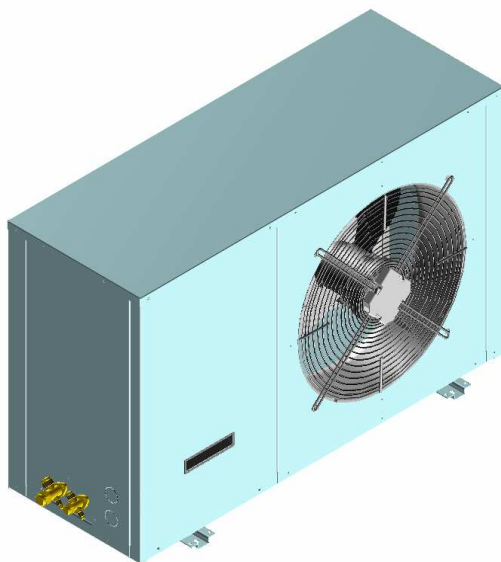
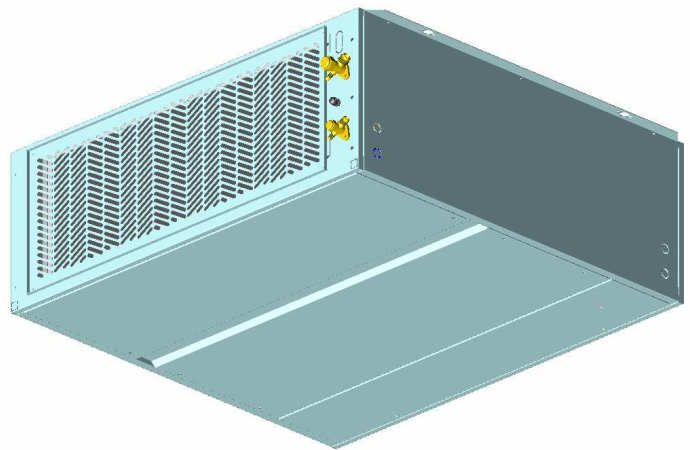


HTS

Packaged SPLIT Air Conditioning

HTI

*Evaporating unit
for wall or ceiling
installation*



HTC

Condensing unit



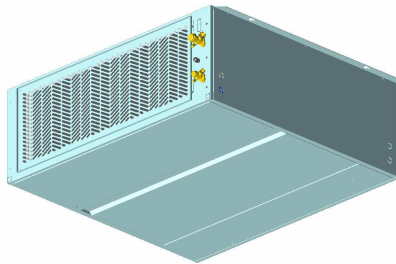
High Technology in Refrigeration Devices

GB

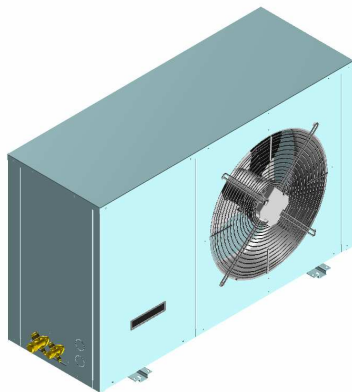
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Introduction

HTI
Evaporating indoor unit



HTC
Condensing outdoor unit



HTS Units

HTS “HiRef Telecom Split” units composed by an evaporating indoor unit **HTI** for ceiling/wall and a motor-condensing outdoor unit **HTC**, mainly for electronic equipped shelters, process centres and telecommunications sites. Proposed in 9 models with nominal cooling capacity from 2,60 to 14,50 kW. The system provides air filtration, indoor ventilation, cooling, heating, freecooling with outdoor fresh air to assure the useful climate in the site. The unit can accept emergency power supply of 48VDC for assuring indoor ventilation and Freecooling.

HTI evaporating unit are designed to be mounted in ceiling inside shelters.

Structure

All **HTS** units supporting structure are made of galvanized sheet steel of suitable thickness, duly insulated with noise-proof/anticondensing material, self-extinguishing in Class 1.

The enclosing panels are painted with epoxy polyester powder coating cured at 180 °C or, on request, painted galvanised sheet steel (RAL 9002). It is featured by rounded shape edges, according to innovative style trends and the accident prevention.

All structure details are entirely produced in-house with automatic processes integrating the CAD-3D designing (solid modeller) with the production process (CAM) = CAD-CAM.

Power supplies

All units are available with different supply voltages, with the option of double power supply. In this case it is possible to have a 48VDC solution for the air-conditioning control, even in case of power failure.

European directives

The **HTS** units are designed and manufactured according to the European directives currently in force, and are consequently marked **CE**.



Features and Fortes

Design & Technology

The **HTS** units introduce a rational arrangement of the components and an excellent assembly compactness.

All units are factory tested by using automatic systems based on objective "in-out" criteria and are ready to be installed and started by simple wiring on site.

Installation

The **HTS** packaged split air-conditioning unit is suitable for all environments except aggressive ones.

Make sure that the HTI indoor unit have more than 0,2 m free space around (Service area), be sure that indoor unit is perfectly horizontal for ceiling installation and perfectly vertical for wall installation, and be sure that the condensation draining is provided with a siphon: this is a critical point for all split units, in which the hydrostatic head is the only condensation level in the basin. Do not place any obstacles near the unit and make sure that the air flow is not impeded by obstacles and/or situations causing back suction (see Fig. 1).

The recommended sizes for the power cables and emergency line are shown in Tab.1.

Handling

While the unit is being unloaded and positioned, utmost care must be taken to avoid abrupt or violent manoeuvres. The unit must be handled carefully and gently; avoid using machine components as anchorages or holds and always keep it in an upright position. The unit should be lifted using the pallet it is

packed on; a transpallet or similar conveyance means should be used.

