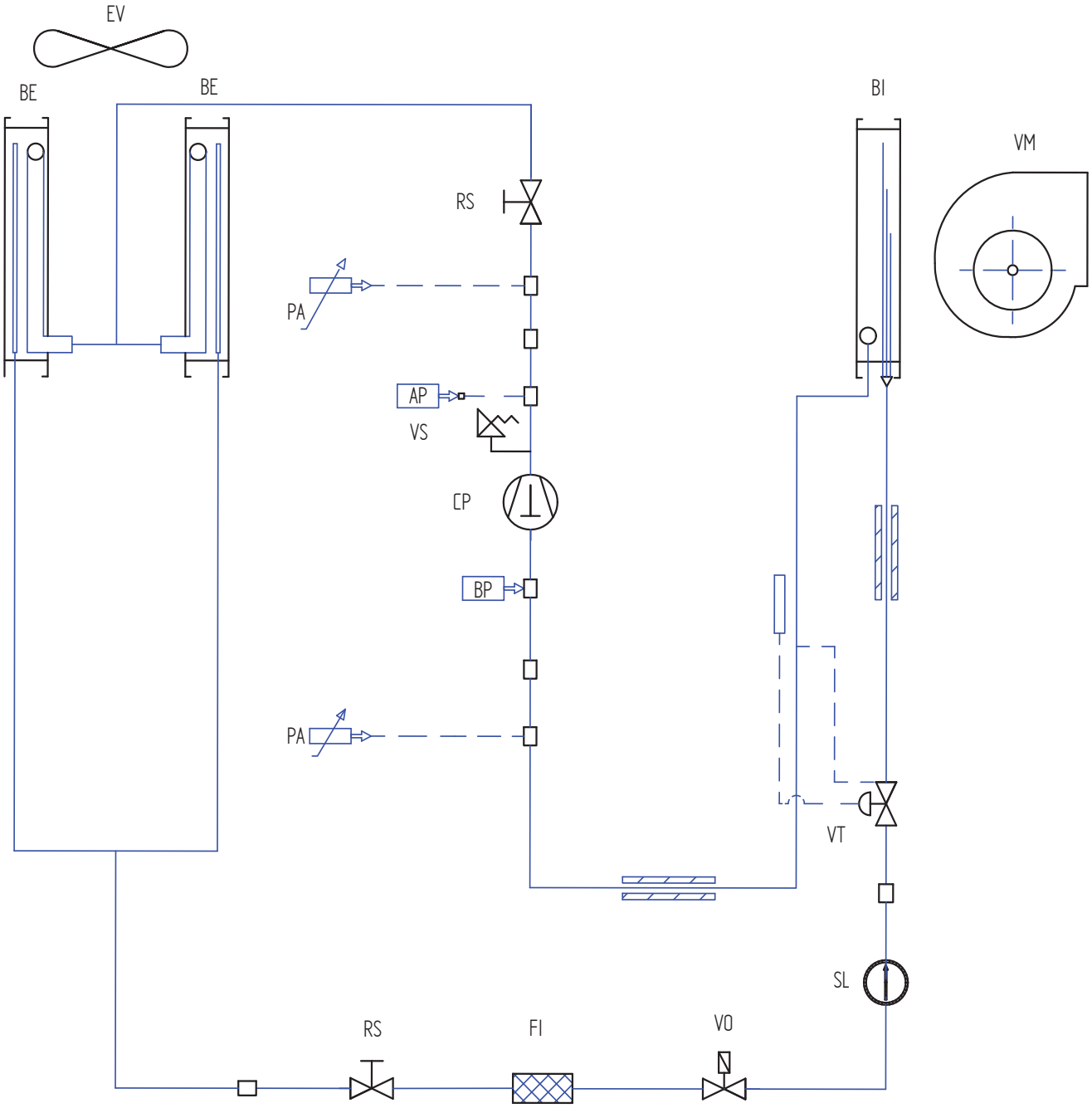
Drowings refrigerators

Drowing refrigerator RTE 025 F - 090 F



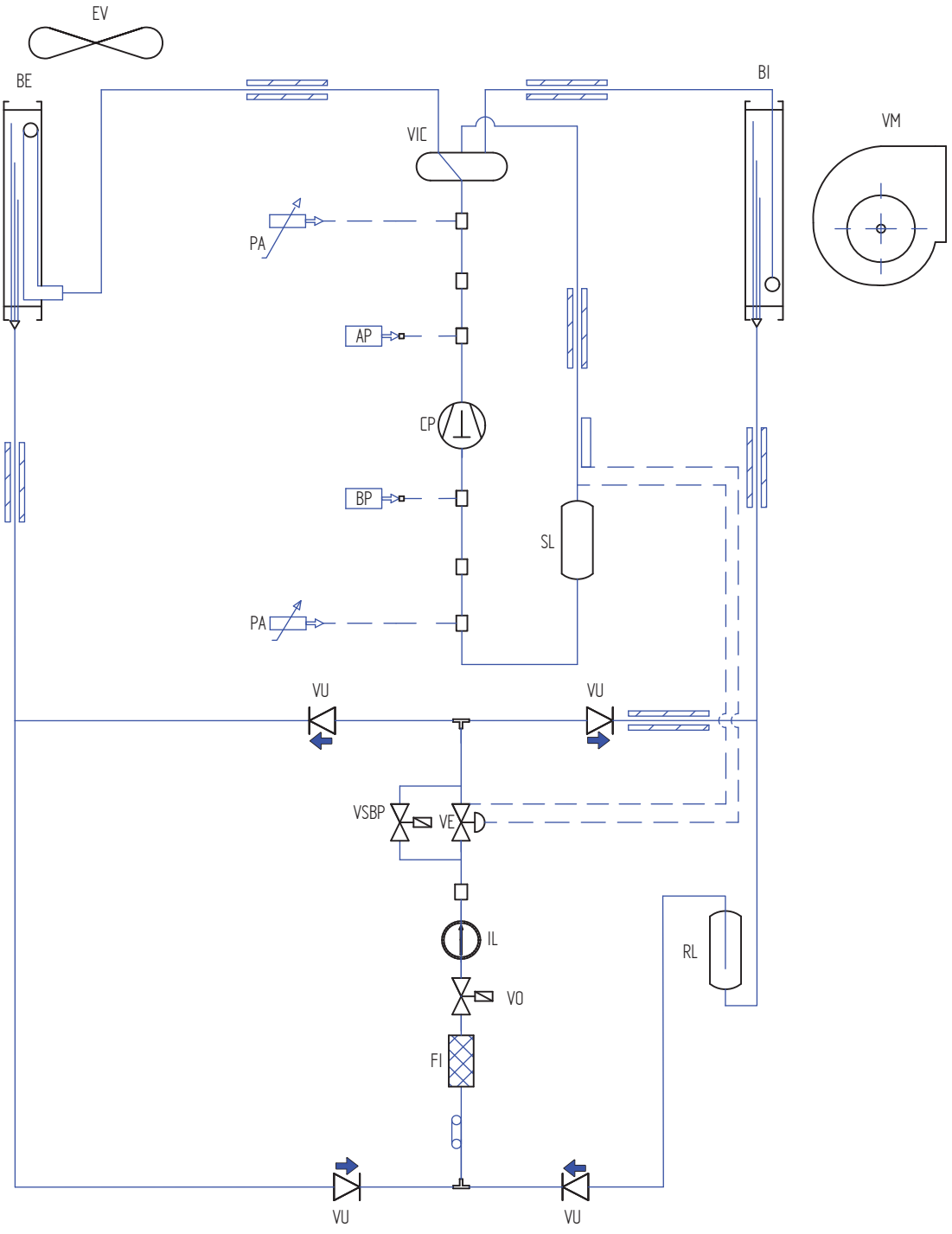
CP	compressor	**FI**	filter
VS	safety valve 30 bar	**VO**	solenoid valve (opzional)
AP	**high pressor switch** (27 bar)	**IL**	liquid and humidity indicator
PA	pressure transducer	**VT**	thermostatic valve
RS	ball valve (opzional)	**VM**	centrifugal fan
EV	axial fan	**BI**	internal coil
BE	external coil	**BP**	low pressure switch (Off 2 bar - on 2,3 bar)

Drowing refrigerator RTE 100 F - 200 F



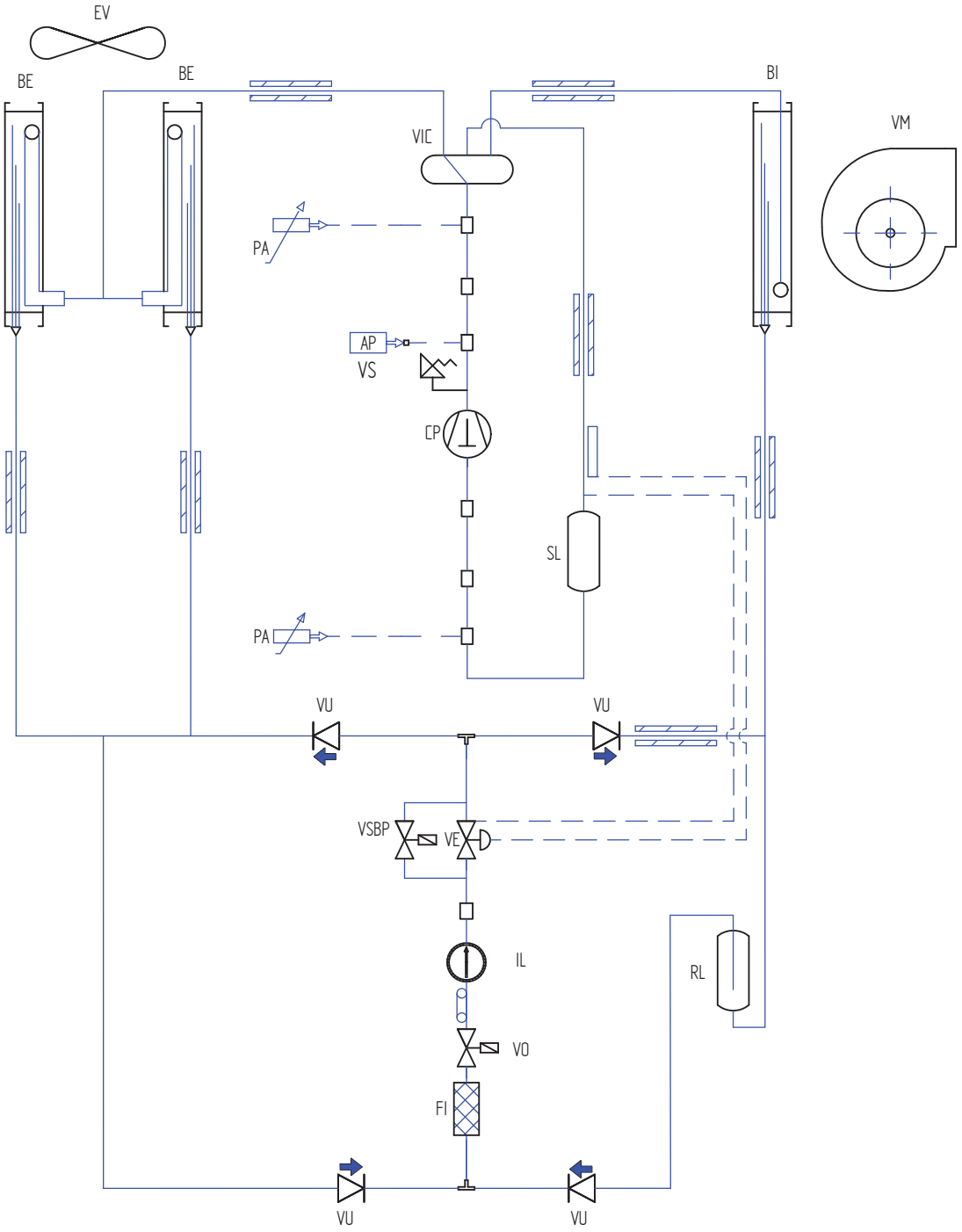
CP	compressore	**FI**	filtro
VS	valvola di sicurezza 30 bar	**VO**	valvola solenoide (opzionale)
AP	pressostato alta pressione (27 bar)	**IL**	indicatore di liquido e umidità
PA	trasduttore di pressione	**VT**	valvola termostatica
RS	rubinetto a sfera (opzionale)	**VM**	ventilatore centrifugo
EV	elettroventilatore	**BI**	batteria interna
BE	batteria esterna	**BP**	pressostato bassa pressione (stacco 2 bar - riarmo 2,3 bar)

Drowing refrigerator RTE 025 H - 090 F



CP	compressor	**VU**	unidirectional valve
VS	safetu valve 30 bar	**VO**	solenoid valve
AP	higt pressor switch (27 bar)	**IL**	liquid and humidity indicator
PA	pressure trasducer	**VT**	thermostatic valve
VIC	four way valve	**VSBP**	vsolenoid valve bypasss
EV	axial fan	**VM**	centrifugal fan
BE	external coil	**BI**	internal coil
FI	filter	**RL**	liquid receiver

Drowing refrigerator RTE 100 H - 200 H



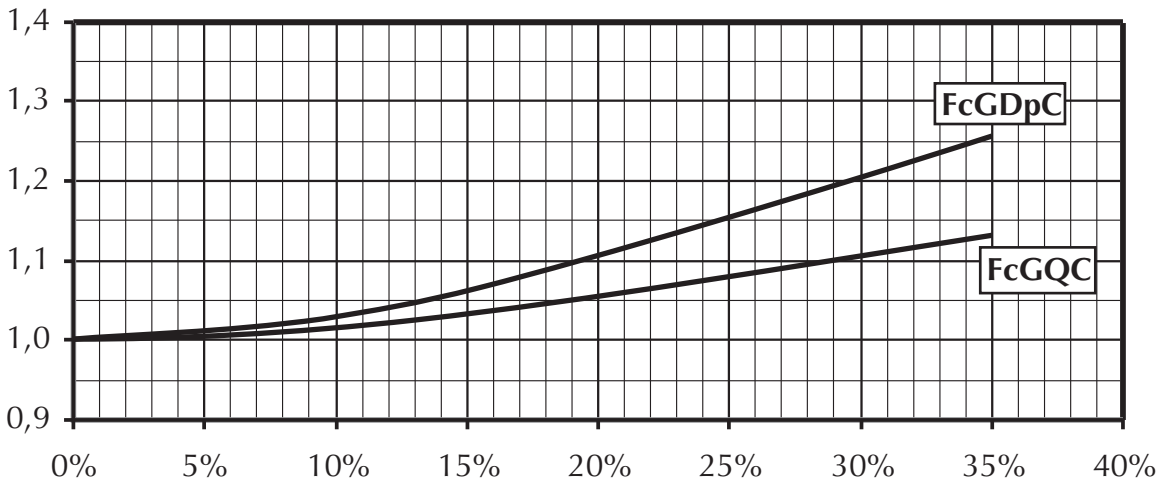
CP	compressor	**VU**	unidirectional valve
VS	safetu valve 30 bar	**VO**	solenoid valve
AP	higt pressor switch (27 bar)	**IL**	liquid and humidity indicator
PA	pressure trasducer	**VT**	thermostatic valve
VIC	four way valve	**VSBP**	solenoid valve bypasss
EV	axial fan	**VM**	centrifugal fan
BE	external coil	**BI**	internal coil
FI	filter	**RL**	liquid receiver

SOUND DATA

TAV 11	Sound pressure*	Sound power band middle frequency (Hz)							Total power	
		125	250	500	1000	2000	4000	8000		
	dB(A)	dB	dB	dB	dB	dB	dB	dB	dB	dB (A)
025	58	79	70	60	61	59	62	51	80	69
030	58	79	70	60	61	59	62	51	80	69
040	61	79	76	63	64	63	64	52	81	72
050	61	79	76	63	64	63	64	52	81	72
080	64	81	68	69	70	67	67	60	82	74
090	64	81	68	69	70	67	67	60	82	74
100	67	81	76	75	73	71	65	54	84	78
150	67	81	76	75	73	71	65	54	84	78
200	67	81	76	75	73	71	65	54	84	78

* Value referred to 1 m distance from the unit, supply fan mouth ducted and in open field.

CORRECTION FACTOR FOR PRESSURE DROP AND WATER FLOW WITH GLYCOL SOLUTIONS

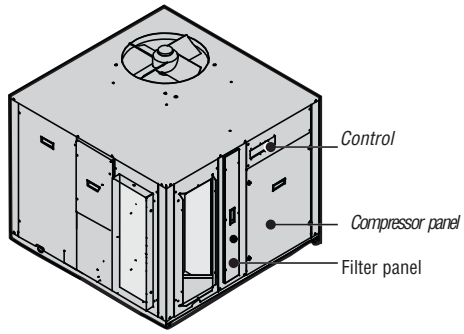


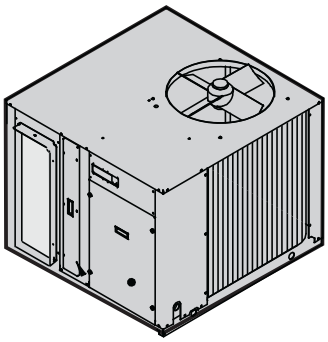
FcGDpC = Pressure drop correction factor.
FcGQC =Water flow correction factor.
The water flow rate and pressure drop correction factors are to be applied directly to the values given for operation without glycol.

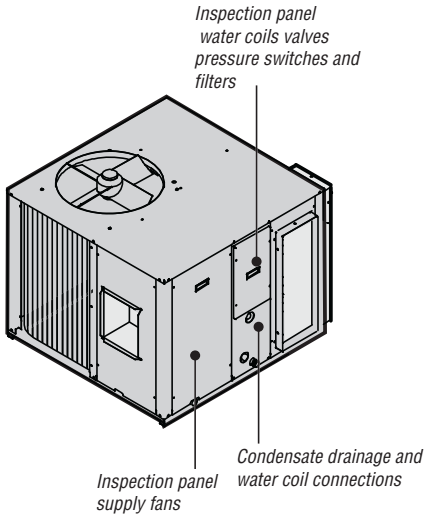
DIMENSIONS

RTE 025 - 030

only recirculation

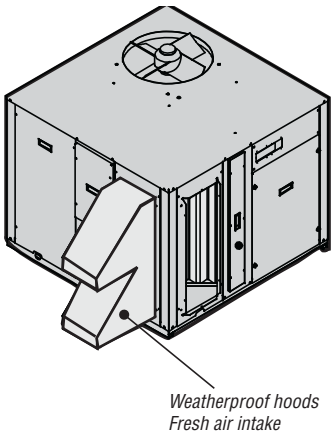


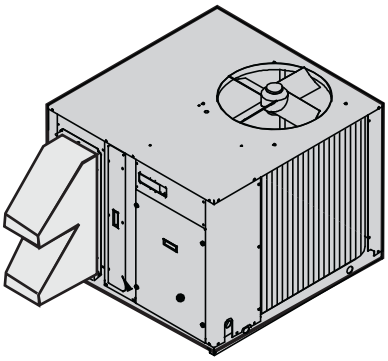


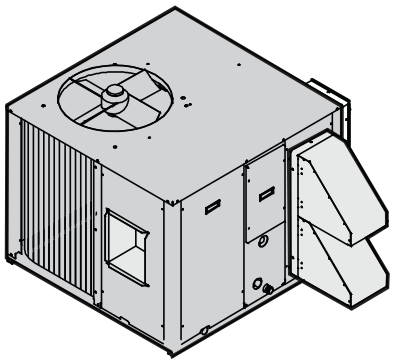


RTE 025 - 030 (SM2)