Packing / Unpacking

The standard packing consist of a wooden pallet and cardboard box, and a polythene foam protects the units' painted surface. On request, a cardboard box with an additional wooden crate or wooden case for sea transport can be supplied. The packing must be carefully removed to avoid the risk of damaging the unit. Different packing materials are used: wood, cardboard, nylon etc. It is recommended to keep them separately and deliver them to suitable waste disposal or recycling facilities in order to minimise their environmental impact.

Noise levels

The **HTS** units include the exclusive use of ventilation solutions, featured by a low emitted noise level making these conditioners compatible with city installations. The support structure, the panels and the fastening systems are designed to reduce vibrations and their transmission as low frequency sound emissions as much as possible.

Energy efficiency

The highest possible energy efficiency has been the main target in the whole thermo-dynamic and aeraulic designing.

The refrigerating circuit is featured by the use of rotary (HTC 025-035-045) or Scroll (HTC 056 - 073 - 090 - 105 - 120 - 145) compressors with top reliability and (optional) possibility of replacing the traditional with an electronically - controlled electric

valve: this brings a reduced energy consumption by 50% when the outer temperature lowers below 20°C and, above all, when the direct free-cooling is not possible. The aeraulic circuit implies the use of centrifugal fans with forwardly curved blades, featured by a very high reaction degree, it is thus possible to remove the scroll and the relevant energy losses in the dynamic-static conversion; all used fans can be equipped with "brushless" motor with permanent magnets and relevant switching electronics, that can be directly powered by an emergency mains at 48VDC. In this case, the DC motor efficiency matches with the fan efficiency, thus reaching outstanding energy results (over 45%).

The Freecooling in simultaneous operation contributes remarkably to reduce energy costs in the range of outer temperatures between the inner set point and TFT (Total Free-Cooling temperature).

Emergency situations

All units can be equipped with dual supply: main supply and "DC" supply.

- Main supply:
 - Compressor
 - Heating
 - Condensing section fan
- 48VDC emergency supply:
 - evaporating section fan
 - Microprocessor
 - Damper servomotor

In case of mains failure, a voltage presence relay signals this to the "mP" control that, together with the ventilation and Free-Cooling section, continues to be powered by back-up batteries. This ensures the air-conditioning control even with possible inner temperature variations from the set-point values.

Manufacturing features

All electric, aeraulic and refrigerating components are assembled inside the machine cabinet and cannot be accessed from outside, without removing the panels. The machine has a min. protection degree IP 44 and the protection grilles of the rotary parts comply with the accident prevention section of the norms EN 60335.

HTC outdoor unit positioning

The condensing unit must be positioned outside to enable its cooling.

It is connected to the air conditioner through the refrigerant lines. Keep refrigerant lines as short as possible (do not use lines longer than 15m for R22 and 10m for R407C).

HTI indoor unit positioning

Bear in mind the following aspects when choosing the best site for installing the unit and the relative connections:

- ▷ position the indoor unit HTI next to the main heat source;
- ▷ location of power supply;
- ▷ solidity of the supporting ceiling.

It is recommended to first prepare holes in the ceiling for the screw anchors.

The dimensions and the positions of the holes for the screw anchors are shown in Fig. 2.

Be careful to the correct horizontal positioning of the unit [if ceiling mounted] and to the correct execution of condensation draining and its siphon.

Fig. 1 – Service area [top view]

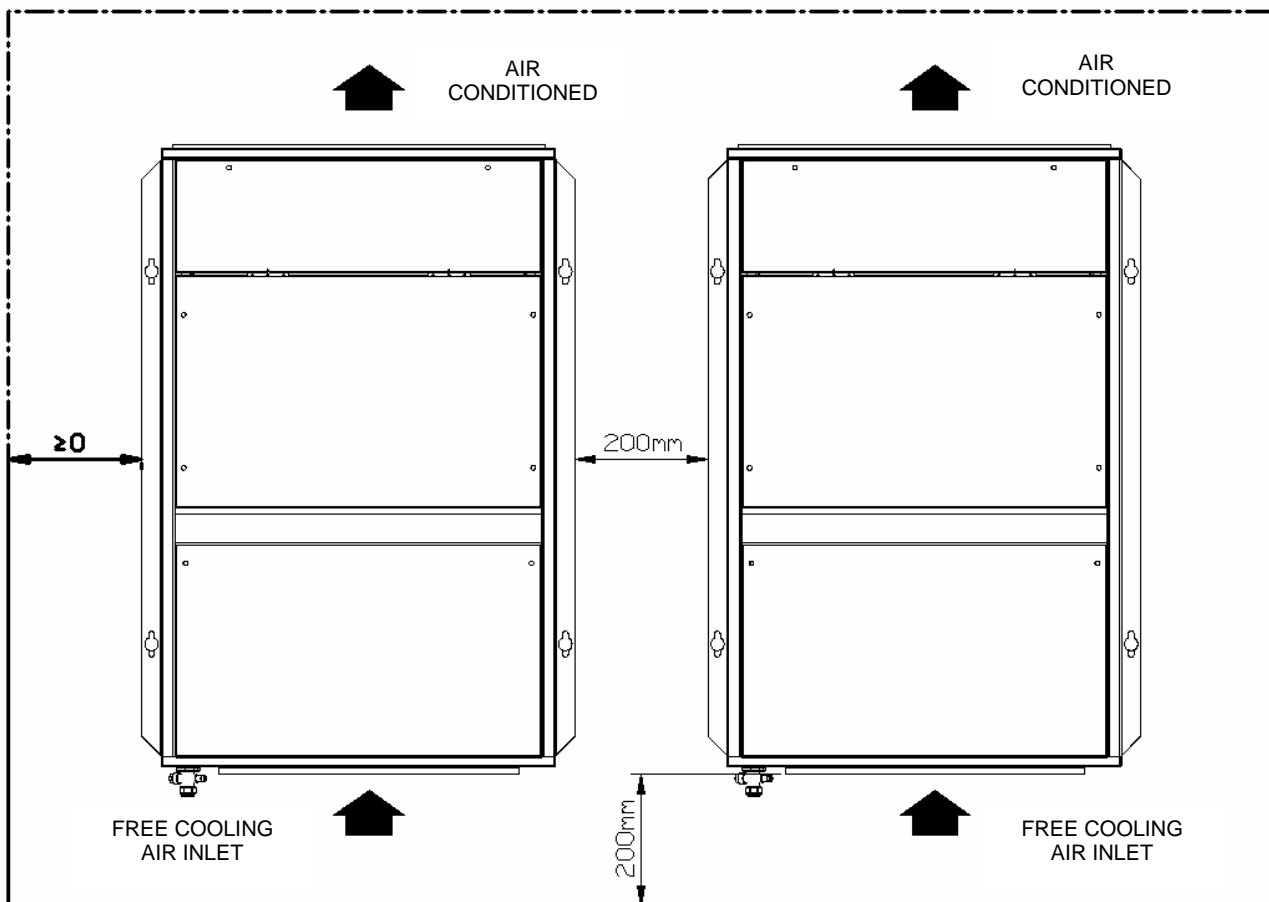
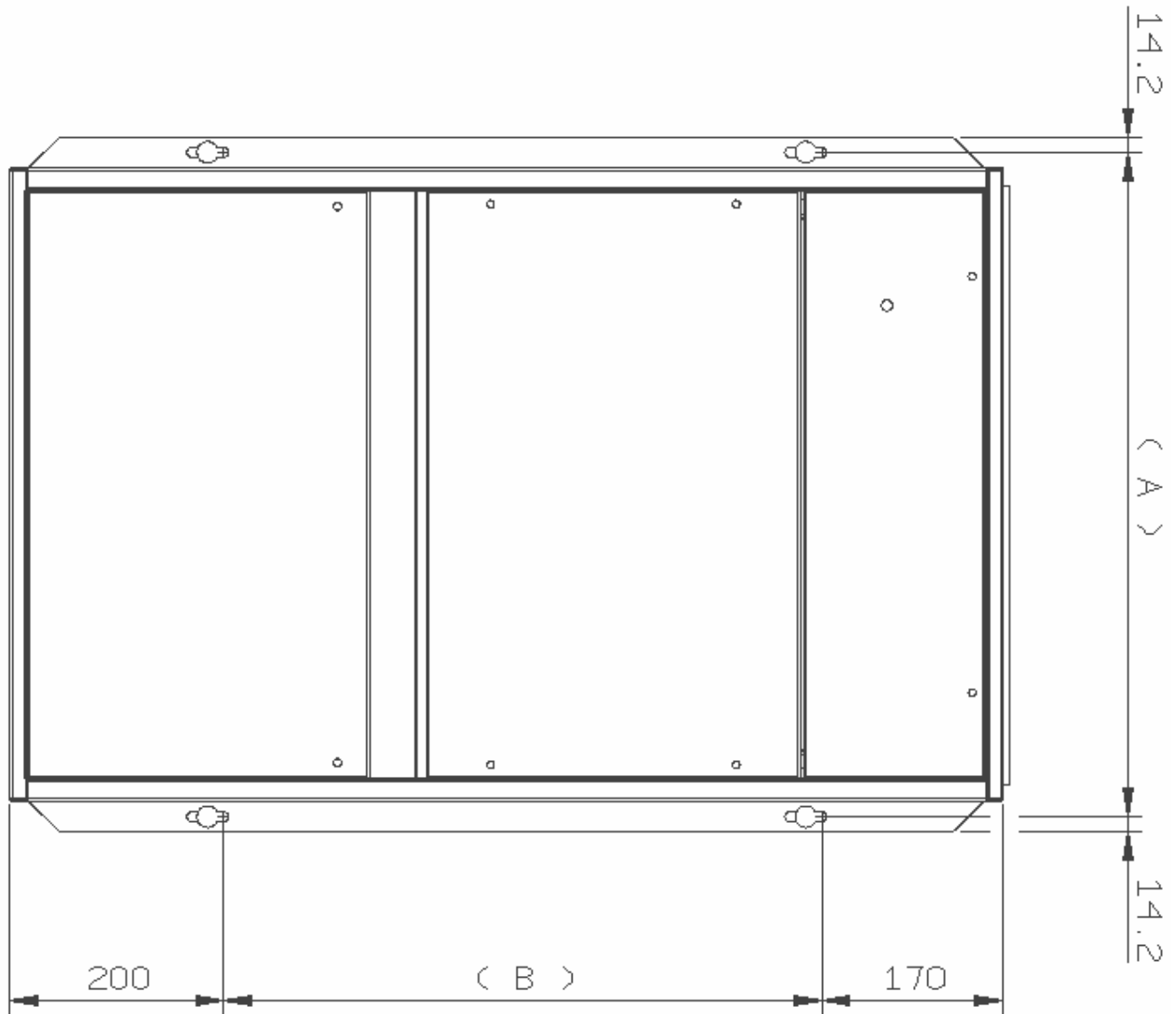


Fig. 2 – Holes position [top view]