with two-way mixing box

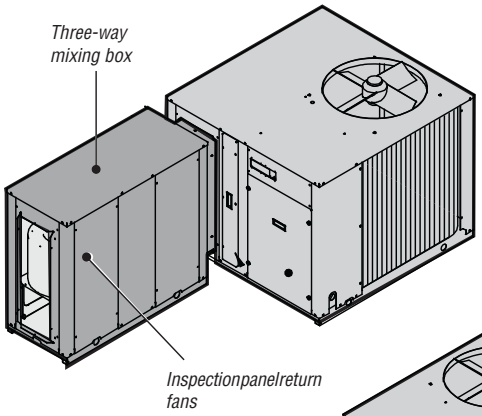


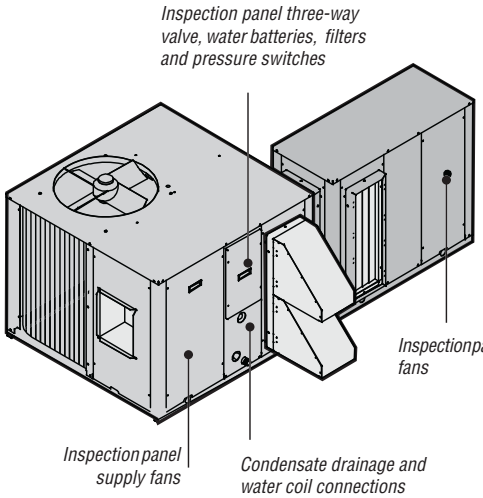


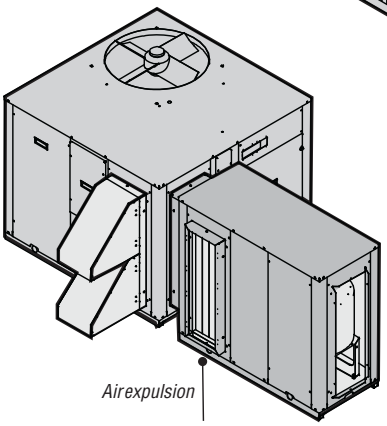


RTE 025 - 030 (SM3)

with three-way mixing box

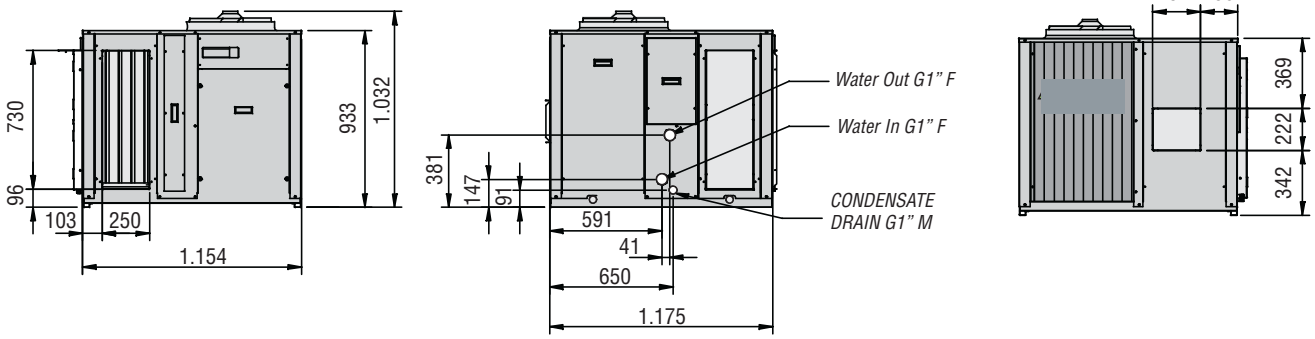


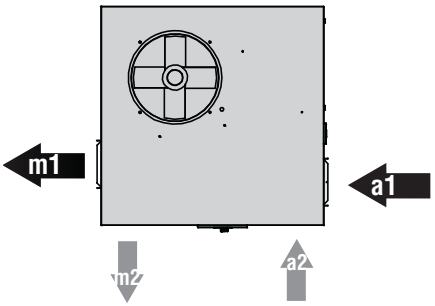




RTE 025 - 030

only recirculation





VENTILATION OPTIONS

- full section supply

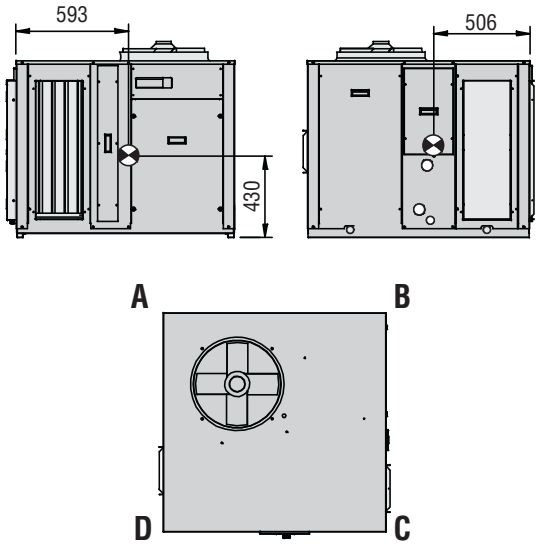
(A1-M1) Front intake - Back supply

(A2-M2) Side intake - Side supply

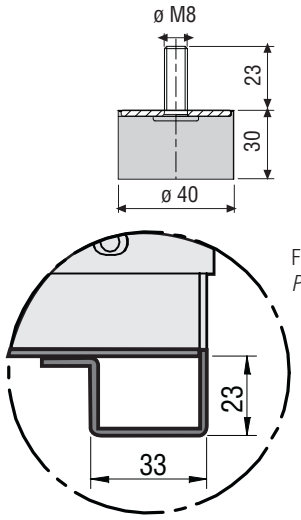
(A1-M2) Front intake - Side supply

(A1-M2) Side intake - Back supply

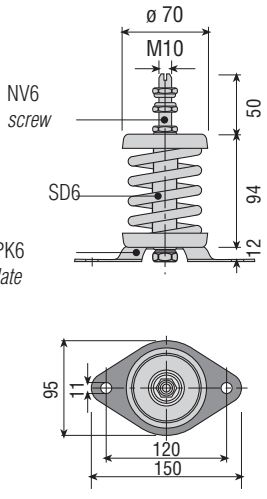
CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



PFA 40/30



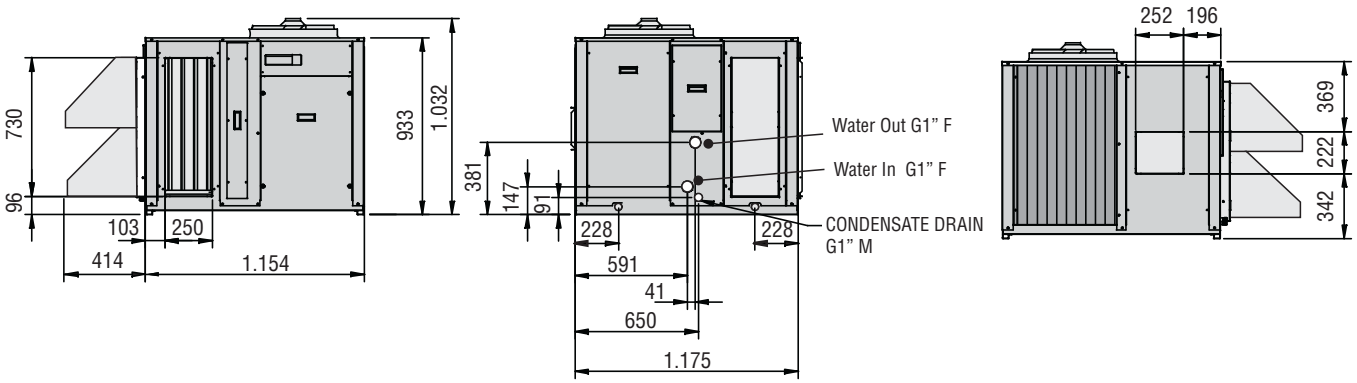
ISOTOP SD6

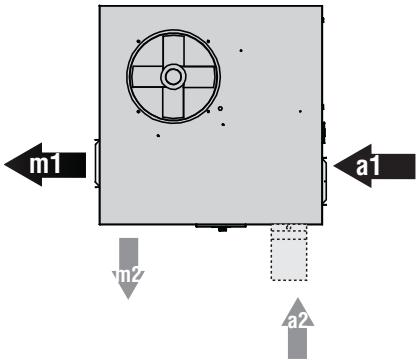


Mod.	weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**025**	195	48	51	50	46	GX170M o PFA40/30
•**030**	200	49	52	51	48	GX170M o PFA40/30
•**025 H**	210	51	55	54	50	GX170M O PFA40/30
• **030 H**	210	51	55	54	50	GX170M O PFA40/30

RTE 025 - 030 (SM2)

with 2-way dampers mixing box





VENTILATION OPTIONS

- supply with mixing box with two-gate dampers

(A1-M1) Front intake - Back supply

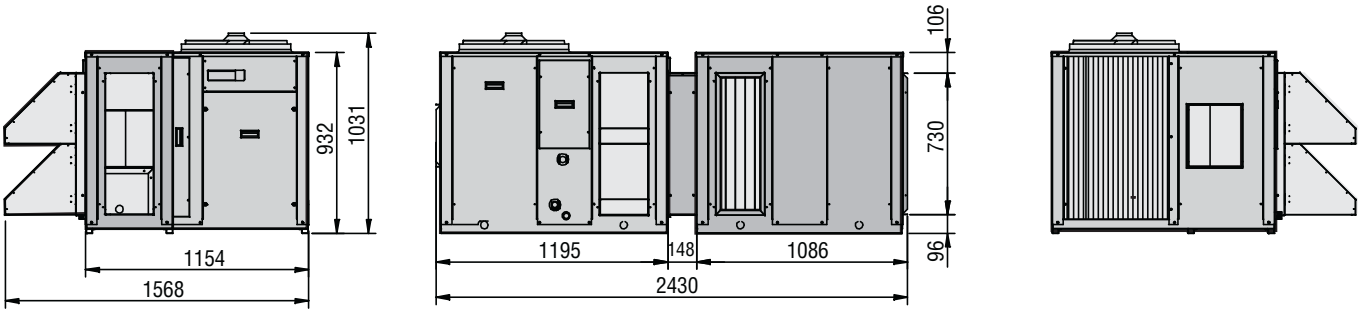
(A2-M2) Side intake - Side supply

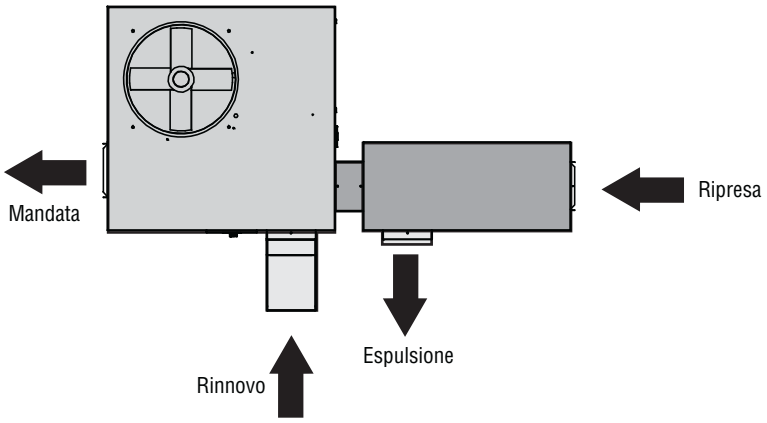
(A1-M2) Front intake - Side supply

(A2-M1) Side intake - Back supply

RTE 025 - 030 (SM3)

with 3-way dampers mixing box

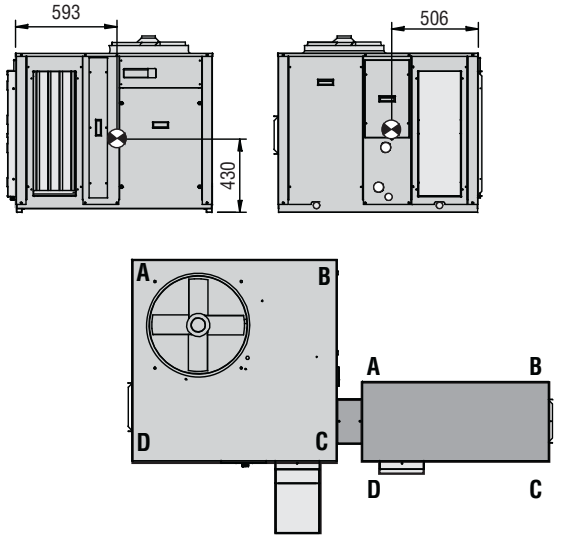




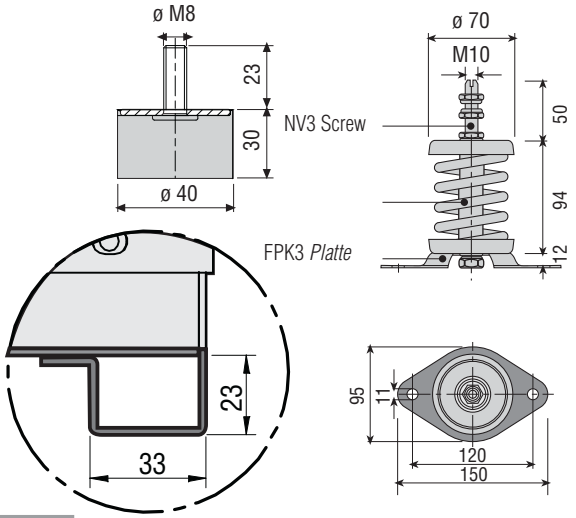
VENTILATION OPTIONS

- supply with mixing box with 3-gate dampers
- **(A1-M1)** Front intake - Back supply
- **(A2-M2)** Side intake - Side supply
- **(A1-M2)** Front intake - Side supply
- **(A2-M1)** Side intake - Back supply

CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



PFA 40/30

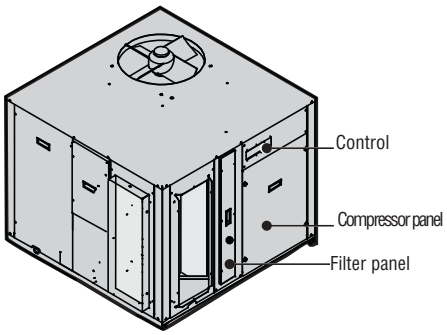


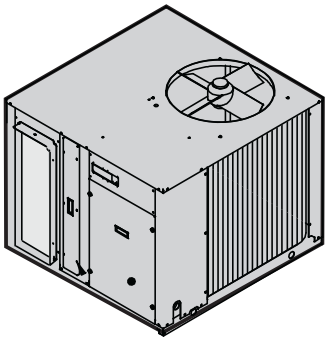
Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**025**	195	48	51	50	46	GX170M o PFA40/30
•**030**	200	49	52	51	48	GX170M o PFA40/30
•**025 H**	210	51	55	54	50	GX170M o PFA40/30
• **030 H**	210	51	55	54	50	GX170M o PFA40/30

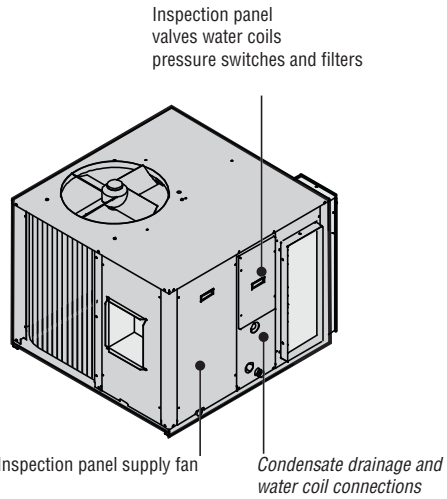
	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**SM3**	80	19	21	21	19	GX55M o PFA40/30

RTE 040 - 050

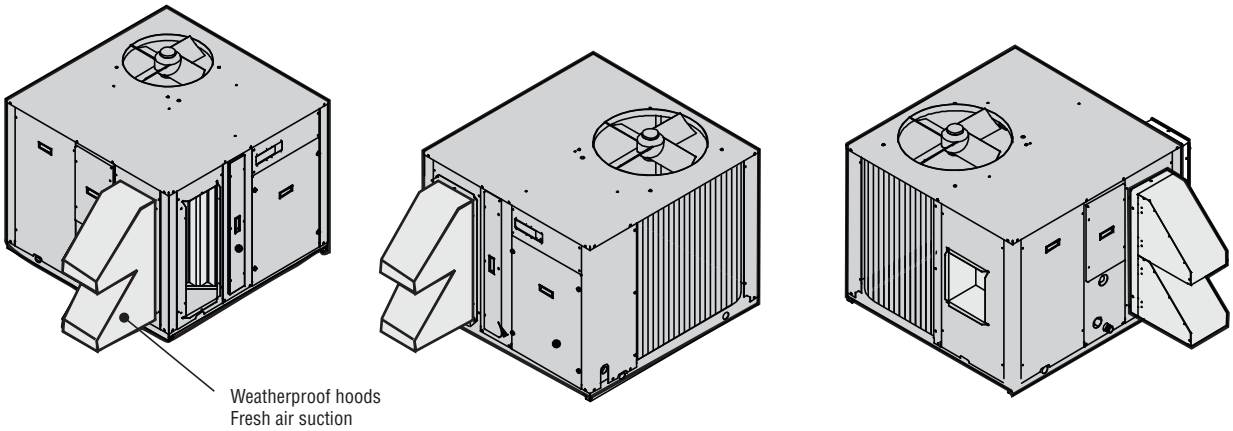
only recirculation



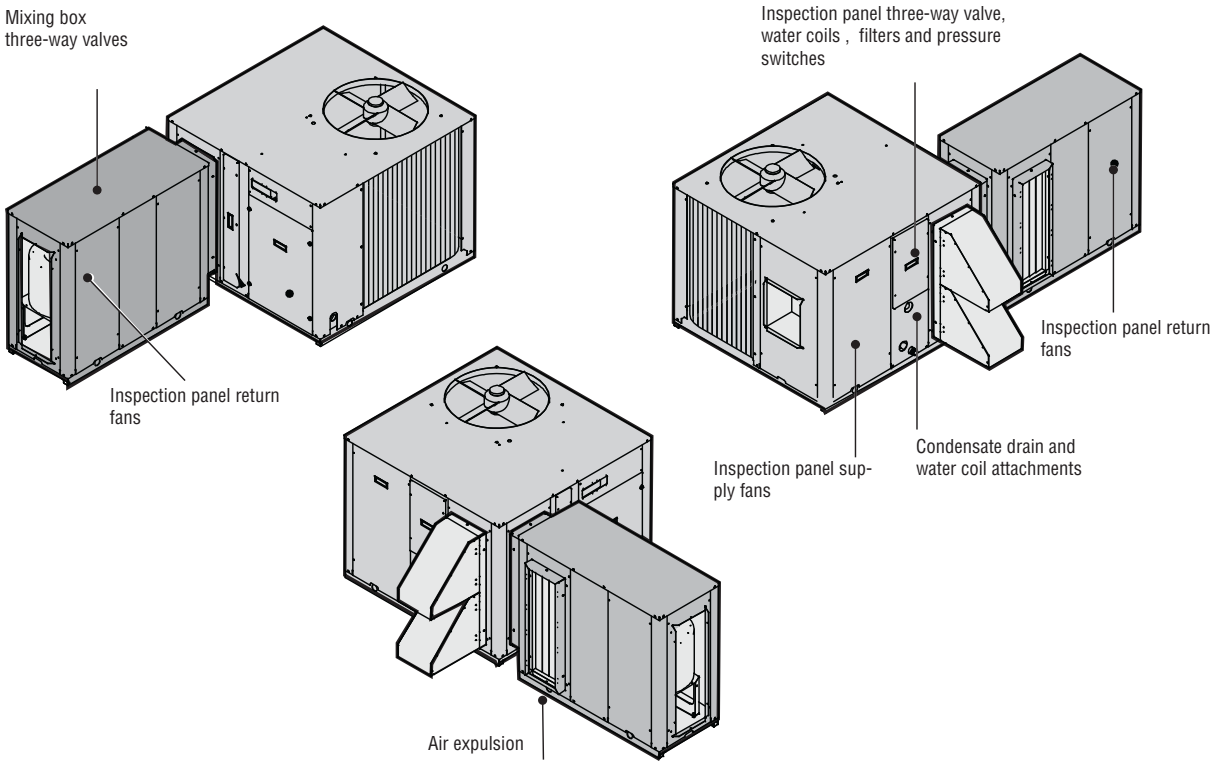




RTE 040 - 050 (SM2)

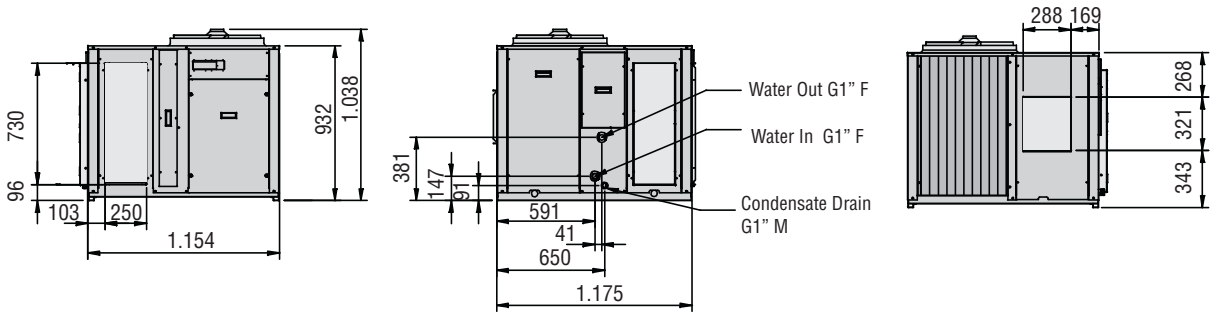


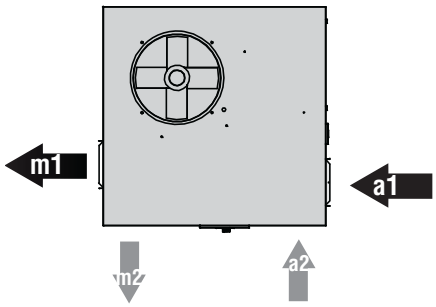
RTE 040 - 050 (SM3)



RTE 040 - 050 (°)

- only recirculation or (A1-M1) or (A2-M2)





VENTILATION OPTIONS

full-section supply

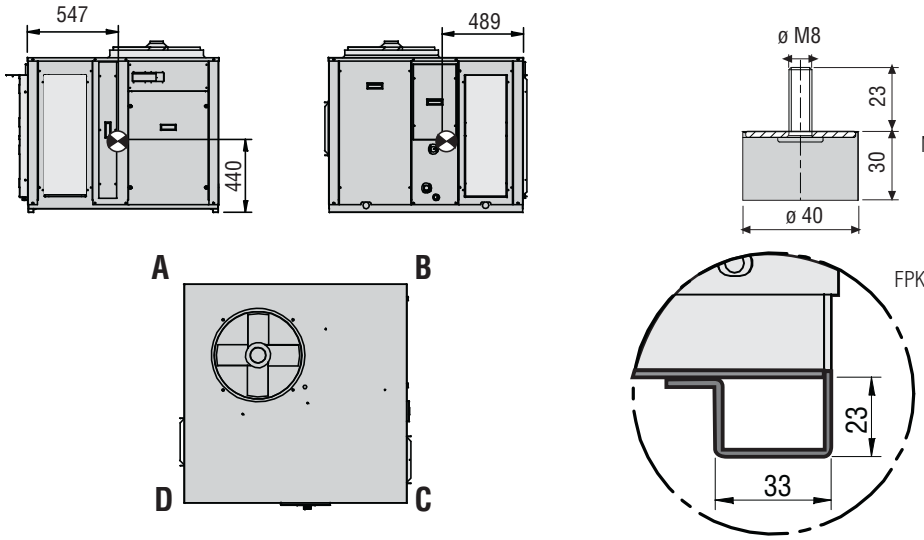
(A1-M1) Front intake - Back supply

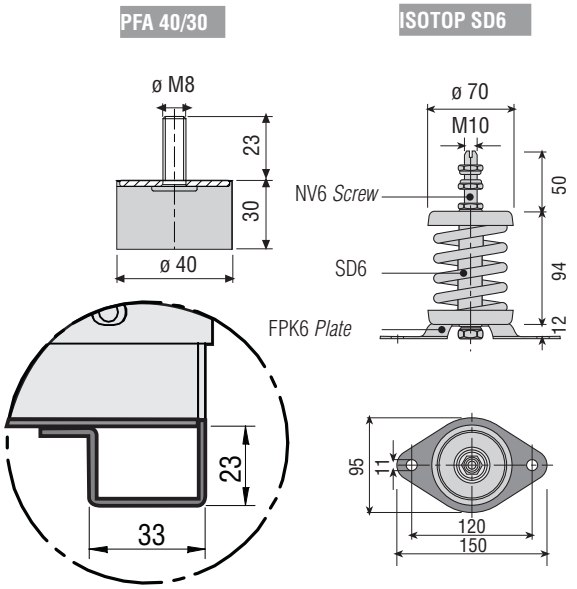
(A2-M2) Side intake - Side supply

(A1-M2) Front intake - Side supply

(A2-M1) Side intake - Back supply

CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS

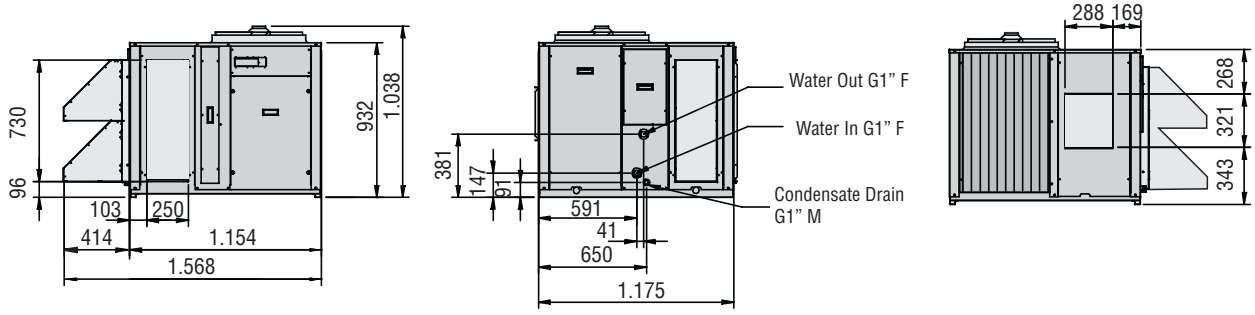


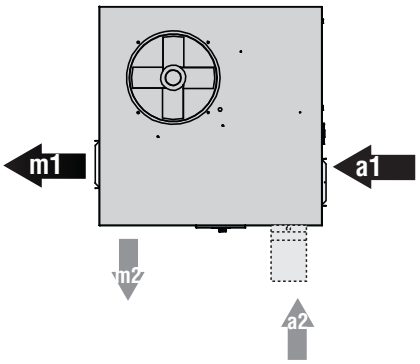


Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**040**	225	52	57	60	56	GX170M o PFA40/30
•**050**	250	59	64	66	61	GX170M o PFA40/30
•**040 H**	240	57	62	63	58	GX170M o PFA40/30
• **050 H**	270	64	69	71	66	GX170M o PFA40/30

RTE 040 - 050 (SM2)

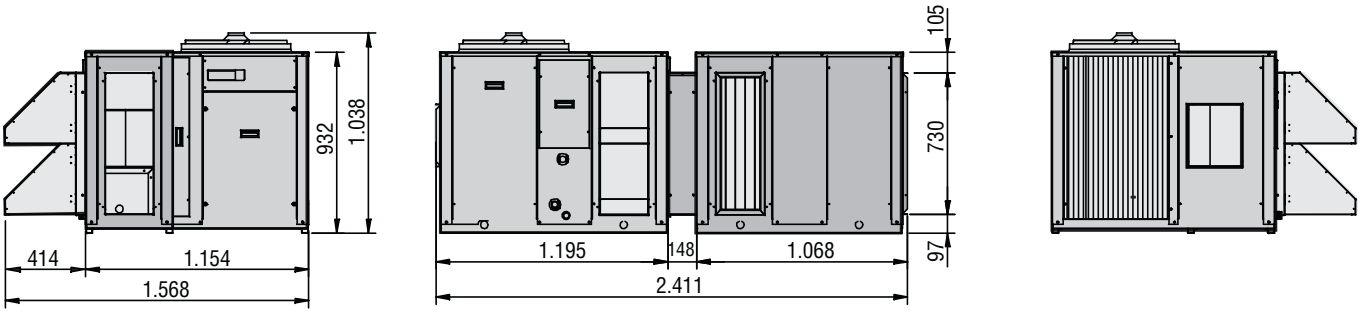
with 2-way dampers mixing box

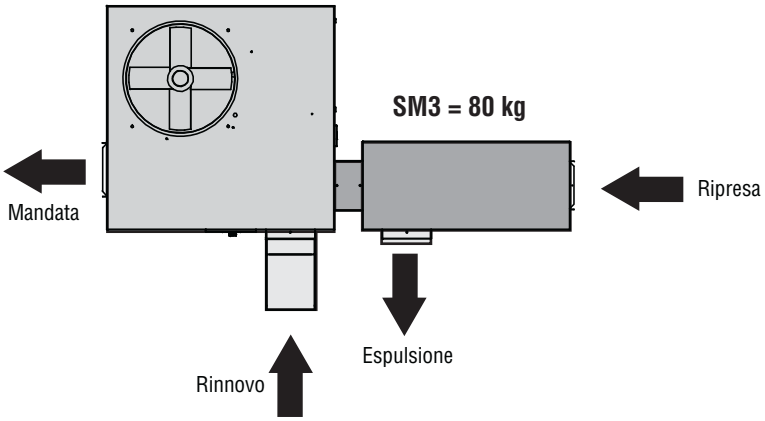




VENTILATION OPTIONS
- two-gate valve mixing box supply
(A1-M1) Front intake - Back supply
(A2-M2) Side intake - Side supply
(A1-M2) Front intake - Side supply
(A2-M1) Side intake - Back supply

RTE 040 - 050 (SM3)
with 3-way dampers mixing box





VENTILATION OPTIONS

- supply with mixing box with three-gate valves

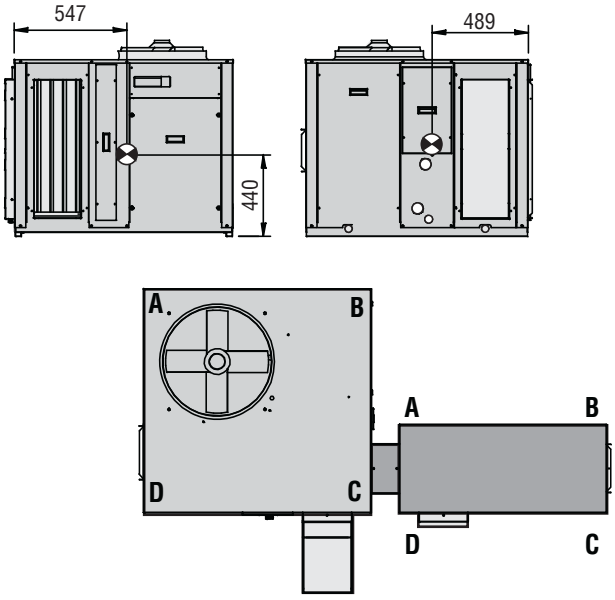
(A1-M1) Front intake - Back supply

(A2-M2) Side intake - Side supply

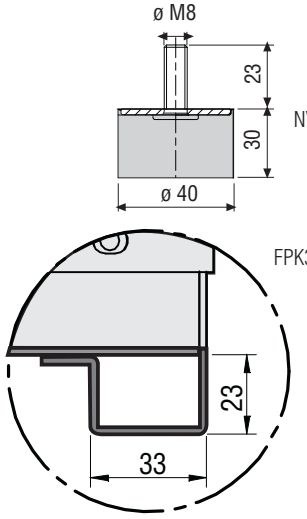
(A1-M2) Front intake - Side supply

(A2-M1) Side intake - Back supply

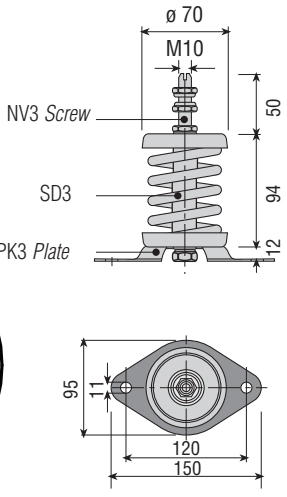
CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



PFA 40/30



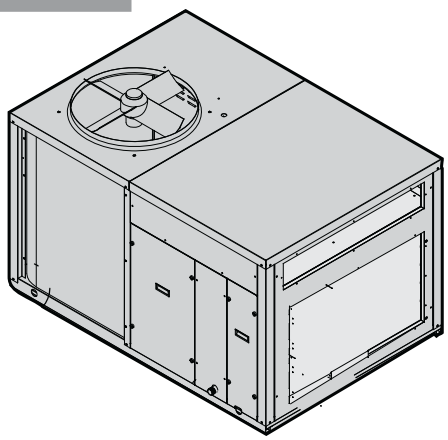
ISOTOP SD3

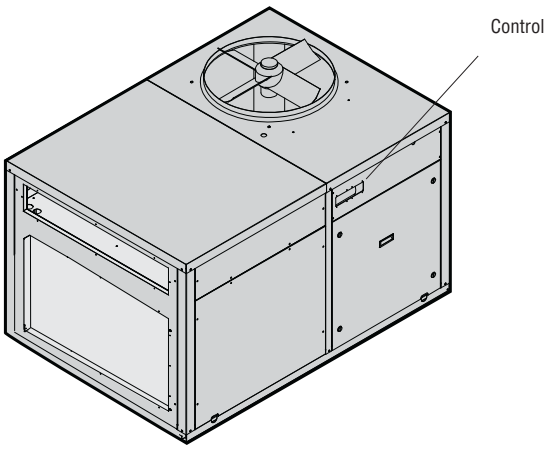


Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**040**	225	52	57	60	56	GX55M o PFA40/30
•**050**	250	59	64	66	61	GX55M o PFA40/30
•**040 H**	240	57	62	63	58	GX55M o PFA40/30
• **050 H**	270	64	69	71	66	GX55M o PFA40/30

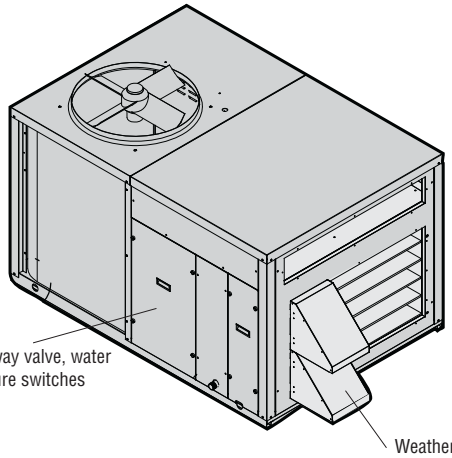
	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**SM3**	80	19	21	21	19	GX55M o PFA40/30

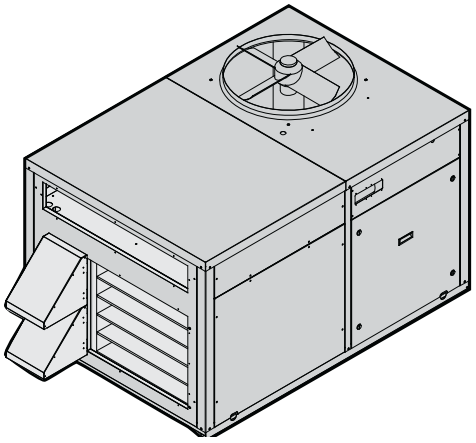
RTE 080 - 090



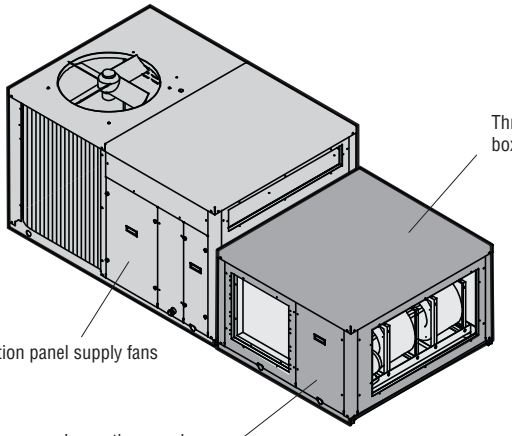


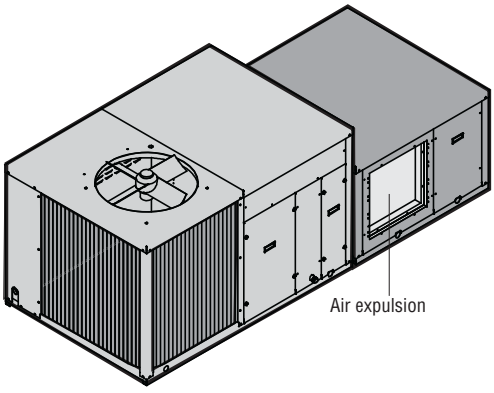
RTE 080 - 090 (SM2)

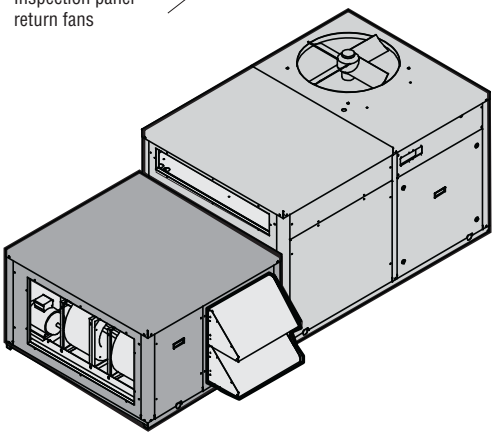




RTE 080 - 090 (SM3)

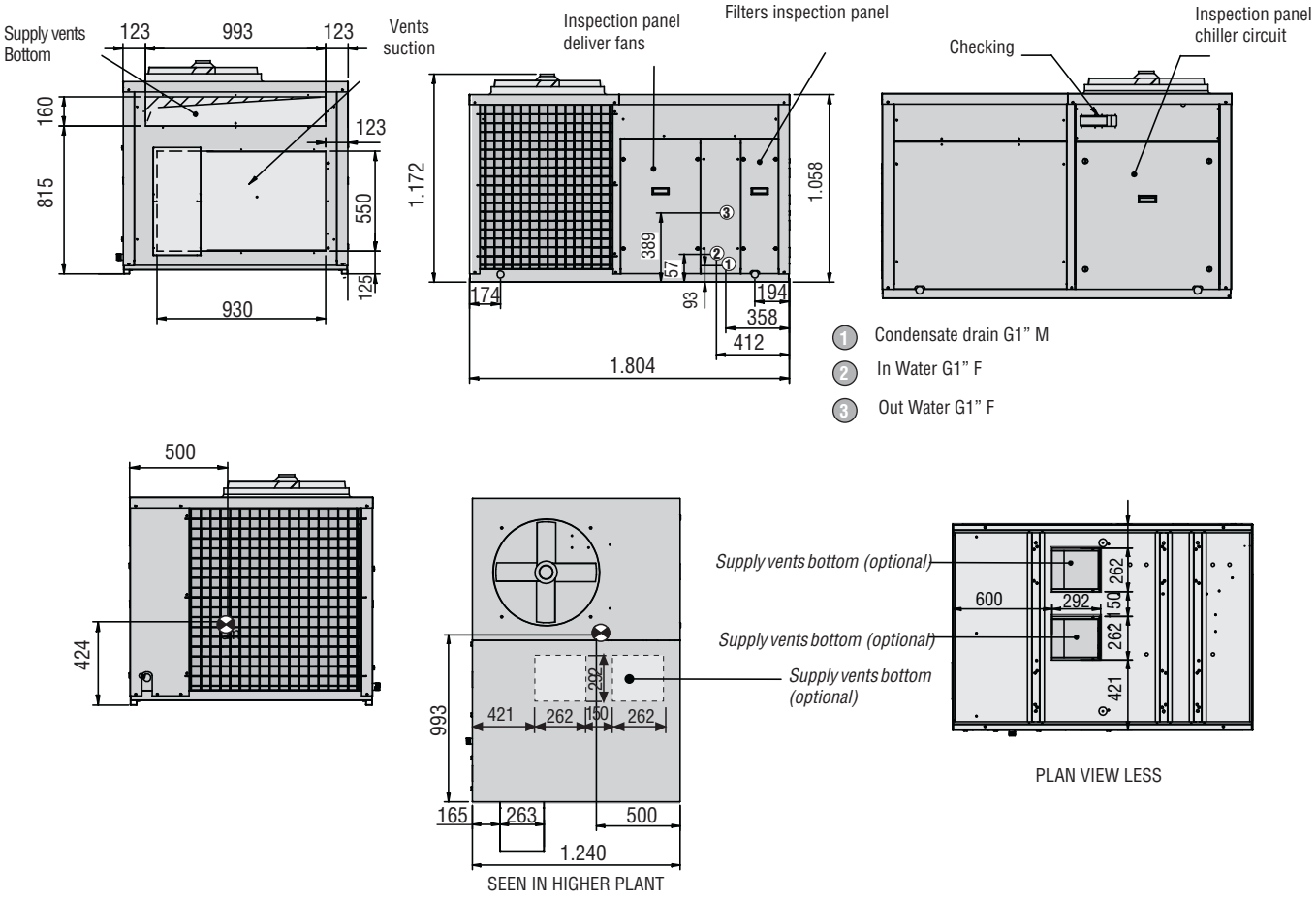




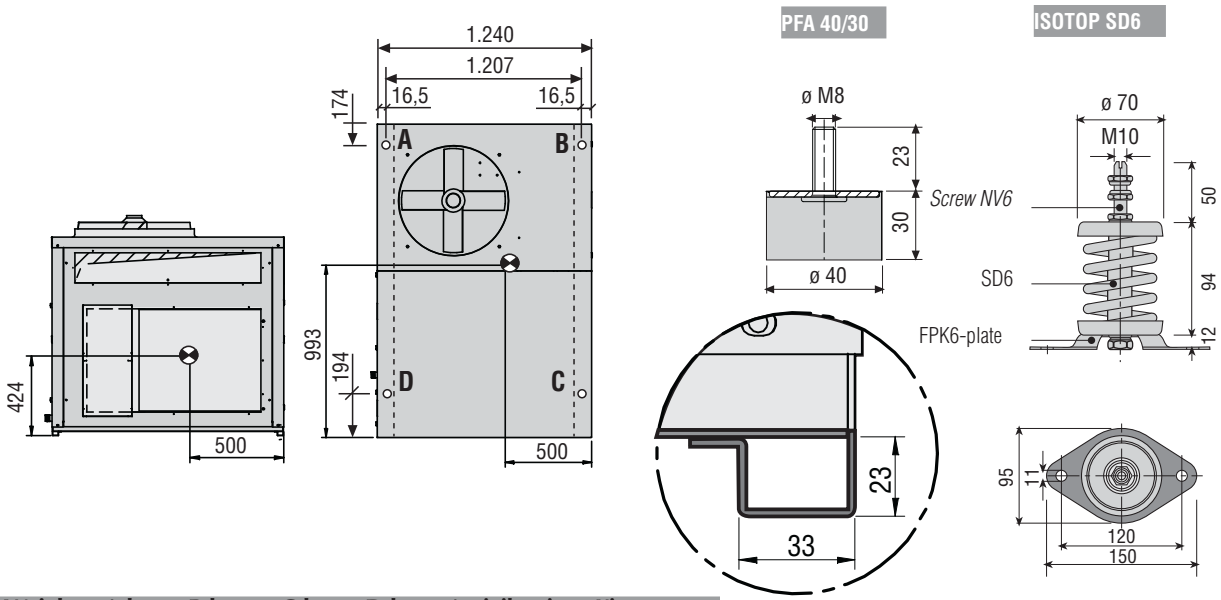


RTE 080 - 090 (°)