Mod.	(A)	(B)
HTS025_035	621.6	560
HTS045_105	1021.6	560
HTS120_145	1121.6	650



Features and Fortes

Tab.1 - HTI cables sizes

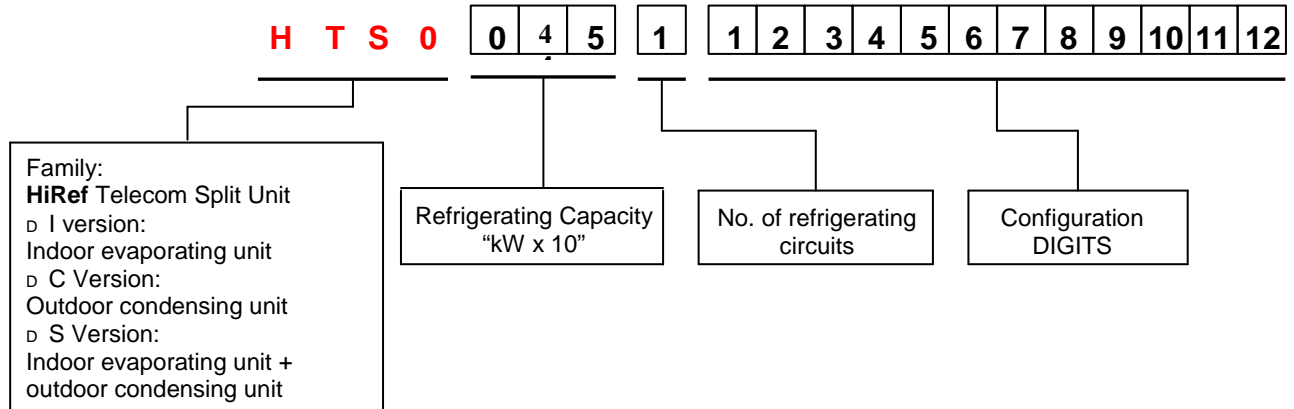
UNIT MODEL	MAINS POWER SUPPLY	CABLE TYPE	UPS EMERGENCY LINE	CABLE TYPE
HTI 025 HTI 035 HTI 045 HTI 056 HTI 073 HTI 090 HTI 105 HTI 120 HTI 145	230 V / 1 Ph / 50 Hz	2 x 6 mm ² + T x 6 mm ²	48 VDC	2 x 2,5 mm ²

Tab.2 - HTC cable sizes

UNIT MODEL	MAINS POWER SUPPLY	CABLE TYPE	UPS EMERGENCY LINE	CABLE TYPE
HTC 025 HTC 035 HTC 045 HTC 056 HTC 073	230 V / 1 Ph / 50 Hz	2 x 6 mm ² + T x 6 mm ²	48 VDC	2 x 2,5 mm ²
HTC 090 HTC 105 HTC 120 HTC 145	400 V / 3 Ph + N / 50 Hz	4 x 6 mm ² + T x 6 mm ²	48 VDC	2 x 4,0 mm ²

Configuration DIGIT

The numerous constructive options may be selected using the configuration scheme illustrated.



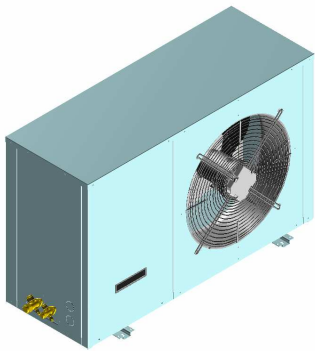
1	Supply + (Auxiliary)	0	230V / 1Ph / 50Hz
		2	230V / 1Ph / 50Hz + [48VDC]
		4	400V / 3Ph + N / 50Hz
		6	400V / 3Ph + N / 50Hz + [48VDC]
2	Control	C	ADVANCED [display built-in]
		D	
3	Refrigerating cycle options	0	R407C
		1	R407C + electronic thermal expansion valve
		2	R22
		3	R22 + electronic thermal expansion valve
4	Cabinet options	E	Painted galvanized sheet RAL7035
5	Electric re-heating	0	Heaters - NO
		1	Heaters - YES
6	Free-Cooling	0	Without Free-Cooling
		G	Modulating Free-Cooling 0-10V
		H	Free-Cooling with spring return
7	Air filtration	0	G2 Filter [Standard]
		1	G3 Filter
		2	G4 Filter
		7	G2 Filter + Clogged filter sensor
		8	G3 Filter + Clogged filter sensor
		9	G4 Filter + Clogged filter sensor
8	Condensation control	0	None
		M	On / Off
		N	Modulating fan speed [with pressure sensor]
9	Serial communication	0	None
		1	Serial card RS232 Modem
		2	Serial card RS485
10	Coils	0	Copper tubes / alu fins [Standard]
		C	Epoxy coated condenser coil
		E	Epoxy coated evaporator coil
11	Packaging	0	Standard
		1	Wooden crate with cardboard
		2	Seaworthy
12	Special	0	Standard
		S	Special

Manufacturing Specifications



Manufacturing Specifications

HTC Condensing unit



Refrigerating circuit

The refrigerating circuit is entirely in house manufactured, using welders certified according to the Directive PED 97/23 on pressurized containers, and all relevant components are certified according to the same directive. The exclusive rotary or scroll-type used compressors are available in the version for fluids type HFC R407C; for the non-EEC countries signing the Montreal Protocol, in the version with HCFC R22.

Scroll compressor



The machine standard equipment includes a thermostatic lamination valve and a vacuum start device: this device is enclosed in the Scroll compressor or is outside in the versions with single-phase rotary compressor/s. The circuit is

completed with anti-acid dryer filter with molecular sieve, a flow indicator and pressure intakes for the maintenance and/or inspection operations. The compressor is also equipped with two pressure switches for protection against high condensing (HP) and low evaporating (LP) pressures. The LP switch features automatic reset and the HP switch is equipped, for safety reasons, with manual reset.

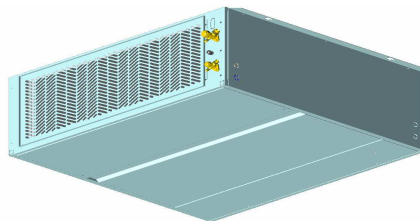
Condenser with finned pack

With geometry 25x21.65 and a 3/8" pipe it is composed of 0.10-mm thick aluminium fins and copper pipes expanded on the same for a complete contact. The design criteria privileges the front section with the advantage of reduced losses on the air side, so that it is possible to use 6-pole axial fan/s with minimized emitted sound power.