only recirculation

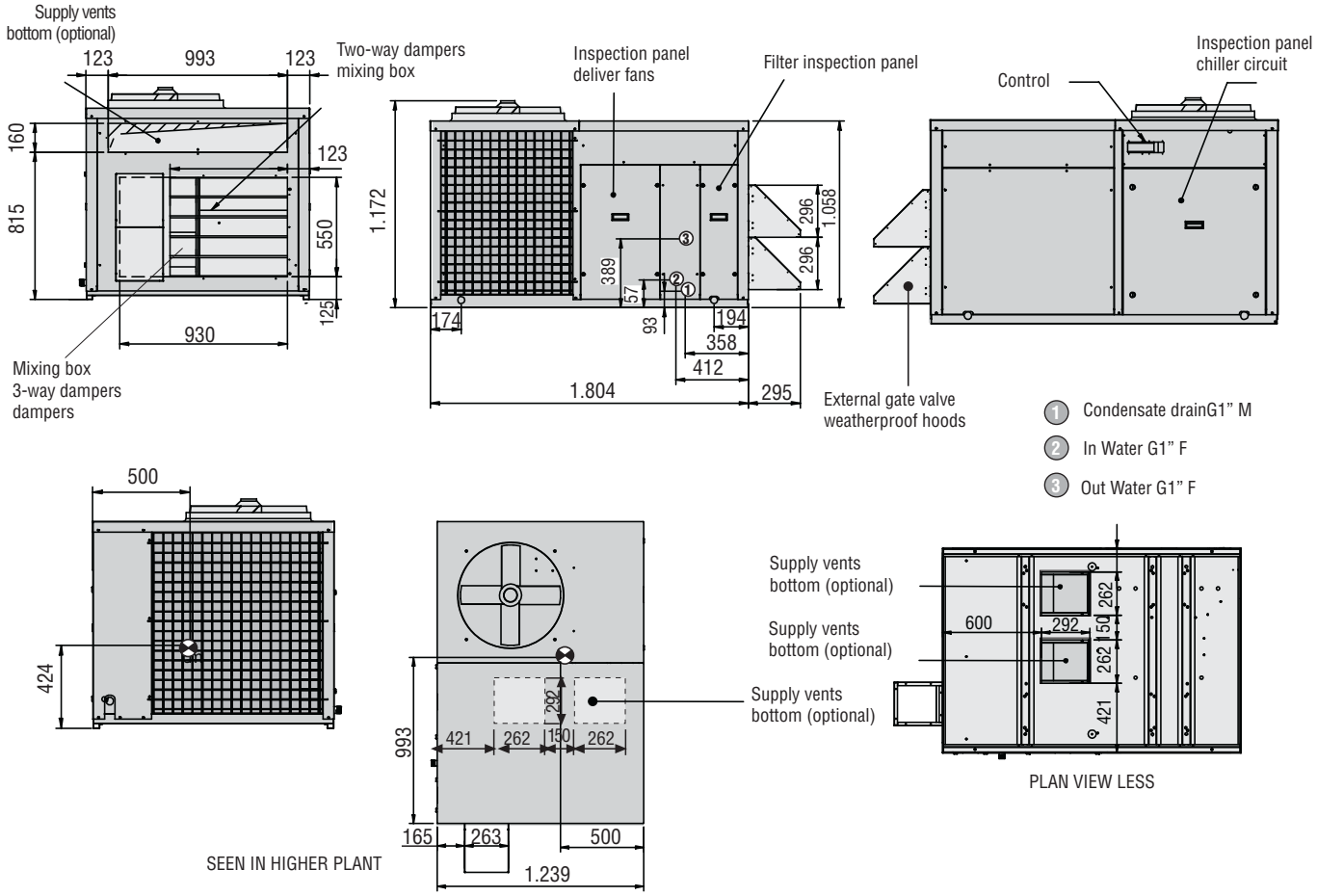


CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS

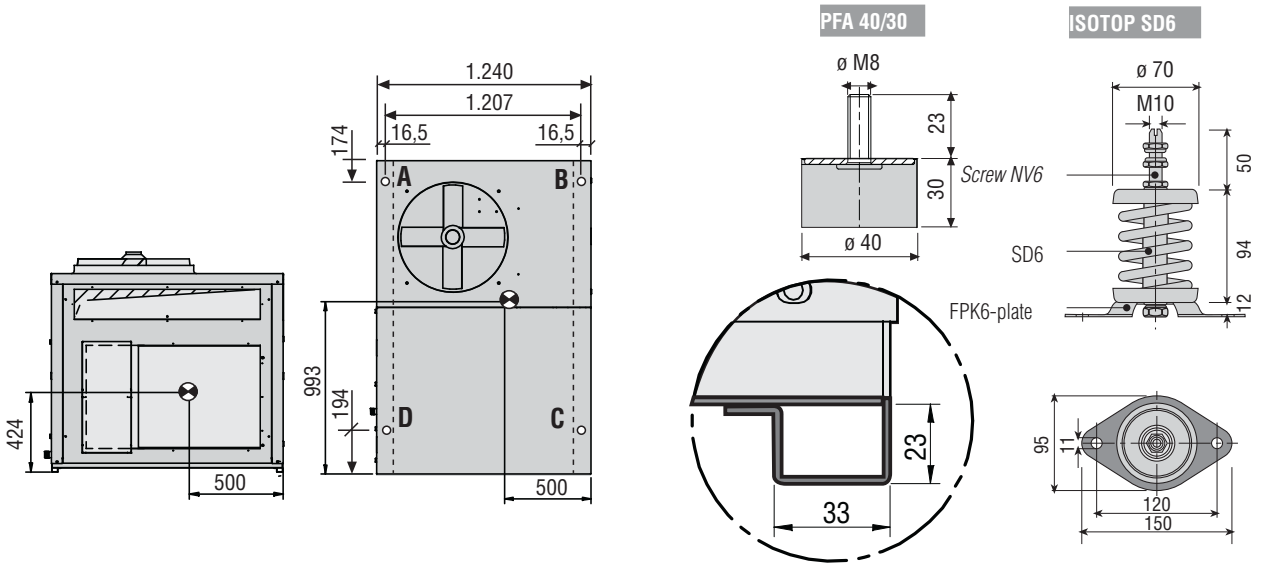


Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•**080**	380	52	57	60	56	GX170M o PFA40/30
•**090**	415	59	64	66	61	GX170M o PFA40/30
•**080 H**400		57	62	63	58	GX170M o PFA40/30
• **090 H**450		64	69	71	66	GX170M o PFA40/30

RTE 080 - 090 (SM)
with 2-way dampers mixing box



CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS

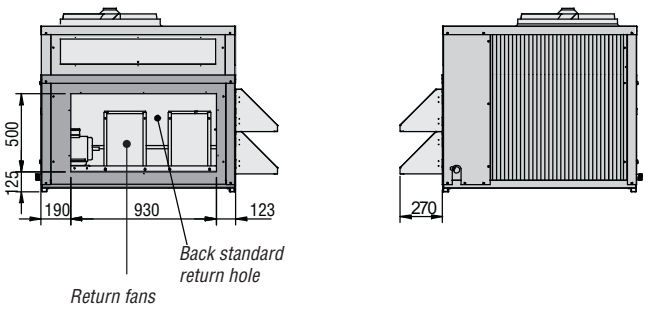


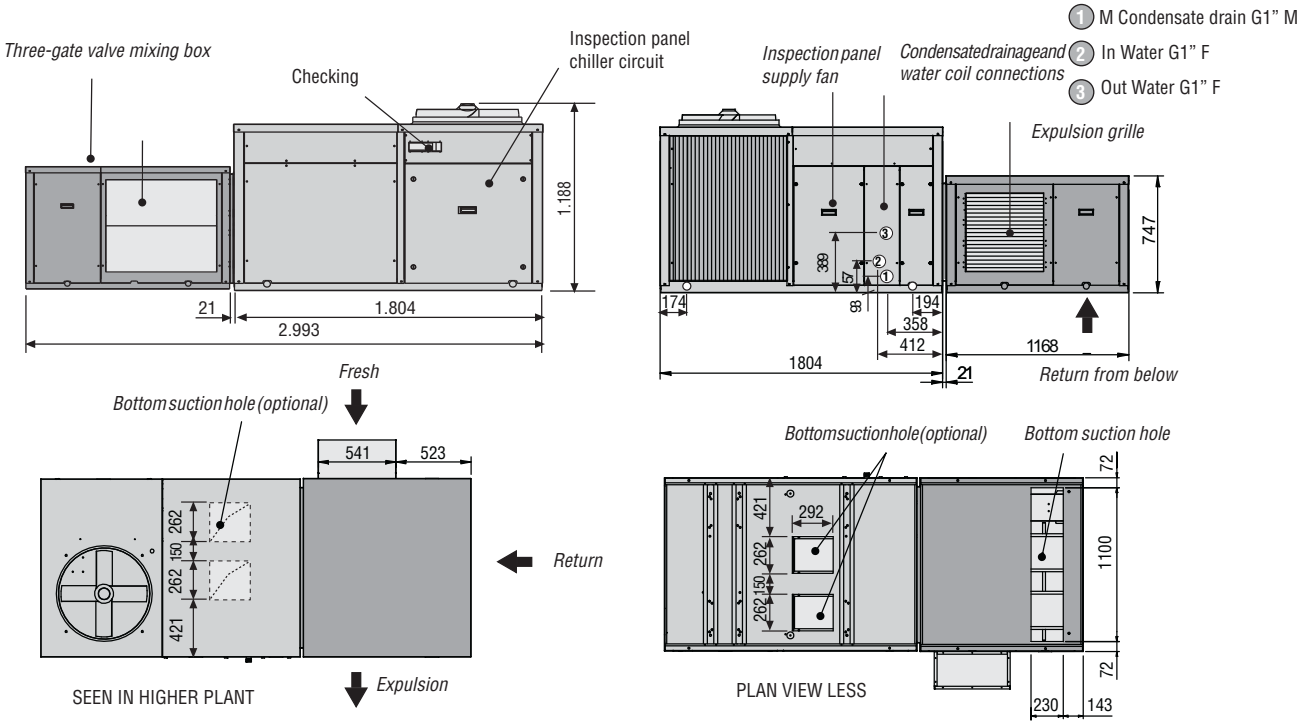
Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•080	380	52	57	60	56	GX170M o PFA40/30
•090	415	59	64	66	61	GX170M o PFA40/30
•080 H	400	57	62	63	58	GX170M o PFA40/30
• 090 H	450	64	69	71	66	GX170M o PFA40/30

WARNING: The weights of the standard versions are shown because the weight does not undergo particular changes to justify a centre of gravity and weight variation on the mounts.

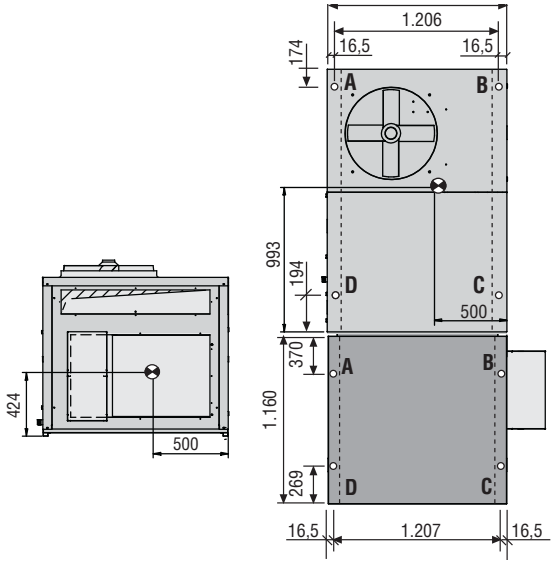
RTE 080 - 090 (SM3)

- with 3-way dampers dampers mixing box

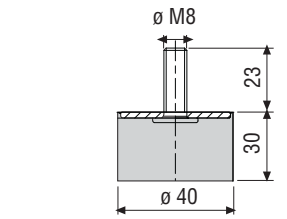


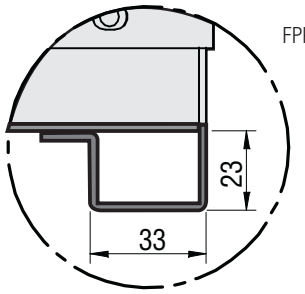


CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS

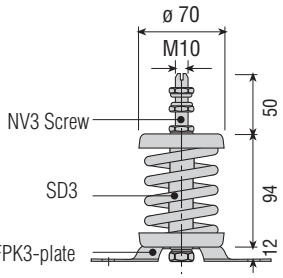


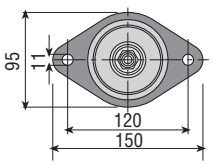
PFA 40/30





ISOTOP SD3

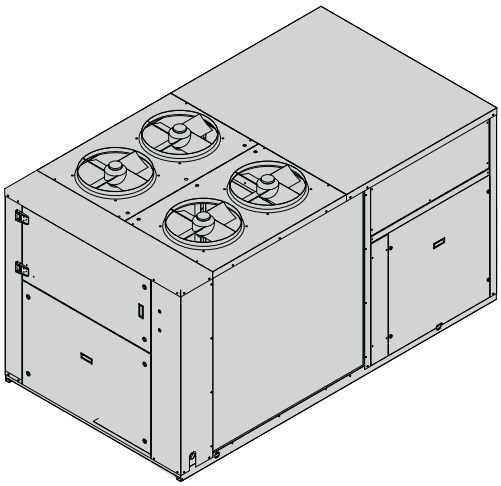




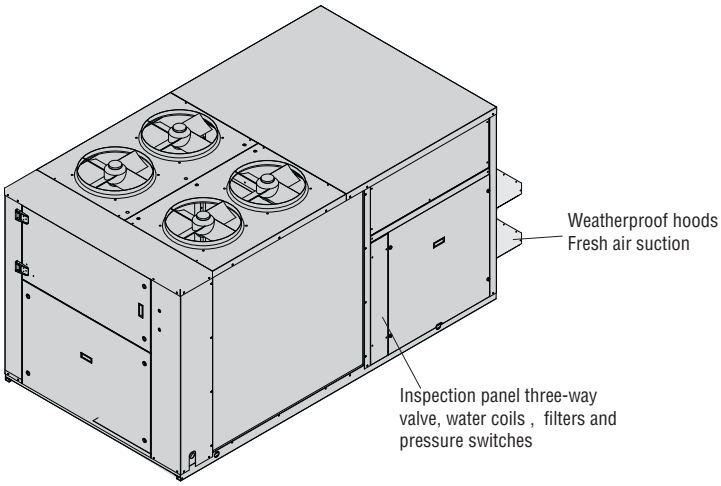
Mod.	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•080	380	52	57	60	56	GX55M o PFA40/30
•090	415	59	64	66	61	GX55M o PFA40/30
•080 H400		57	62	63	58	GX55M o PFA40/30
• 090 H450		64	69	71	66	GX55M o PFA40/30

	Weight	A kg	B kg	C kg	D kg	Antivibrations-Kit
•SM3	130	31	31	33	32	GX55M o PFA40/30

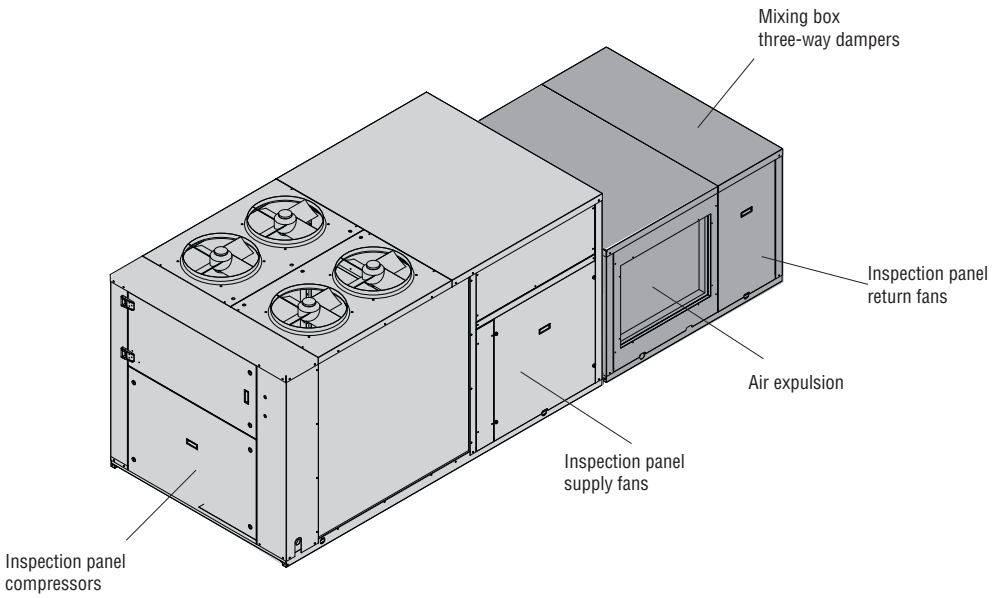
RTE 100 - 150 - 200



RTE 100 - 150 - 200 (SM2)

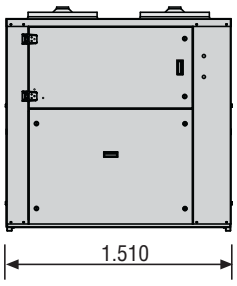


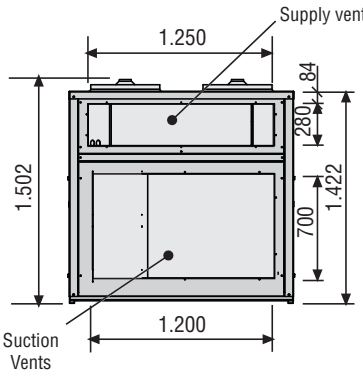
RTE 100 - 150 - 200 (SM3)

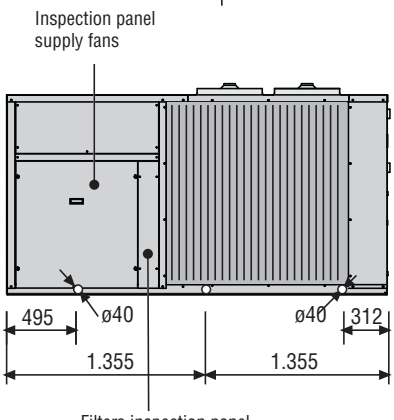


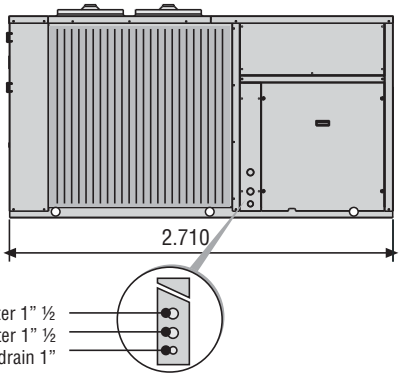
RTE 100 - 150 - 200

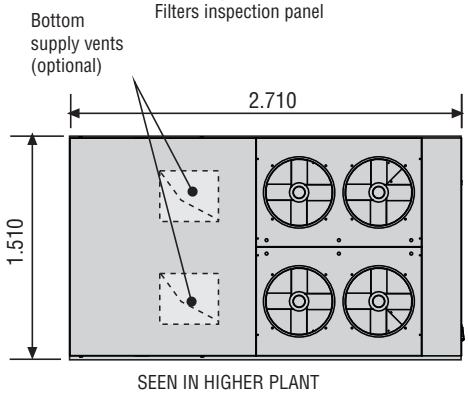
only recirculation

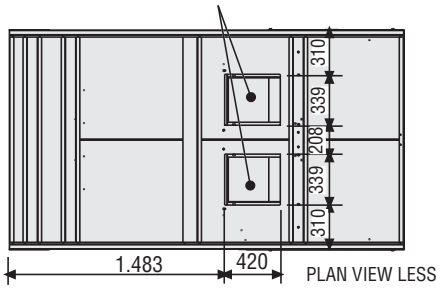




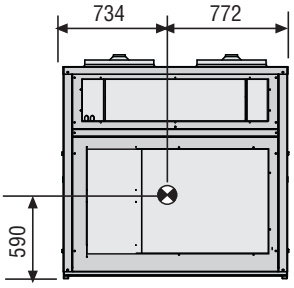


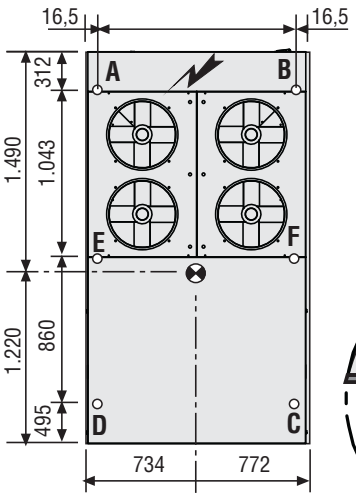




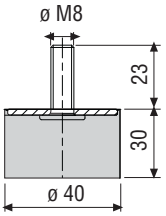


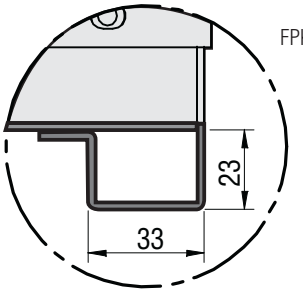
CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



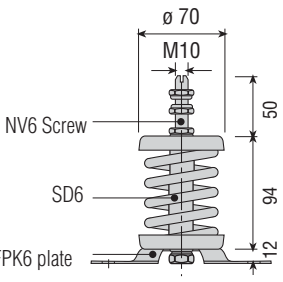


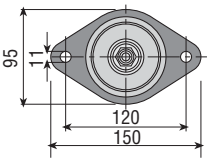
PFA 40/30





ISOTOP SD6

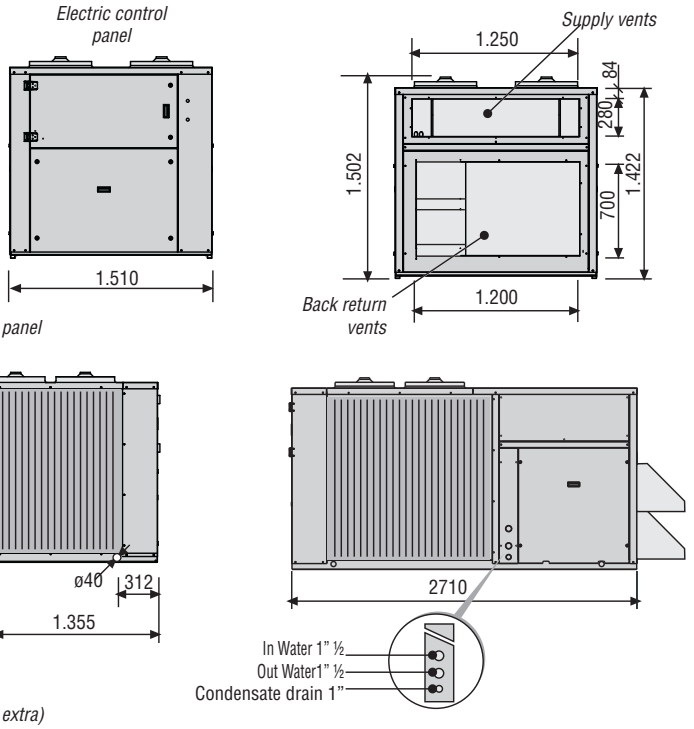




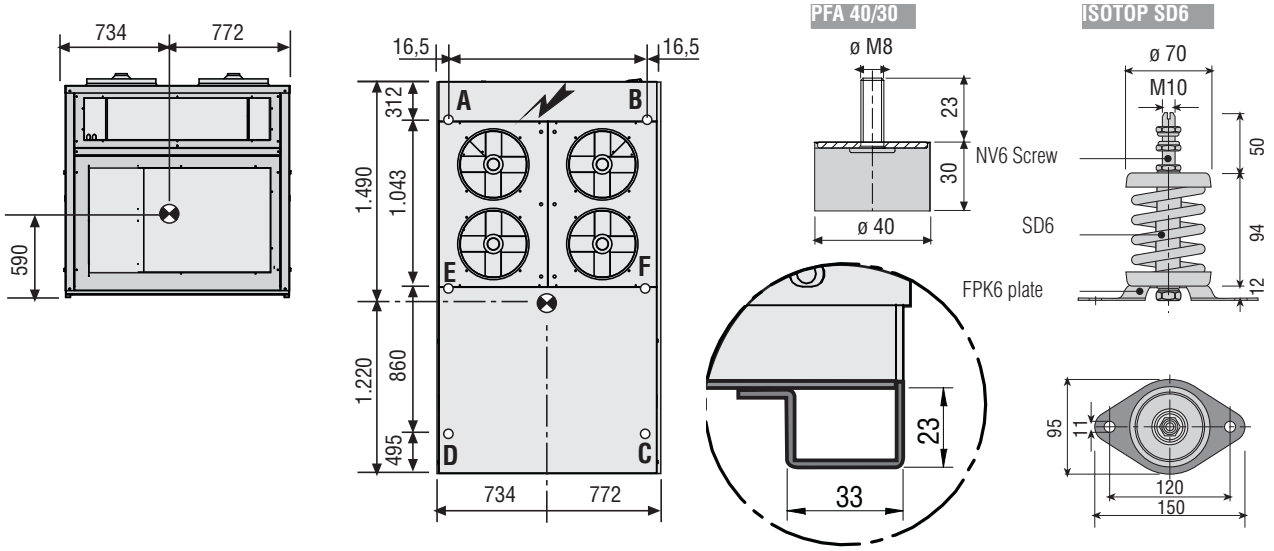
Mod.	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
•**100**	670	119	117	126	129	122	120	GX55M o PFA40/30
•**150**	700	119	117	126	130	122	120	GX55M o PFA40/30
•**200**	750	122	120	130	132	124	122	GX55M o PFA40/30

Mod.	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
• **100 H**	690	119	117	126	129	122	120	GX55M oPFA40/30
• **150 H**	710	119	117	126	130	122	120	GX55M o PFA40/30
• **200 H**	770	122	120	130	132	124	122	GX55M o PFA40/30

RTE 100 - 150 - 200 (SM2)
- with 2-way dampers mixing box



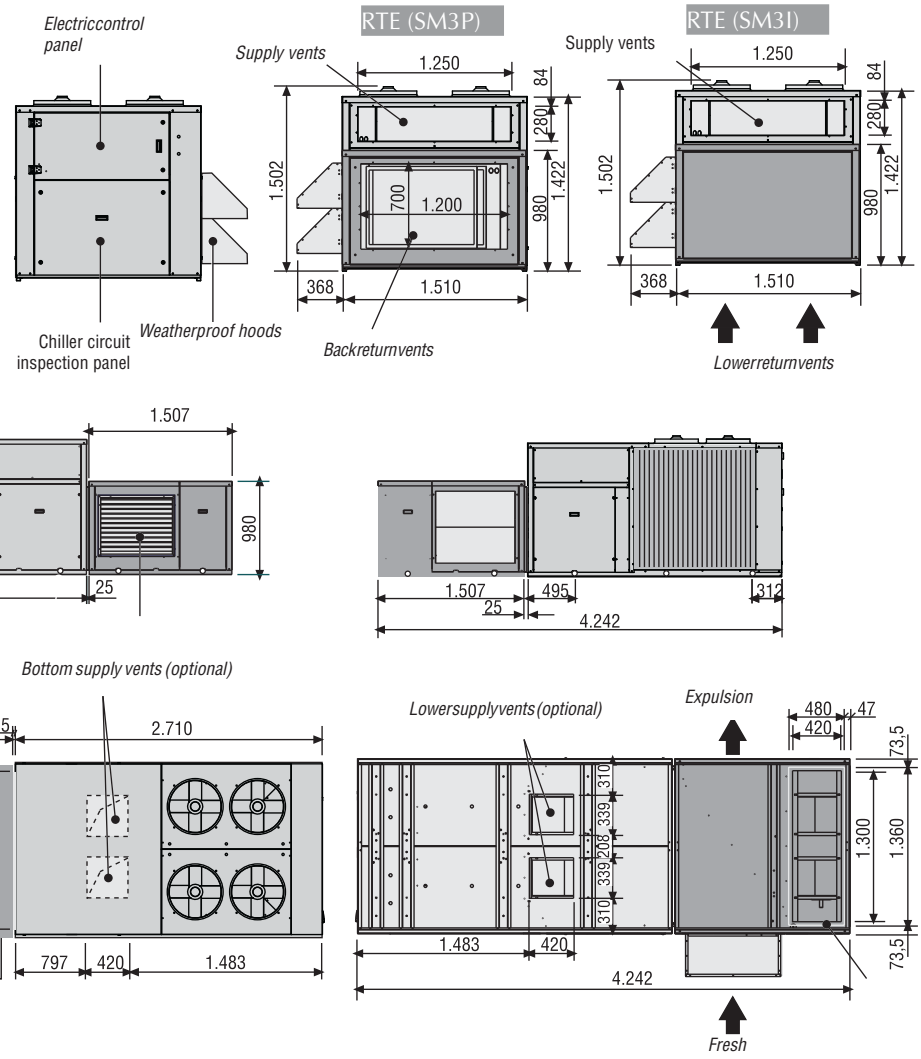
CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



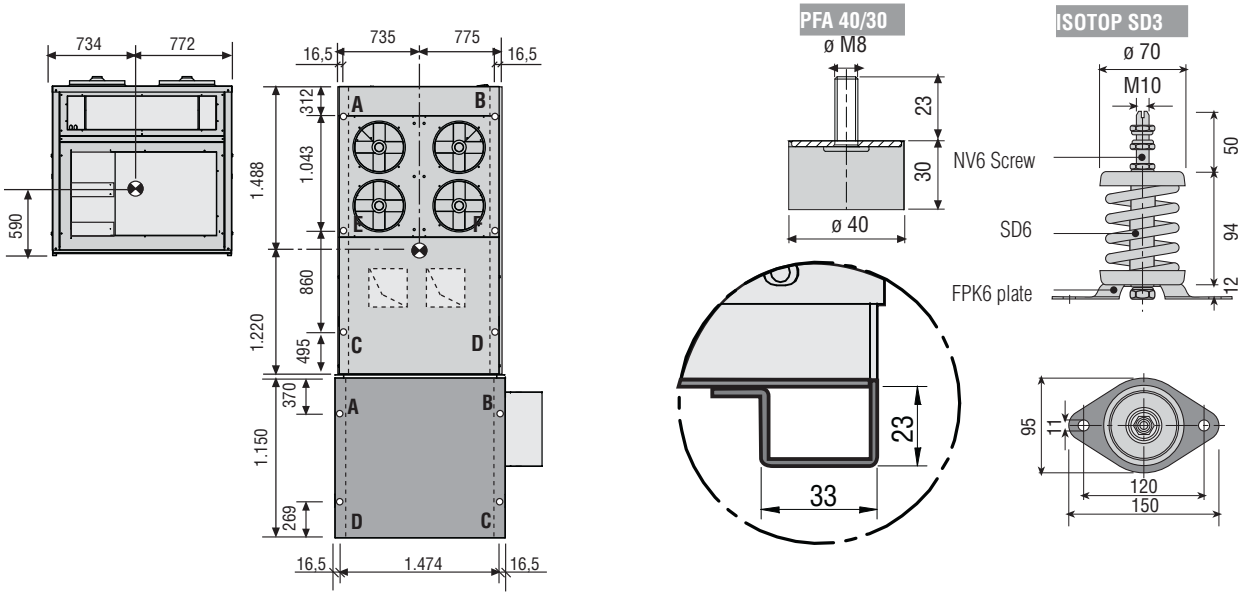
Mod.	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
•**100**	733	119	117	126	129	122	120	GX55M o PFA40/30
•**150**	734	119	117	126	130	122	120	GX55M o PFA40/30
•**200**	750	122	120	130	132	124	122	GX55M o PFA40/30
• **100 H**690		119	117	126	129	122	120	GX55M o PFA40/30
• **150 H**710		119	117	126	130	122	120	GX55M o PFA40/30
• **200 H**770		122	120	130	132	124	122	GX55M o PFA40/30

ATTENZIONE: The weights of the standard versions are shown because the weight does not undergo particular changes to justify a centre of gravity and weight variation on the mounts.

RTE 100 - 150 - 200 (SM3)
- with 3-way dampers mixing box



CENTRE OF GRAVITY AND DISTRIBUTION OF THE WEIGHT ON THE MOUNTS



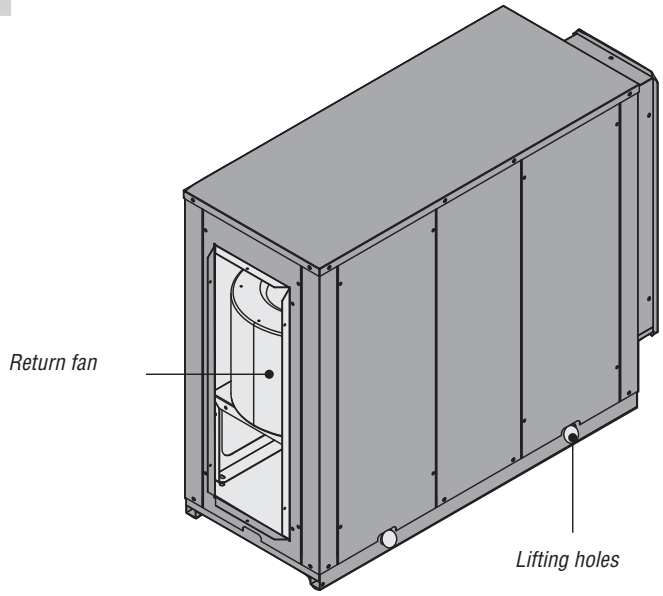
Mod.	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
•**100**	733	119	117	126	129	122	120	GX55M o PFA40/30
•**150**	734	119	117	126	130	122	120	GX55M o PFA40/30
•**200**	750	122	120	130	132	124	122	GX55M o PFA40/30

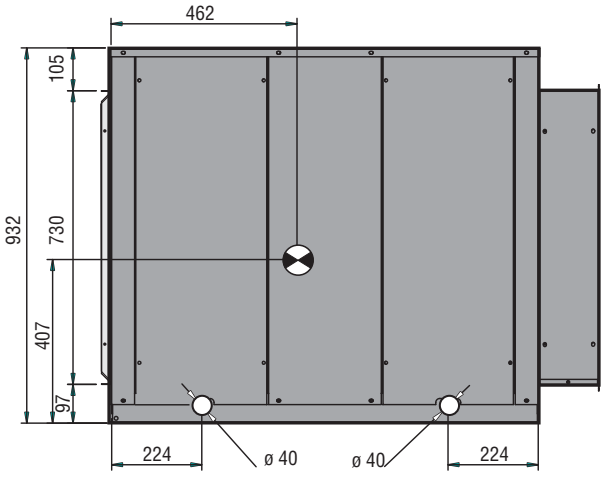
Mod.	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
• **100H**	690	119	117	126	129	122	120	GX55M o PFA40/30
• **150 H**	710	119	117	126	130	122	120	GX55M o PFA40/30
• **200 H**	770	122	120	130	132	124	122	GX55M o PFA40/30

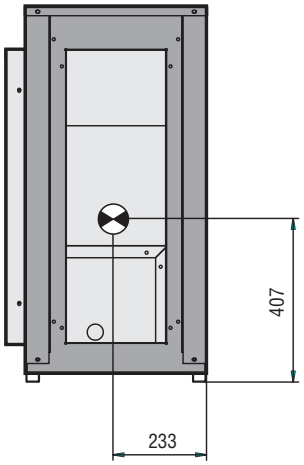
	Weight	A kg	B kg	C kg	D kg	E kg	F kg	Antivibrations-Kit
•**SM3**	240	36	39	41	44	38	42	GX55M o PFA40/30

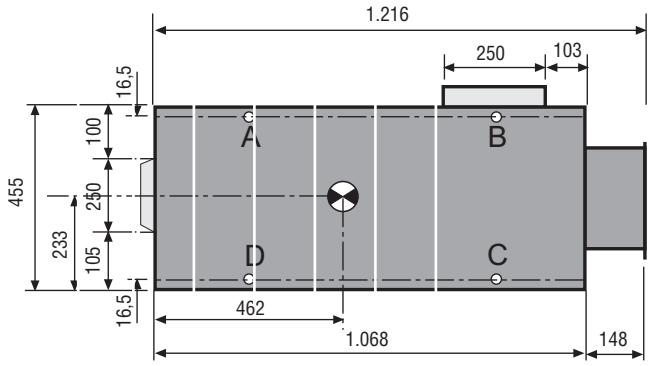
CONFIGURATIONS

3-WAY DAMPERS MIXING BOX 025 - 030 - 040 - 050
Back suction and return fan
Gate valve actuators, weatherproof hoods
Temperature free-cooling management