Condensing fan section

The unit is equipped with 6-pole axial fan/s and the electrical motor/s is directly coupled on the motor shaft, with internal thermal protection on IP44. This kind of motors limit the sound emissions, and are outer rotor type to improve the energy efficiency and reduce the magnetic noise.

HTI Evaporating unit



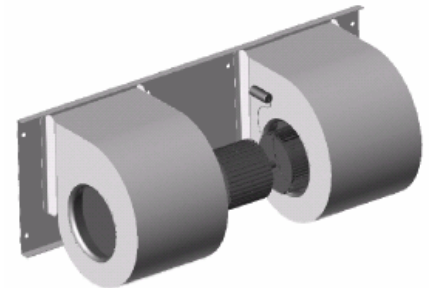
Finned pack evaporator

The heat transfer coil consists of a slab coil in copper tubes with aluminium

waved fins with a large face area so as to increase the SHR (Sensible Heat Ratio) and also optimise the EER (Energy Efficiency Ratio). This is achieved by reducing the air pressure drop and turbulence and increasing the evaporating temperature, thus the efficiency of the compressor.

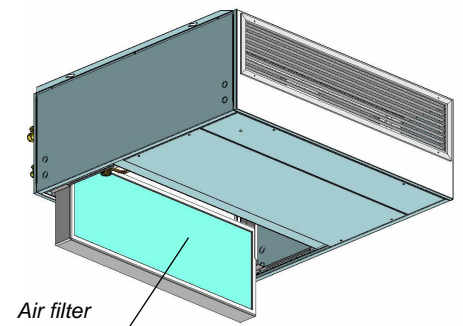
Evaporating fan section

Centrifugal fans



The standard HTI units are supplied with centrifugal fans with forwardly curved blades impeller. These fans have been specifically conceived for combine small size with high flow rate. All machines can be equipped with fans powered by brushless motors with permanent magnets, DC supplied at 48V.

Air filtration



The filter is located vertically, before the evaporating coil and provides filtration of the recirculated or the fresh air to obtain the required degree of air cleaning in the room. The filter can be easily extracted by removing the bottom panel dedicated

Manufacturing Specifications



to the filter/coil section. The standard filter class is G3, according to Eurovent G4/5 standard.

Note:

The mechanical safety devices such as the high pressure switch are of the kind that trigger directly; their efficiency will not be affected by any faults occurring in the microprocessor control circuit, in compliance with 97/23 PED.

All on-board systems comply with the EEC Directive "Low tension 73/23" and with the related norms. The access to the electric board is possible with operating unit as it is completely separated from the air flow; the protection degree with open panel is IP20.

Electric control board

The electric control board is constructed and wired in accordance with Directives 73/23/EEC and 89/336/EEC and related standards. All the remote controls use 24VDC signals powered by an insulating transformer.

Application field

Tab.3 - Field of Applications

MODEL: HTS		025	035	045	056	073	090	105	120	145	
Power supply	V / Ph / F	230VAC [±] 1.10% / 1Ph / 50Hz					400VAC [±] 1.10% / 3Ph / 50Hz				
		24VDC / 48VDC [±] 1.16% [Emergency cooling]									
Outdoor temperature	Min.	- 20°C									
	Max.	-	-	48°C	46,5°C	45°C	47°C	45°C	44°C	-	
Temperature / Humidity conditions	Min.	19°C / 30% R.H.									
	Max.	35°C / 50% R.H.									
Storage conditions	Min.	10°C / 90% R.H.									
	Max.	55°C / 90% R.H.									

Interconnectivity

All units can be connected with remote supervision systems by the use of "Gateway". With "mP" control of the "ADVANCED" type, there is the possibility of piloting directly a GSM modem able to send and receive SMS messages.

Up to max. 15 units can be connected with ADVANCED type mP, sharing the operating parameters and enabling the stand-by rotation and re-start of the installed machines.

The interconnection possibilities, according to control type, are summarized in the tables below (Tab.2).

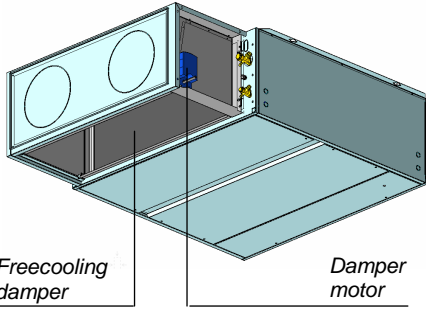
Tab.4 - mP ADVANCED

PROTOCOL	SERIAL CARD	GATEWAY	NOTES
Proprietary Carel	RS485	Not necessary	RS485 network connection
		RS485 / RS232 converter (PC485KIT)	Connection with the supervision PC
Modbus [→]	RS485	Not necessary	RS485 network connection
BACnet™	RS485	Gateway BACnet™	RS485 network connection
LonWorks [→]	LON RS485	Not necessary	For the dedicated programming, contact HiRef S.p.A.
	LON RS485		
Trend	Trend serial	Not necessary	For the dedicated programming, contact HiRef S.p.A.
Tcp / Ip	RS485	Gateway TCP / IP	Ethernet network connection
GSM	RS232	GSM modem	For the dedicated programming, contact HiRef S.p.A.
	RS485 control local network	PlantWatch + GSM modem	PlantWatch operates as concentrator

Manufacturing Specifications



Freecooling section (Option)



All HTI units can be available with the freecooling option, in this way we save energy and achieve better reliability, for the lower number of compressor starts/stops, and the shorter running time.