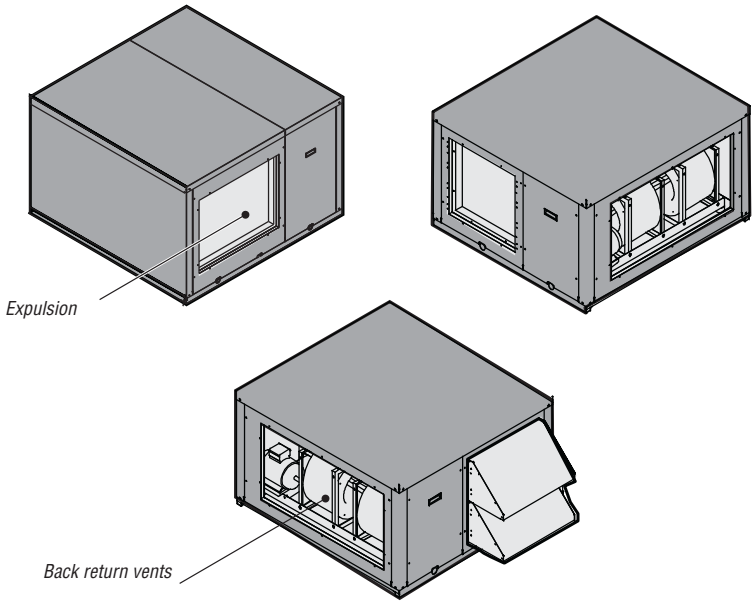


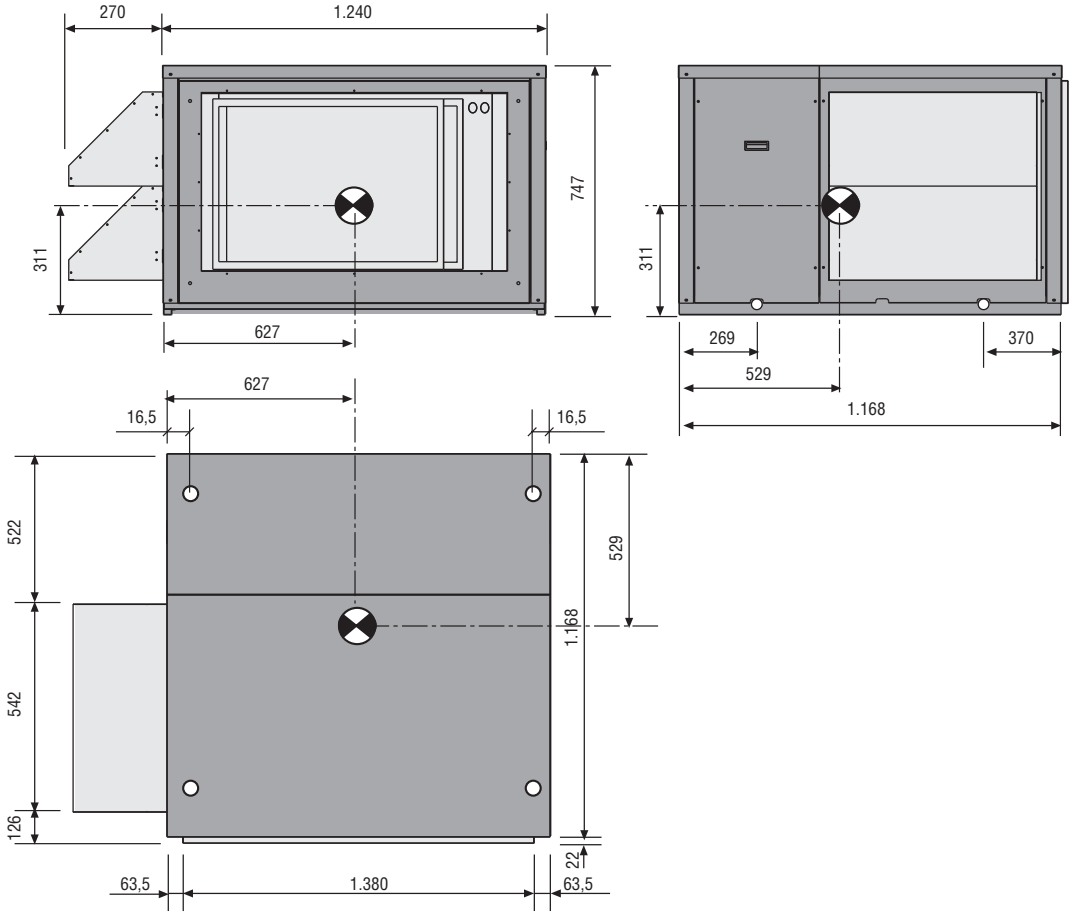






3-WAY DAMPERS MIXING BOX 080 - 090
Back suction and return fan
Gate valve actuators, weatherproof hoods
Temperature free-cooling management



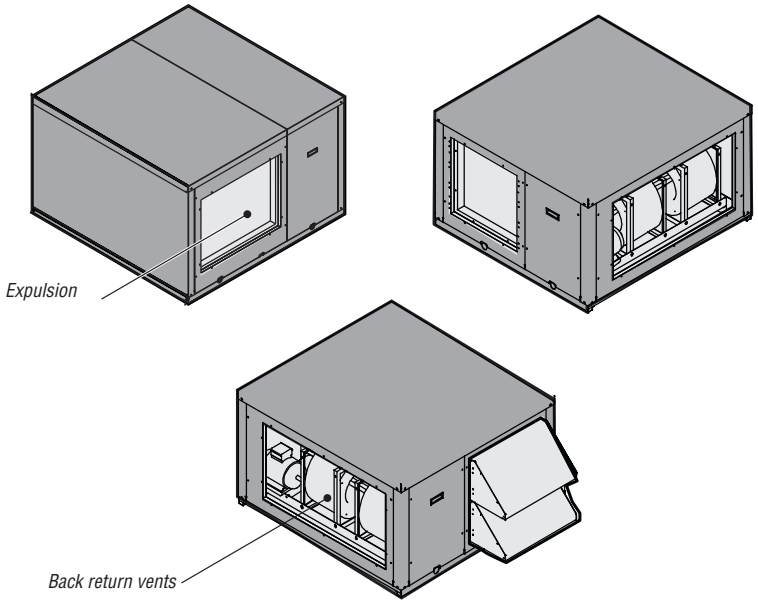


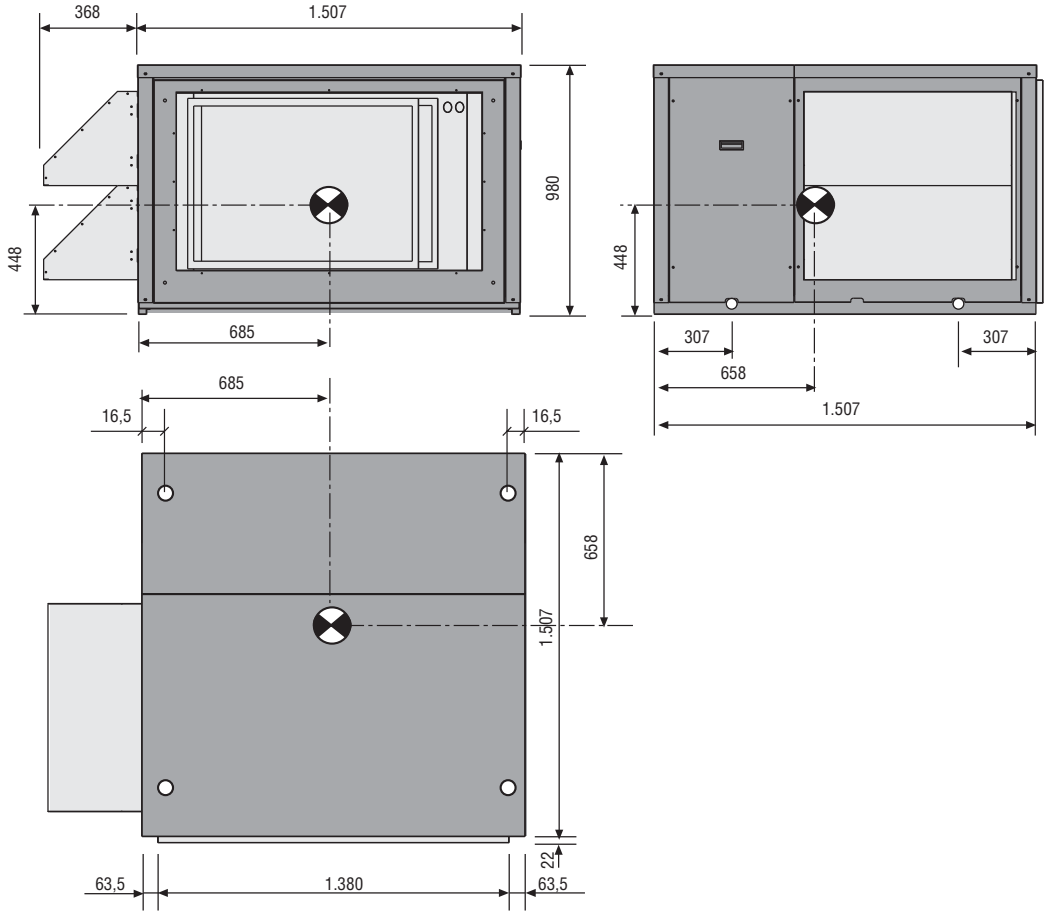
3-WAY DAMPERS MIXING BOX 100 - 150 - 200

Back suction and return fan

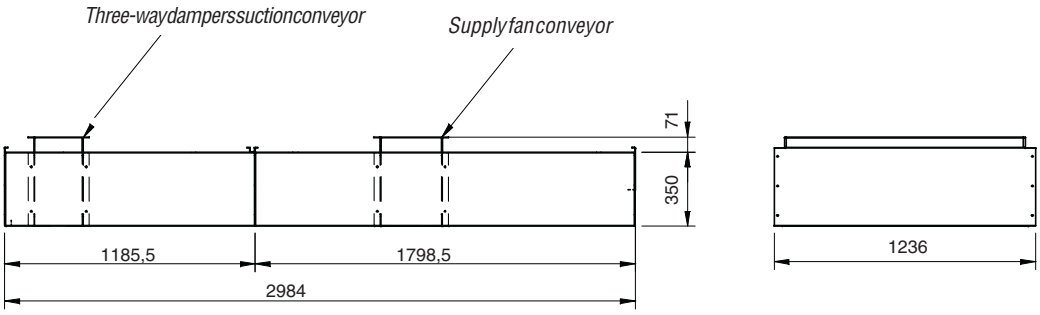
Gate valve actuators, weatherproof hoods

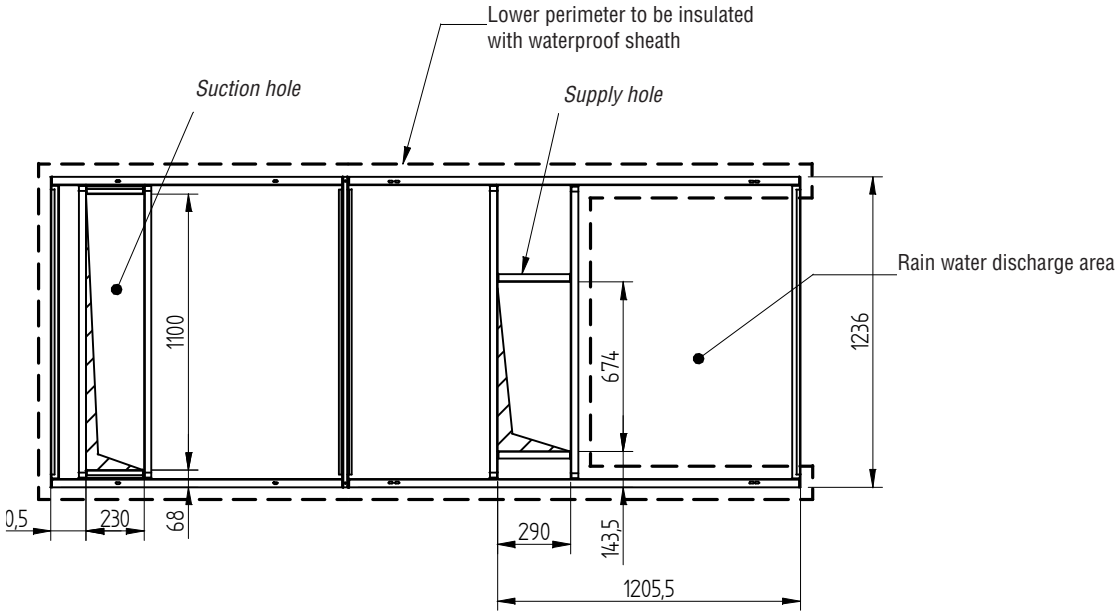
Temperature free-cooling management

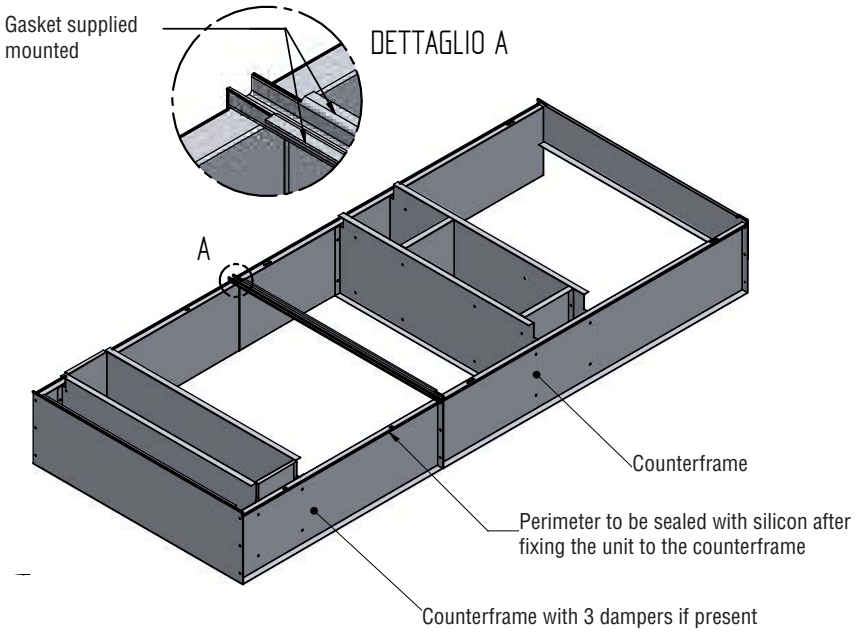




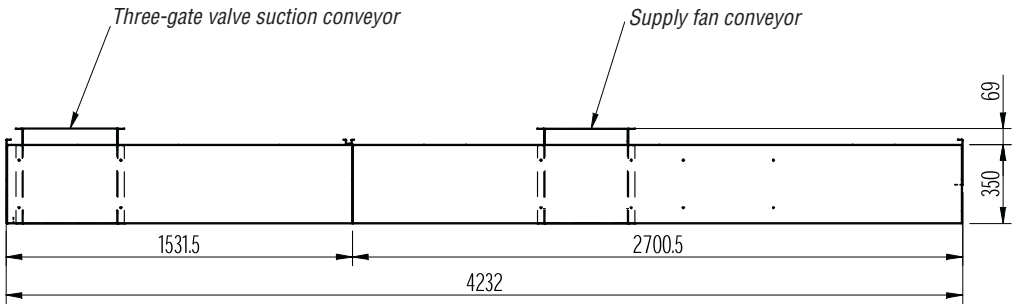
ROOF-CURB
RTE 080 - 090

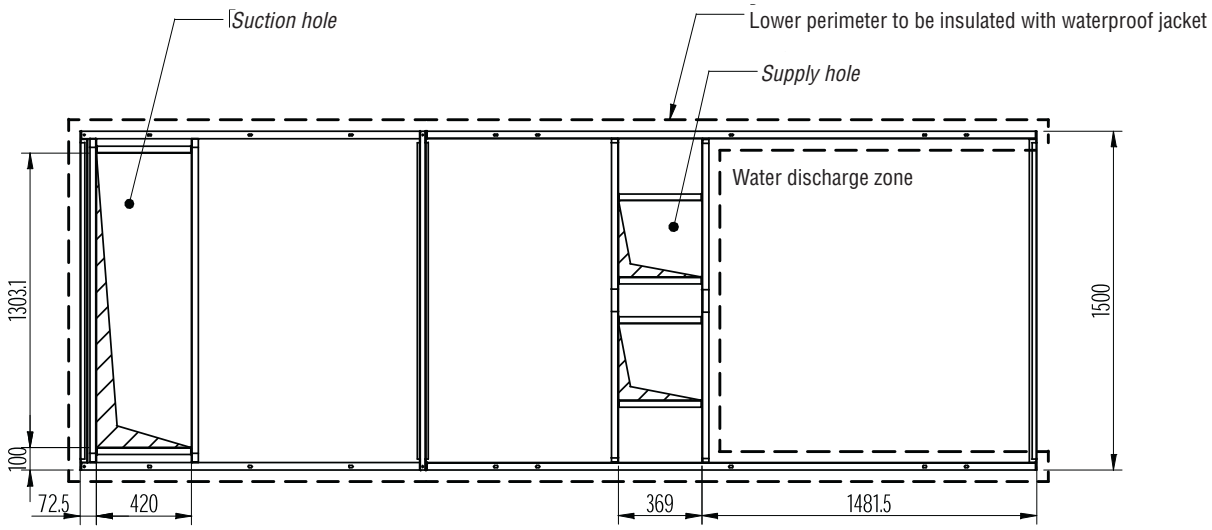


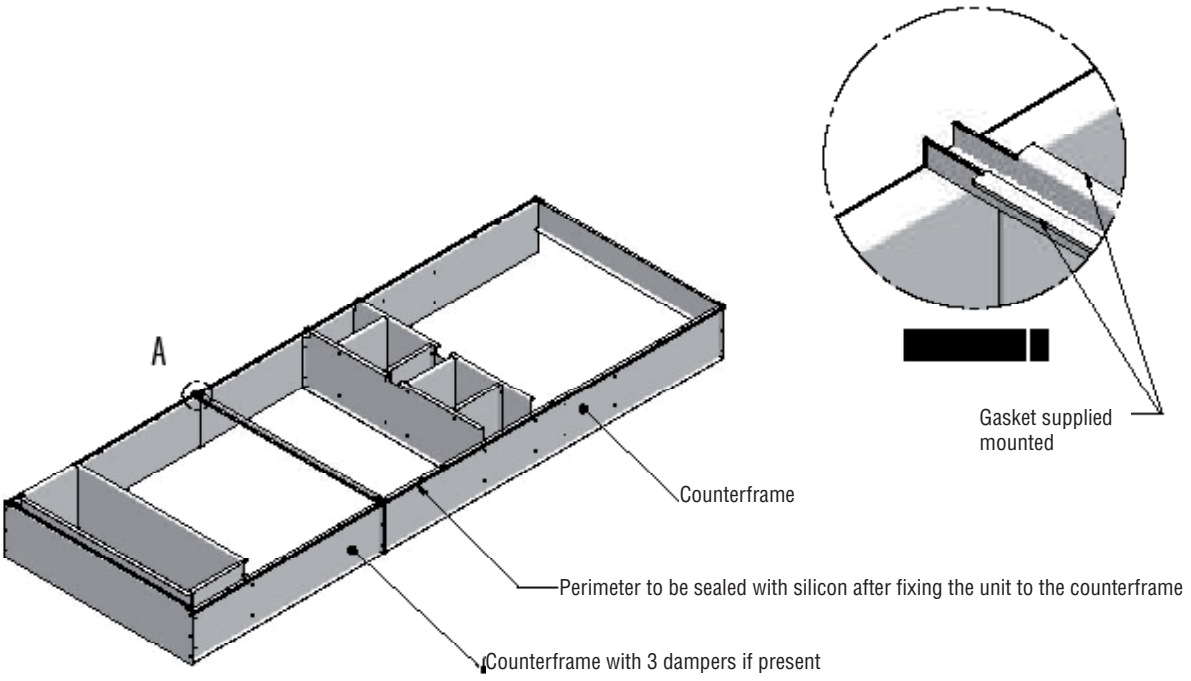




ROOF-CURB
RTE 100 - 150 - 200





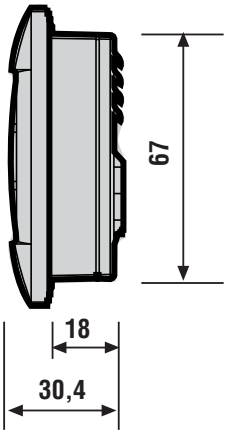


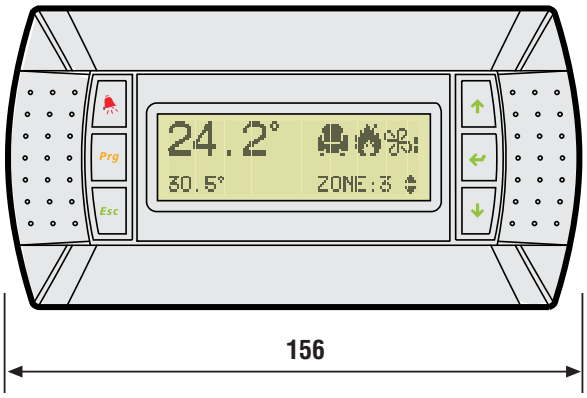
PR2 REMOTE PANEL

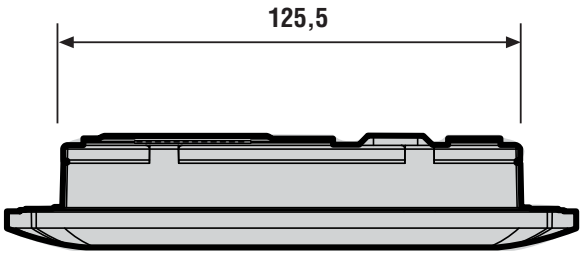
RTE 025 - 030 - 040 - 050 - 080 - 090 - 100 - 150 - 200

PR REMOTE PANEL

The graphic display is an electronic device which allows the complete management of graphic by visualising icons (defined with an application software development), as well as the management of international fonts in two sizes: 5x7 and 11x15 pixels. The application software resides on the card only, the terminal does not require any additional software for operation. Furthermore, the terminal features a wide operating temperature range and in the built-in version, the front panel ensures a high degree of protection (IP65).