An internal motorized damper modulates his position from 0% to 100% of fresh air to achieve the required cooling capacity. The exhaust air is discharged outdoor.

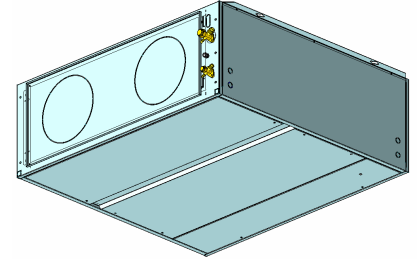
The consensus to freecooling is given when the difference between the indoor and outdoor air temperature is higher than a set value. No freecooling and direct expansion cooling are allowed at the same time.

Freecooling duct connections (option)

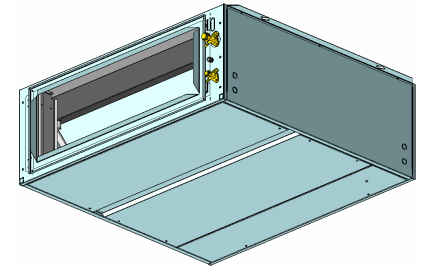
The freecooling unit is equipped with connections collect the outside air, as follows:

- Standard: double circular holes for 252mm diameter flexible ducts.
- Option: single rectangular hole with flange for 789x252mm rigid pipe (air duct).

Double circular ducts [Standard]



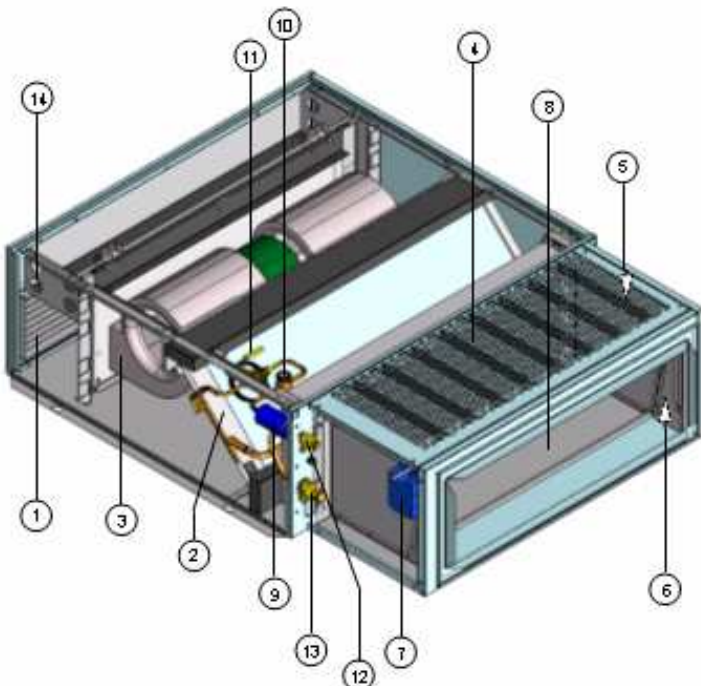
Single rectangular pipe (air duct) [Optional]



In both cases, the holes in the wall have to be protected by rainproof grilles with prefilter to avoid water or foreign bodies get in the conditioner.

Outside air, taken into the room by the fan, gets out through an overpressure damper, which is installed on the wall of the room and is protected also by external rainproof grille.

Fig. 3 – HTI unit main features



Tab.5 - HTI Main Components

REF.	DESCRIPTION
1	Air discharge grille
2	Evaporator coil
3	Evaporator fan
4	Air filter
5	Return air section
6	Freecooling air inlet section
7	Damper motor (only with freecooling)
8	Damper (only with freecooling)
9	Filter dryer
10	Sight glass
11	Thermostatic valve
12	Refrigerant inlet connection
13	Refrigerant outlet connection
14	Power supply inlet

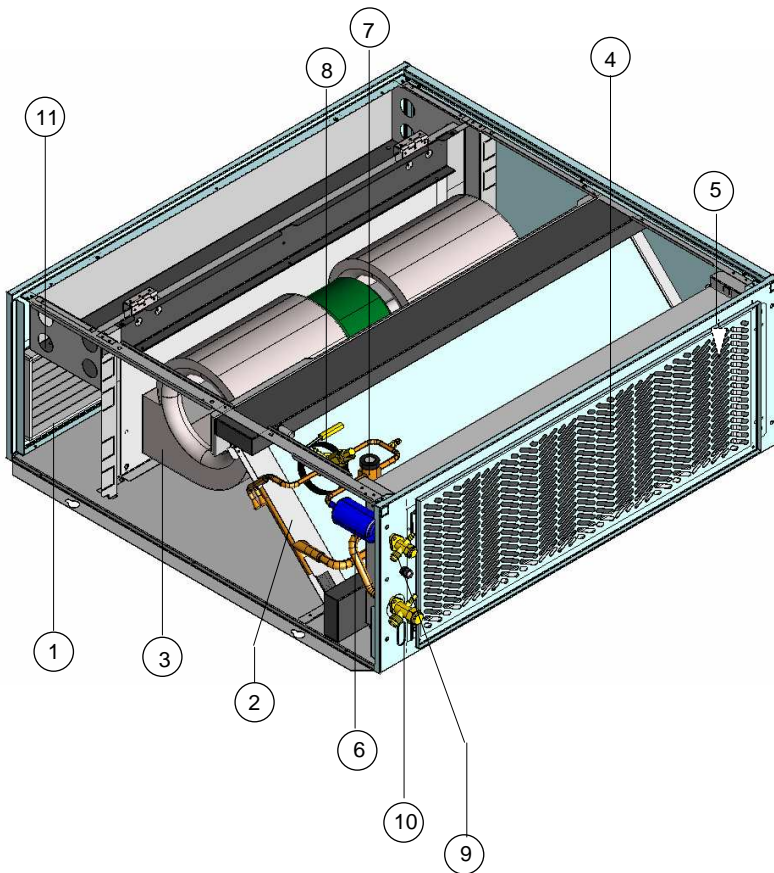
Manufacturing Specifications



Tab.5 - HTI Main Components (without free cooling)

REF.	DESCRIPTION
1	Air discharge grille
2	Evaporator coil
3	Evaporator fan
4	Air filter
5	Return air section
6	Filter dryer
7	Sight glass
8	Thermostatic valve
9	Refrigerant inlet connection
10	Refrigerant outlet connection
11	Power supply inlet

Fig. 3 – HTI unit main features (without free cooling)





Control Software and Hardware

ADVANCED [Carel pCO²]

The **HTS** units can be supplied with one microprocessor control levels:

- D without local user interface*
- D with built-in display 4x20 LCD*

A remote display is available too, and can be positioned up to 200 m far with a simple plug-in connection with phone-type cable.



All microprocessors, ADVANCED and ADVANCED with built-in display 4x20 LCD, enable to control completely the units, such as:

- Sensors
 - room temperature to keep the inner set-point
 - outer temperature to pilot the Free-Cooling damper
 - delivery temperature to prevent the risks of thermal shocks of the room electronic equipment
 - condensing pressure (optional)
 - evaporating pressure (optional)
- Functions:
 - room temperature management
 - reading of the relative humidity (optional)
 - control of the air outlet min. temperature in the environment
 - control of the air de-humidification by reducing the fan speed (with optional sensor and with optional dc fans)
 - heating (optional)
 - alarm control equipped with clean contacts for the remote connections of visual and sound systems
 - stand-by management of two units. The LAN connection by the ADVANCED microprocessor, ensures other functions such as SMART, Free-Cooling, modem sharing, etc.
 - clean contacts for every other type of alarm (optional)
 - from the microprocessor it is possible to select the automatic restart after a voltage lack
 - min. time between two compressor start-ups
 - remote interface, up to 200 m, directly connected using a LAN connection (for mP ADVANCED)
 - possibility of connecting the unit with a supervision system (optional)
 - 2 password levels to access the unit configuration
 - clock card for recording the even date and time
 - hour-counter to enable a scheduled maintenance of the fans, compressors and filters

List of the Main Options

1 ADVANCED microprocessor

Programmable microprocessor with 16 bit and high performances.

2 Air differential pressure switch

3 Double supply

- AC main supply from the mains:
 - Compressor/s
 - Fan/s of the condensing section
 - Heating
- Auxiliary supply 48 VDC:
 - Microprocessor
 - Evaporating section fan

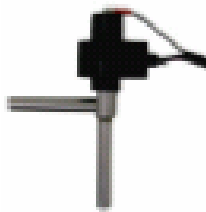
Note: it is possible to activate the fan speed control to enable the coil energy saving during its operation.

- Damper servomotor

4 Free-Cooling with damper

Thanks to the unit designing principle, it is possible to carry out the “upgrading on site” on the units not equipped with the Free-Cooling option.

5 ETV-T “Electronic Thermostatic Valve Technology”



For applications where the direct Free-Cooling is not possible. This solution enables to reduce the energy consumption up to 50% compared to the standard units when the outdoor temperature is below 20°C.

6 Humidity sensor

For the enthalpic control in the Free-Cooling situations, combined with the mP ADVANCED control.

7 Condensation control

8 Interconnectivity

- Serial port:
 - RS232
 - RS485
- Communication protocol:
 - Carel
 - Modbus[→]
 - LonWorks[→]
 - BACnet[™]
 - TCP-IP
 - GSM modem (complete management through SMS Services).

Free-Cooling Technology

The innovative Free-Cooling system enables to reach outstanding efficiency levels, above all when operating simultaneously with the mechanical cooling: this situation, in many central European climate areas, represents over 50% of the yearly total hours.

The damper is further designed to be integrally extracted, thus enabling a complete maintenance possibility.

The HTS designing concept enables the upgrading on site of units not equipped with the Free-Cooling option; this is important in such cases where it is necessary to have a unit stock at disposal.

The temperature sensors installed at delivery, intake and fresh air control completely the damper, improving its energy efficiency and avoiding the risk of inlet air at temperatures lower than the limit allowed by the electronic equipment.

In case of combination with DUAL supply, mains + DC UPS, the Free-Cooling can enable to control the climate even in emergency situations and, if the two units are reciprocally connected, it can implement all strategies for avoiding to lose the control of the inner set point of the container (see Fig. 4).