Security

The machine has been designed so as to reduce to a minimum the risks for the safety of those persons interacting with it. During the design phase, it was not technically possible to completely eliminate the risk causes. Therefore it is imperative to refer to the following instructions.

Access to the unit

Access to the unit once it has been installed must only be permitted to qualified operators and technicians. The operator is a person who has been authorized by the owner of the machine to carry out operations on the machine (in accordance with that indicated in the present manual). The technician is a person authorized by AERMEC or subordinate under their own responsibility by a AERMEC distributor, to carry out operations on the machine. The owner of the machine is the legal representative of the company, entity or individual owner of the system in which the AERMEC machine is installed.
These persons are responsible for the observance of all safety standards indicated in the present manual and the existing. law. In the event that access by unauthorized persons to the machine cannot be prevented due to the nature of the location in which it is installed, a cordoned area must be defined around the machine and at least 1.5 meters from the external surface, inside of which only operators and technicians are permitted.

Residual risks

The installation, start-up, shutdown and maintenance of the machine must be carried out in accordance with that stipulated in the technical documentation of the product and in such a manner that no hazardous situations are generated.

CONSIDERED PART	RESIDUAL RISK	METHOD	PRECAUTIONS
Heat exchange coil	small cuts	contact	avoid contact with eyes, use protective gloves
Fans grille and fan	injuries	Insert sharp objects through the grille while fan is operating	Insert any objects inside fans grille and not put objects on grilles
Inside the unit: compressor and supply tube	severe burns	contact	avoid contact with eyes, use protective gloves
Inside the unit: metal parts and electrical cables	intoxication, electrocution, severe burns	insulation defect of the power supply cables upstream of the unit's electric panel; metal parts under voltage	suitable electrical protection of the power supply line; maximum care when earthing the metal parts
Outside the unit: area around the unit	intoxication, severe burns	fire due to short circuit or overheating of the power supply line upstream of the unit's electric panel	cable section and power supply line safety system conforming with existing laws.

UNIT INSTALLATION AND USE

PACKAGING

The units in the RTE series are usually supplied without packaging except for the high or absolute efficiency filtering cells and for the assembly accessories which are supplied in cardboard and are to be installed by the customer. On request, the equipment may be supplied packed in polythene film, on pallets + polythene, in crates or cages.

HANDLING

Before moving the unit, make sure that it has not suffered any damage during transport and that the lifting and positioning equipment to be used has an adequate capacity (see table of weights) and that it complies with current safety regulations. Particular care must be taken during all loading, unloading and lifting operations, to avoid potential danger to people, damage to carpentry works and damage to the working parts of the unit.
The unit weight and axes of the center of gravity are indicated in the table. The lifting holes in the base are marked with adhesive labels showing a black arrow on a yellow ground.
The lifting forks must be of a suitable size, and must protrude from the base by a length sufficient to allow the lifting cables to be raised from above without encountering any type of interference. Make sure that the belts are capable of bearing the full weight of the unit, ensure they are firmly fixed to the upper frame and to the lifting forks, the safety fastenings must ensure that the belts do not come out of their housing. The lifting frame connection point must be vertical to the center of gravity.
The positioning may be done by using two pallets, one for each side of the section, preferably acting on the longest side.
Alternatively the positioning may be done by sliding the rooftop on the tubes, which then act as rollers.
During lifting it is recommended that the vibration damper mounts are installed (AVX or VT), fitting them to the ø 40mm holes in the base, according to the assembly diagram supplied with the accessories (AVX or VT).

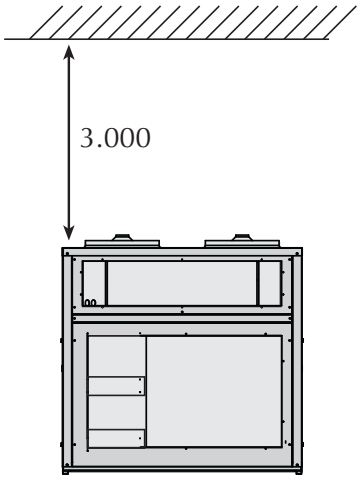
Never stand underneath the unit.

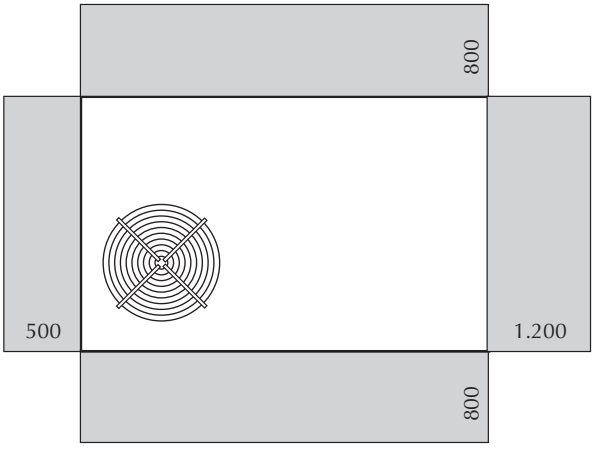
INSTALLATION SITE

RTE series units are designed for outdoor installation in a specifically prepared area granting adequate clearance for maintenance operations (ordinary and special) and for operation requirements (i.e. allowing air intake around the sides and supply from above). To ensure correct operation, install the unit on a perfectly horizontal surface. Make sure that the support surface is able to withstand the weight of the unit.

Should the unit be positioned in particularly windy areas windbreak barriers must be arranged for in order to prevent DCPR device malfunction

MINIMUM TECHNICAL SPACE [mm]





BEFORE UNIT START-UP

Before starting up the unit, we recommend to check that:
-the circuits have been charged and all air has been blown out;
-the electrical connections have been made correctly;
-the line voltage is inside the permitted range of tolerance (±10% the nominal value).

WARNING: Power up the unit at least 24 hours before putting it into service (or following a prolonged period of disuse) to allow the compressor crankcase heaters to eliminate (by evaporation) any refrigerant in the oil. Failure to observe this precaution could lead to serious compressor damage and will automatically imply the decease of any warranty.

UNIT START-UP

The commissioning has to be agreed in advance according to the timing of completion of the installation.
Before the intervention of AERMEC After-Sales service, all the works (electrical and hydraulic connections, air charge and discharge from the plant) have to be ready.

For the setting of all functional parameters and for detail information concerning the operation of the unit and of the control board, please refer to the user manual.

FILLING / DRAINING OF THE INSTALLATION

If the unit is shut down during winter, the water in the exchanger could freeze, causing unrepairable damage to the exchanger itself, discharging of the refrigerant circuits and even damage to the compressors.
To avoid the risk of freezing there are two possible solutions:

1) completely drain the exchanger of all water at the end of the season and refill at the beginning of the next season of operation.
2) operation with glycol in the water, with a percentage of glycol according to the minimum ambient temperature that is foreseen. In this case you must account for the differences in performance and absorption of the chiller, sizing of the pumps and terminal unit capacities.

REQUIREMENTS FOR GAS R407C

Water roof-top units using refrigerant gas R407C require special attention during assembly and maintenance operations to prevent from operating faults.
Observe the following requirements:

- Do not refill the oil with a type different from the one already precharged in the compressor.
- In the event that a gas leak has discharged the unit even partially, do not refill with the refrigerant fluid; discharge the unit completely, make the vacuum, then recharge with the specified quantity.
- Do not leave the cooling circuit open for more than 15 minutes when replacing parts.
- When replacing the compressor, complete the operation within the time specified above (after having removed the rubber plugs).
- Do not power up the compressor when under vacuum; do not compress air inside the compressor.
- Using R407C gas bottles take care to the maximum number of allowed drawings in order to ensure the correct proportioning of R407C gas.

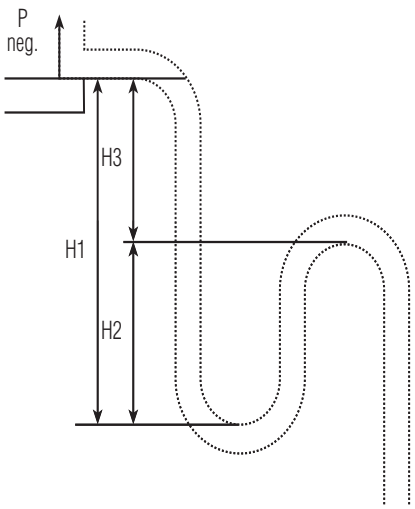
Hydraulic connections

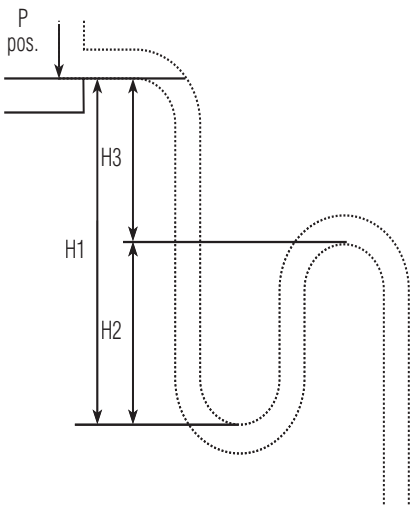
Condensate drain

The drain pan is provided with a threaded drain pipe 1/2" G UNI 338.
The drainage system should feature an adequately sized siphon to:

- ensure free condensate drainage;
- prevent the inadvertent entry of air into the circuit under negative pressure;
- prevent the inadvertent leakage of air from the pressurised circuit;
- prevent the entry of unpleasant smells and insects.

Follow the indications below when sizing siphons on trays in negative and positive pressure.





Negative pressure:

H1 = 2P
H2= H1 / 2

Positive pressure:

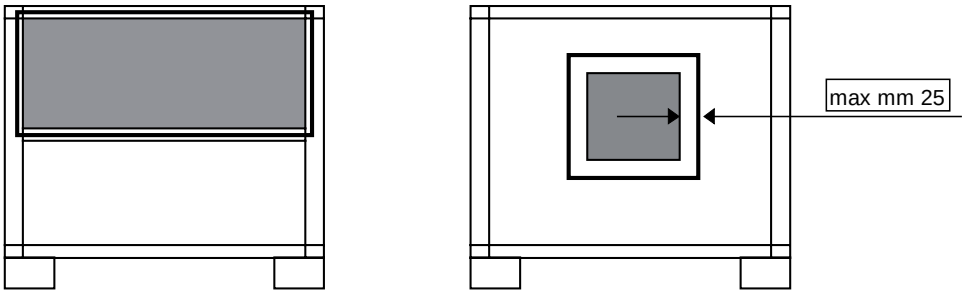
H1 = 2P
H2= H1 / 2

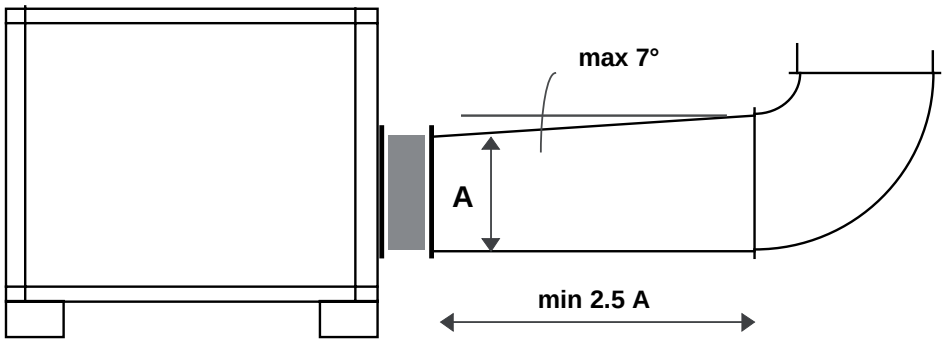
where P is pressure expressed in mm (water gauge) (1 mm c.a. = 9.81 Pa)

The siphon should have a plug to facilitate cleaning of the lower section, and be easy to disassemble.

Aeraulic connections

For the installation of the ducts we recommend to:
- provide for adequate brackets to support the ducts so that their weight does not fall on the unit;
- connect the supply and return vents to the ducts with an antivibration canvas. This canvas will be connected to the unit by screwing it to the flange or to the damper if present. In case the flange or the damper are not present, teh antivibration canvas will have to be screwed to the frame of the unit;
- provide for an earth cable to act as a bridge on the antivibration canvas, in order to grant equal electrical capacity between the duct and the unit;
- provide, before curves, forks etc., for the supply duct to have a straight channel of at least 2.5 times the shorter side of the duct, in order to avoid performance falls of the fan;
- avoid that the ducts have inclinations of sections superior to 7°C.





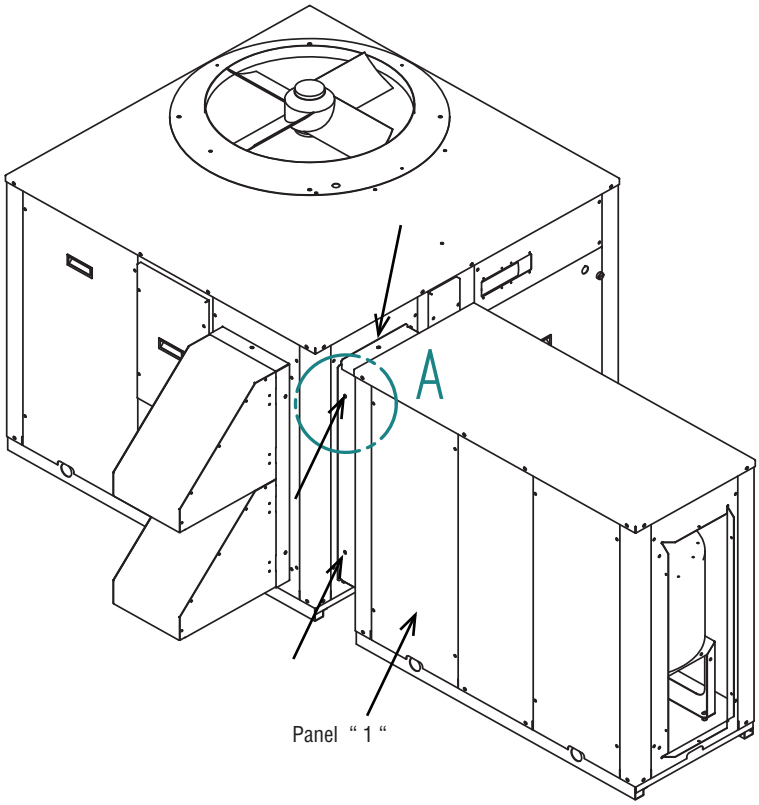
Coupling sections

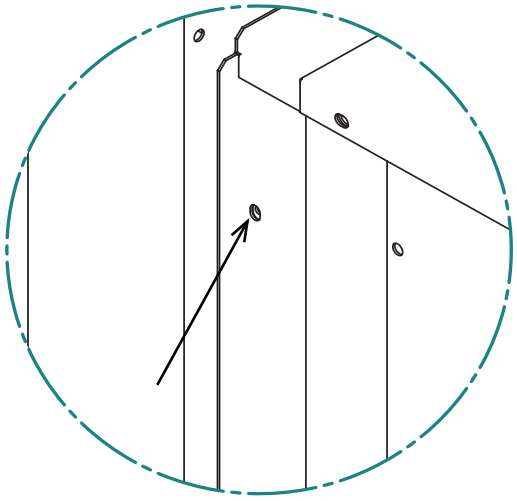
RTE 025-050
THREE WAY MIXING BOX JOINING

Instructions for the union three way mixing box RTE 025-050

Merge the two hills approaching the flange present in the mixing chamber three dampers, having interposed gasket adhesive supplied.
with the screws provided in the kit, screwed into the holes indicated.

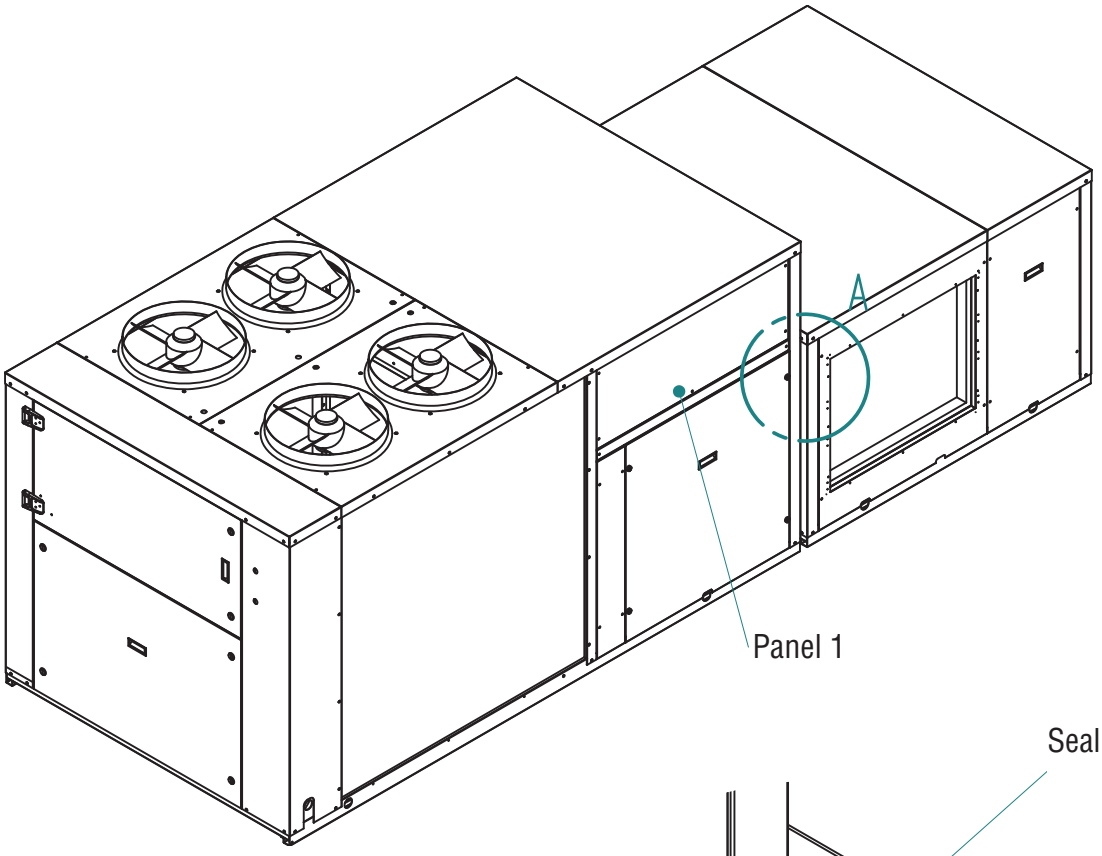
Make the electrical connections by opening the panel "1" in order to access the electrical box with terminal ready.





DETAIL A

RTE 080-200
THREE WAY MIXING BOX JOINING

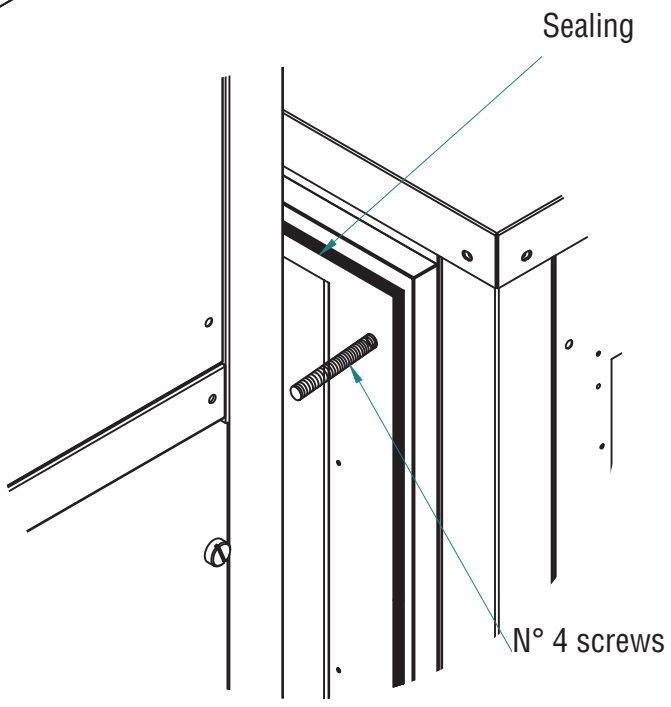


Instructions for the union three way mixing box RTE 080-200

For the union of the three way mixing box on the roof top using the screw-in support of the unit (see Annex A).

Remember to apply the guarnixzione sealing caorredo present at the car before approaching the treserrande the rooftop: fastening the two units will be made from within the compartment filters rooftop.

IMPORTANT: After the union of the two sections make the wiring between the treserrande and the rooftop, carrying electrical cables already predisposed colored and/or numbers in the appropriate box in the top compartment of the car which is accessed by removing the panel 1



DETAIL A

IMPROPER USES

The unit is designed and constructed to guarantee the maximum safety in its immediate proximity, and to resist weathering. The fans are shielded against accidental contact by a protective guard. Accidental opening of the electric switchboard with the unit in operation is prevented by the safety door interlock.
Tools or heavy objects must not be leaned directly against the side exchanger coils to avoid damaging the fins.

NEVER slide or drop objects through the fan guards.

NEVER lean on the heat exchanger coil: sharp edges.

SAFETY SYMBOL

Danger: Power supply

Danger: Temperautre

Danger: Moving parts

Danger: Disconnect power line

Danger !!!

IMPORTANT SAFETY INFORMATION

During the functioning the unit must not exceed the pressure limits given in the table showed in paragraph "Operation limits".

Correct operation of the unit is not ensured after a fire; before re-starting the unit, contact an authorized service centre.

The unit is supplied with safety pressure relief valves which, in case of an excessive pressure, may discharge high temperature gas to the atmosphere.

Wind, earthquakes and other natural phenomena of extraordinary intensity have not been considered.

If the unit must be openominal in an aggressive atmosphere or with aggressive water please consult the factory.

Further to extraordinary maintenance work on the refrigerant circuit with replacement of components, the following operations must be performed:

1. The refrigerant charge must be restored to the value shown on the unit nameplate (inside the switchboard)
2. All the shut-off valves of the refrigerant system must be opened
3. The power supply and the earth wiring must be properly connected
4. The hydraulic connections must be checked
5. The condenser coils must not be dirty or obstructed
6. The correct direction of rotation of condenser fans and screw compressor must be checked

ELECTRICAL CONNECTIONS

The unit is completely pre-wired at the factory. The electrical power requirements are specified on a data plate. The power line should be fitted with appropriate protective devices.
Cable sections and dimensions of the line switch are indicative only.
The installation technician is responsible for dimensioning the power line as appropriate, in relation to its length, the cable type, unit absorption and position.
All electrical connections should comply with standing regulations at the time of the installation of the unit.
N.B: Check that all power conductor terminals are tightened at the first starting and after 30 days from start-up.
Afterwards, check the tightening of all power conductor terminals every six months. Loosen terminals may determine an overheating of cables and components.

ELECTRICAL DATA

Size		025	030	040	050	080	090	100	150	200
Max. compressor input power	[kW]	3,0	3,4	4,6	5,8	7,4	8,1	11,0	13,2	15,5
Max. compressor input current	[A]	5,3	6,0	8,0	9,5	13,2	14,3	18,0	22,0	26,6
Supply fan	[A]	3,6	3,6	6,6	6,6	2,7	3,4	3,4	4,8	6,5
Axial fan	[A]	0,7	0,7	1,7	1,7	2,4	2,4	2,6	2,6	2,6
Return fan	[A]	4,6	4,6	4,6	4,6	1,5	1,8	1,8	3,4	3,4

Sections recommended for max. cable lengths of 50 m. Cable sections and dimensions of the line switch are indicative only.

Size		025	030	040	050	080	090	100	150	200
SEZ A	[mm^2]	2,5	2,5	4	4	4	4	6	10	10
SEZ PE	[mm^2]	2,5	2,5	4	4	4	4	6	10	10
IL	[A]	16	16	20	20	20	20	32	40	40

SEZ A = SUPPLY LINE
SEZ PE = EARTH WIRE
IL = LINE SWITCH

N.B: FOR THE ELECTRICAL SCHEMES PLEASE REFER TO THOSE PRESENT BY THE UNIT

Diagnosis and fault solving

PROBLEM	CAUSE	SYMPTOM	SOLUTION
1. SUPPLY AIR TEMPERATURTE HIGHER THAN FORESEEN	1. Heat power too high	- The air temperature on supply is higher than the foreseen value	- Decrease the heat power, decreasing the flow rate or the air inlet temperature
	2. Room temperature too high	See 2.1.	- Avoid air recirculation on condenser. Facilitate the fresh air flow.
	3. Condensers fins clogged	See 1.1.	- Clean the condensers fins
	4. Condensers front surface obstructed	See 1.1.	- Liberare la superficie frontale del condensatore ostruita
	5. Fan rotates in the opposite direction	See 1.1.	- Invert the position of two fans phases
	6. No refrigerant in the cooling circuit	- Low evaporation pressure - Presence of air bubbles in the liquid lights	- Search the refrigerant leakages (by a specialized technician) and avoid them. - Realize the recharge (by a specialized technician)
2. INSUFFICIENT COOLING CAPACITY	1. Insufficient refrigerant charge	- The cooling circuit operates properly, but with insufficient capacity	See 1.6.
	2. Room temperature too high	See 2.1.	- Avoid air recirculation on condenser. Facilitate the fresh air flow.
3. Abnormal noise	1. Vibrations in the ducts	- The unit noise is higher than normal	- Properly fix the ducts with brackets
	2. Loud compressor	See 3.1	- Verify and eventually replace
	3. Loud expansion valve	See 3.1	- Verify. Add refrigerant if necessary. Replace it if necessary.
4.INTERVENTION OF THE LOW PRESSURE SWITCH	1. Pressure switch out of use	- The compressors stop	- Verify and replace the pressure switch.
	2. Unit completely empty	See 4.1.	See 1.6.
	3. Refrigerant filter clogged	See 4.1.	- Verify and replace the filter
	4. The expansion valve does not operate properly	See 4.1.	- Verify, clean, eventually replace
	5. Room temperature too low	See 4.1.	- Install the condensate control kit

PROBLEM	CAUSE	SYMPTOM	SOLUTION
5. INTERVENTION OF THE HIGH PRESSURE SWITCH	1. One or many fans can't operate	- The compressor does stop - Intervention of the general alarm	- Repair or replace fans/ fan
	2. Pressure switch out of use	See 5.1.	-Verify and replace the pressure switch
	3. Excessive refrigerant charge	See 5.1.	- Discharge the gas in excess
	4. Gas presence impossible to condensate in the cooling circuit	See 5.1.	- Recharge it after the unit discharge
	5. Condensate coil not sufficiently run over the from air	See 5.1.	- See 1.3, 1.4, 1.5
	6. Clogged refrigerant filte	See 5.1.	- Verificare e sostituire il filtro
	7. Room air temperature too high	See 5.1.	- Verify and replace the filter
	8. Hot air recirculation caused by wrong installation	- Air outlet temperature from coil higher than max. values permitted	- Avoid the recirculation causes respecting the minimal distances to wall as indicated in the imensional schemes or avoid that the condensate coils are run over the hot air.
6. COMPRESSORS FAULTS	1. Defective compressor	-The compressor does not restart	- Replace the compressor
	2. Absence of a safety device	See 6.1	-See par. 5 and 6
	3. Defective connection or open contacts	See 6.1	- Verify the voltage and close the contacts
	4. Power circuit open	See 6.1	- Find the intervention cause of protection, close the compressor automatic
	5. Compressors not under voltage	See 6.1	- Check the voltage. Close the compressors
	6. Compressors defective actuator	- The compressor starts and stops	- Verify and eventually replace
7. EXPANSION VALVE FAULTS	1. Expansion valve too closed: excessive gas overheating at evaporator outlet	- Compressor too hot	- Open the expansion valve to decrease the overheating
	2. Expansion valve too open: the system operates with overheating too low. Compressors liquid return.	- Compressor too cool and loud	- Close the expansion valve to increase the overheating
	3. Expansion valve broken: discharged bulb or blocked stem	- Low evaporation pressure	- Replace the valve
8. DRIER FILTER FAULTS	1. Drier filter clogged	- Compressors suction pipe frosted - Bubbles in the flow light - Liquid pipe more cool at drier filter outlet	- Clean or replace the filter

List of service centers

VALDAOSTA

AOSTA
>>D.AIR di Squaiella D.&
Bidoggia C. snc
Tel. 0117 708 112

PIEMONTE

ALESSANDRIA - ASTI - CUNEO
>>Bellisi s.r.l
Corso Savona, 245 - 14100 Asti
Tel. 0141 556 268

BIELLA - VERCELLI
>>LOMBARDI SERVICE S.R.L.
Via delle Industrie - 13856 Vigliano
Biellese (BI)
Tel. 0158 113 82

NOVARA - VERBANIA
TUTTA LA GAMMA ESCULSO
SPLIT SYSTEM
>>AIR CLIMA SERVICE S.R.L.
Via Pertini, 9 - 21021 Angera (VA)
Tel 0331 932 110
SOLO SPLIT SYSTEM
>>CL. CLIMA SNC DI BENVEG-
NÙ L
Via S. Anna, 6 -
21018 Sesto Calende (VA)
Tel. 0331 914 186

TORINO
>>AERSAT TORINO SNC
di Borioli Seondino & C.
Strada Bertolla, 163-10156 Torino
Tel. 0115 611 220
>>D.AIR
di Squaiella D. & Bidoggia C. snc
Via Chambery 79/7 - 10142 Torino
Tel. 0117 708 112

LIGURIA

GENOVA
>>BRINZO ANDREA
Via Del Commercio, 27 1/C2
16167 Genova Nervi
Tel. 0103 298 314

IMPERIA
>>AERFRIGO
di A. Amborno e C. s.n.c
Via Z. Massa, 152/154
18038 Sanremo (IM)
Tel. 184 575 257

LA SPEZIA
>>TECNOFRIGO
di Veracini Nandino
Via Lunense, 59
54036 Marina di Carrara (MS)
Tel. 0585 631 831

SAVONA
>>CLIMA COLD
di Pignataro D.
Via Risorgimento, 11
17031 Albenga (SV)
Tel. 0182 51176

LOMBARDIA

BERGAMO
>>ESSEBI
di Sironi Bruno e C. sas
Via Pacinotti, 98 - 24100 Bergamo
Tel. 0354 536 670
BRESCIA
>>TERMOTEC
di Vitali G. & snc
Via G. Galilei - Trav. I°, 2
25010 S. Zeno S. Naviglio (BS)
Tel. 0302 160 812

COMO - SONDRIO - LECCO
>>PROGIELT
di Libeccio & C srl
Via Rigamonti, 21
22020 San Fermo della Battaglia (CO)
Tel. 0315 364 23

CREMONA
>>MORETTI ALBANO & C. SNC
Via Manini, 2/C - 26100 Cremona
Tel. 0372 461 935

MANTOVA
>>F.LLI COBELLi
di Cobelli Davide & C. s.n.c.
Via Tezze, 1 - 46040 Cavriana (MN)
Tel. 0376 826 174

MILANO - LODI ZONA CREMA-
SCA
>>CLIMA CONFORT
di O. Mazzoleni
Via A. Moro, 113
20097 S. Donato Milanese (MI)
Tel. 0251 621 813
>>CLIMA LODI
di Sali Cristian
Via Felice Cavallotti, 29 - 26900 Lodi
Tel. 0371 549 304
>>CRIO SERVICE S.R.L.
Via Gallarate, 353 - 20151 Milano
Tel. 0233 498 280
>>SATIC
di Lovato Dario
Via G. Galilei, 2 int. A/2
20060 Cassina dè Pecchi (MI)
Tel. 0295 299 034

PAVIA
>>BATTISTON GIAN LUIGI
Via Liguria, 4/A -
27058 Voghera (PV)
Tel. 0383 622 53

VARESE
TUTTA LA GAMMA ESCULSO
SPLIT SYSTEM
>>AIR CLIMA SERVICE
di Frascati Paolo & C snc
Via Pertini, 9 -
21021 Angera (VA)
Tel. 0331 932 110
SOLO SPLIT SYSTEM
>>CL. ELLE CLIMA SNC DI BEN-
VEGNÙ L.
Via S. Anna, 6
21018 Sesto Calende (VA)
Tel. 0331 914 186

TRENTINO ALTO ADIGE

BOLZANO - TRENTO
>>SESTER F SNC
di Sester A & C
via Enrico Fermi, 12 - 38100 Trento
Tel. 0461 920 179

FRIULI VENEZIA GIULIA

PORDENONE
>>CENTRO TECNICO SNC
di Menegazzo G. & C.
Via Conegliano, 94/A
31058 Susegana (TV)
Tel. 438 450 271

TRIESTE - GORIZIA
>>LA CLIAMTIZZAZIONE TRIE-
STE SRI
Strada della Rosandra, 269
34018 San Dorligo della Valle(TS)
Tel. 0408 280 80

UDINE
>>S.A.R.E.
di Musso Dino
Corso S. Valentino, 4
33050 Fraforeano (UD)
Tel. 0432 699 810

VENETO

BELLUNO
>>FONTANA SOFFRIO FRIGORI-
FERI SNC
Via Sampoi, 68 - 32020 Limana (BL)
Tel. 0437 970 042

LEGNAGO
>>DE TOGNI STEFANO
Via De Nicoli, 2 - 37045 Legnago (VR)
Tel. 0442 203 27

PADOVA
>>CLIMAIR SAs
di F. Cavestro & C.
Via Austria, 21 - Z.I. - 35127 Padova
Tel. 0497 723 24

ROVIGO
>>FORNASINI MAURO
Via Sammartina, 18/A
44040 Chiesuol del Fosso (FE)
Tel. 0532 978 450

TREVISO
>>CENTRO TECNICO
DI MENEGAZZO SRL
Via Conegliano, 94/A
31058 Susegana (TV)
Tel. 0438 450 269

VENEZIA CENTRO CITTÀ
>>SIMONATO GIANNI
Via Trento, 29 - 30174 Mestre (VE)
Tel. 0419 598 88

VENEZIA PROVINCIA
>>S.M. S.N.C.
di Spolaore Andrea e Musner
Maurizio
Via Fapanni 41/D
30030 Martellago (VE)
Tel. 0415 402 047

VERONA ESCLUSO LEGNAGO
>>ALBERTI FRANCESCO
Via Tombetta, 82 - 37135 Verona
Tel. 0455 094 10

VICENZA
SOLO SPLIT SYSTEM
>>ASSICLIMA
di Colpo Donato
Via Capitello, 63/c
36010 Cavazzale (VI)
Tel. 3368 139 63
TUTTA LA GAMMA ESCULSO
SPLIT SYSTEM
Bianchini Giovanni e Ivan snc
Via G. Galilei, 1Z - Loc. Nogarazza
36057 Arcugnano (VI)
Tel. 0444 569 481

EMILIA ROMAGNA

BOLOGNA
Effepi snc
di Ferrazzano & Proto
Via I° Maggio, 13/8
40044 Pontecchio Marconi (BO)
Tel. 0516 781 146

FERRARA
Fornasini Mauro
Via Sammartina, 18/A
44040 Chiesuol del Fosso (FE)
Tel. 0532 978 450

FORLÌ - RAVENNA - RIMINI
Alpi Giuseppe
Via N. Copernico, 100 - 47100 Forlì
Tel. 0543 725 589

MODENA ZONA MODENA SUD
Aersat snc
di Leggio M. & Lolli S.
Piazza Beccadori, 19
41057 Spilamberto (MO)
Tel. 0597 829 08

MODENA ZONA MODENA NORD
Cliamaservice
di Golinelli Stefano.
Via Per Modena, 18/E
41034 Finale Emilia (MO)
Tel. 0535 921 56

PARMA
Alfatermica
di Galbano & Biondo.
Via Mantova, 161 - 43100 Parma
Tel. 0521 776 771

Benassi Graziano
Via Paisello, 8 - 43100 Parma
Tel. 0521 460 744

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Moretti Albano & C
Via Manini, 2/C - 26100 Cremona
Tel. 0372 461 935

REGGIO EMILIA
Ecoclima srl
Via Maestri del lavoro, 14
42100 Reggio Emilia
Tel. 0522 558 709

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AREZZO
Clima service Etruria snc
Via G. Caboto, 69/71/73/75
52100 Arezzo
Tel. 0575 900 700

FIRENZE - PRATO
SEAT Servizi tecnici srl
Via Aldo Moro, 25
50019 Sesto Fiorentino (FI)
Tel. 0554 255 721

GROSSETO
Acqua e aria service srl
Via D. Lazzaretti, 8A -58100 Grosseto
Tel. 0564 410 579

LIVORNO - PISA
SEA s.n.c.
di Rocchi R. & C
Via dell'Artigianato, Loc.Picchianti
-57121 Livorno
Tel. 0586 426 471

LUCCA - PISTOIA
Frigotec snc G & MC Benedetti
Via V. Civitali, 2 - 55100 Lucca
Tel. 0583 491 089

MASSA CARRARA
Tecnofrigo
di Veracini Nandino
Via Lunense, 59
54036 Marina di Carrara (MS)
Tel. 0585 631 831

SIENA
Tutta la gamma esculso split system
Frigo tecnica Senese snc di B. & C.
Strada di Cerchiaia, 42
Z.A. 53100 Siena
Tel. 0577 284 330

SOLO SPLIT SYSTEM
Global impianti
Senese srl
Strada Massetana Romana, 52 53100
Siena
Tel. 0577 247 406

MARCHE

ANCONA - PESARO
Aersat snc
di Marchetti S. & Sisti F.
Via M. Ricci, 16/A
60020 Palombina (AN)
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MACERATA ASCOLI PICENO
CAST s.n.c
di Antonio Cardinali & R.
Via D. Alighieri, 68
62010 Morrovalle (MC)
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UMBRIA

PERUGIA
A.I.T. srl
Via dell'industria, Z.I. Molinaccio
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Capoccetti Otello
Via G. Medici, 14 - 05100 Terni
Tel. 0744 277 169

ABRUZZO

CHIETI - PESCARA - TERAMO
- L'AQUILA - ISERNIA - CAMPO-
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Petrongolo Dino
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Tel. 0871 360 311

LAZIO

FROSINONE - LATINA
Mastro Giacomo
Air Service M.C.
P.zza Berardi, 16
03023 Ceccano (FR)
Tel. 0775 601 403
RIETI
Capoccetti Otello
Via G. Medici, 14 - 05100 Terni
Tel. 0744 277 169
SOLO SPLIT SYSTEM
Dueg Clima
di Giulio Giornalista
Via Chitignano, 12B - 00138 Roma
Tel. 0688 130 20

Marchionni Marco
.zza dei Bossi, 16
00172 Centocelle (RM)
Tel. 0623 248 850

TUTTA LA GAMMA ESCULSO
SPLIT SYSTEM
Tagliaferri 2001 snc
Via Guidonia Montecelio snc 00191
Roma
Tel. 0633 312 34

VITERBO
Air Frigo
di Massimo Piacentini
Viale Baccelli, 74
00053 Civitavecchia (RM)
Tel. 0766 541 945

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SAIT s.r.l.
Via G. Deledda, 10
84010 San Marzano sul Sarno (SA)
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Cataldo Costanza
Via Tiberio, 7/F 80073 Capri (NA)
Tel. 0818 378 479

NAPOLI - CASERTA - BENEVEN-
TO
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di Fisciano Carmelo & C
Via Nuova Toscanella, 34/c 80145
Napoli
Tel. 0815 456 465

PUGLIA

BARI
Kliafrigo srl
Via Vallone, 81 - 70121 Bari
Tel. 0805 538 044

FOGGIA
Cliamcenter
di Amedeo Nardella
Via Carmicelli, 29 Pal. A Sc. A
71016 San Severo (FG)
Tel. 3396 522 443

LECCE - BRINDISI
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