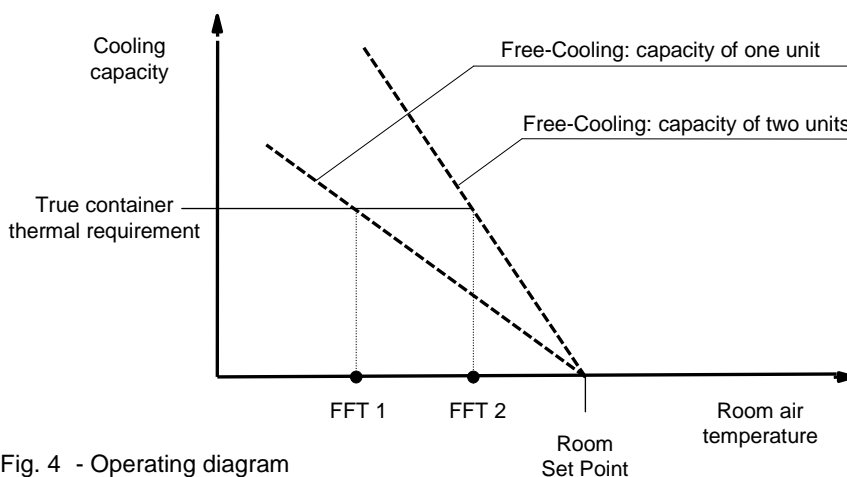


Fig. 4 - Operating diagram

List of the Main Options



Damper servomotor with spring return

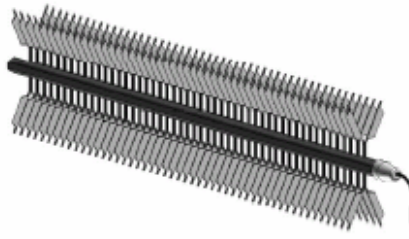
It positions the dampers completely open or completely closed at the customer's choice in case of power lack: with an operation signal connected with a fire alarm, the damper is usually positioned closed, to enable the operation of the automatic switching-off systems.

This option must be defined at the order.

Clogged filter sensor

This differential pressure sensor detects the filter clogging and generates an alarm displayed by the microprocessor control.

Heating



It is performed by using heaters in extruded aluminum, with high thermal exchange surface: this aspect enables to match reduced thermal inertias with reduced surface temperatures, to the advantage of a full use safety. Each heating element is protected by a safety thermostat directly acting on the supply.

Outer paneling

The standard supply includes panels in painted galvanized sheet metal RAL9002.

Surface treatments on finned coils

An efficient protection against corrosive agents is guaranteed by the copper-copper version, the cataphoresis protection and the use of hydrophile pre-treated aluminum: the protection grade is reported in the mentioned order.

Refrigerants

According to the norm EEC 2037/00, the **HTS** units can operate with:

- HFC R407C as standard
- HCFC R22 Export non-EEC in the countries signing the Montreal protocol

The unit is supplied, after being pre-charged with nitrogen, tested and ready to be started up on the site.

Alarms

It reports high and low priority alarms on clean contacts. In case of ADVANCED microprocessor, it is possible to have a subdivision of the alarm type in the terminal board of the electric panel and, generally, it is possible to arrange Custom solutions according to the different supply standards of the phone companies.

Air distribution grilles

The air distributions grilles are made of extruded aluminum, with single row of adjustable fins. In case of Free-Cooling unit, a further filter (option) is arranged on the air outlet to prevent the unwished entry of small animals and/or insects.

Tests and Reference Standards

Safety

The **HTS** units have been designed, manufactured and tested according to the directives of the European Union:

- 98/37/EC
(former 89/392/EEC, 91/368/EEC, 93/68/EEC)
- 89/336/EEC
- 73/23/EEC

Electric boards

The electric boards comply with EN 60204-1.

Electro-magnetic compatibility

The **HTS** units complies with the following EMC standards:

- EN 50081-1, Emissions
(“Generic emission standard, Part 1: residential, commercial and light industrial”, January 1992)
- EN 50082-2, Electro-magnetic compatibility
(“Generic emission standard, Part 2: industrial environment”, March 1995)

Conformity **CE**

Each **HTS** unit is supplied complete with test certificate and conformity certificate according to the Directives of the European Union. The units are “**CE**” marked.



Technical Data

Technical Data

Tab.1 - HTI Performance table

MODEL: HTI - INTERNAL UNIT		025	035	045	056	073	090	105	120	145
Refrigerant [Ashrae]		R407C								
Cooling capacity [Total] [I.T. 27°C; R.H. 40% / O.T. 35°C]	kW	2.60	3.60	4.50	5.60	7.30	9.00	10.40	12.00	14.50
Power supply [Standard]	V / Ph / F	230 / 1 / 50								
Fan/s absorbed power	W	185		245		470		690		
Fan/s	No	1				2				
Refrigerating circuit	No	1								
Evaporator air flow	m ³ /h	950	930	1400		2200		3200		
Indoor coil front surface	m ²	0.16				0.29		0.37		
Air filter efficiency	-	EU 3								
Free Cooling air flow	m ³ /h	810	790	1190		1870		2720		
Free Cooling temperature	°C	17.5	13.5	15.8	13.0	15.5	12.7	10.5	14.0	11.2
Width x Height x Depth	mm	1040 x 350 x 590		1040 x 350 x 990				1140 x 400 x 1090		
Weight	kg	64	64	83	83	87	94	94	105	106

Tab.2 - HTC Performance table

MODEL: HTC - EXTERNAL UNIT		025	035	045	056	073	090	105	120	145	
Refrigerant [Ashrae]		R407C									
Power supply [Standard] (**)	V / Ph / F	230 / 1 / 50					400 / 3 / 50				
Absorbed power [Total]	W	940	1180	1320	1760	2210	2560	3070	3720	4720	
Absorbed current [Total]	A	3.4	4.6	4.9	7.4	9.6	4.5	5.1	6.2	8.2	
FLA	A	6.3	8.8	9.5	12.0	15.0	7.0	7.0	10.0	13.0	
LRA	A	18.3	28.0	34.0	47.0	64.0	40.0	46.0	50.0	66.0	
Compressor	Type	Rotary		Rotary ^(*)	Scroll						
	No	1									
Refrigeration circuit	No	1									
External coil front surface	m ²	0.25				0.54		0.67			
Condenser air flow	m ³ /h	2250	2050	3450	3350	3350	5100	5100	5580	5450	
Condenser fan	No	1					2				
Sound power level	dB(A)	68		69		70		73		71	
Sound pressure level [at 10m in free field]	dB(A)	41		42		43		46		44	
Width x Height x Depth	mm	600 x 580 x 350		990 x 630 x 360				1120 x 1128 x 578			
Weight	kg	77	78	86	88	92	98	106	130	133	

FLA= Max. operating current

LRA= Pickup current

(*) Scroll compressor [Optional]

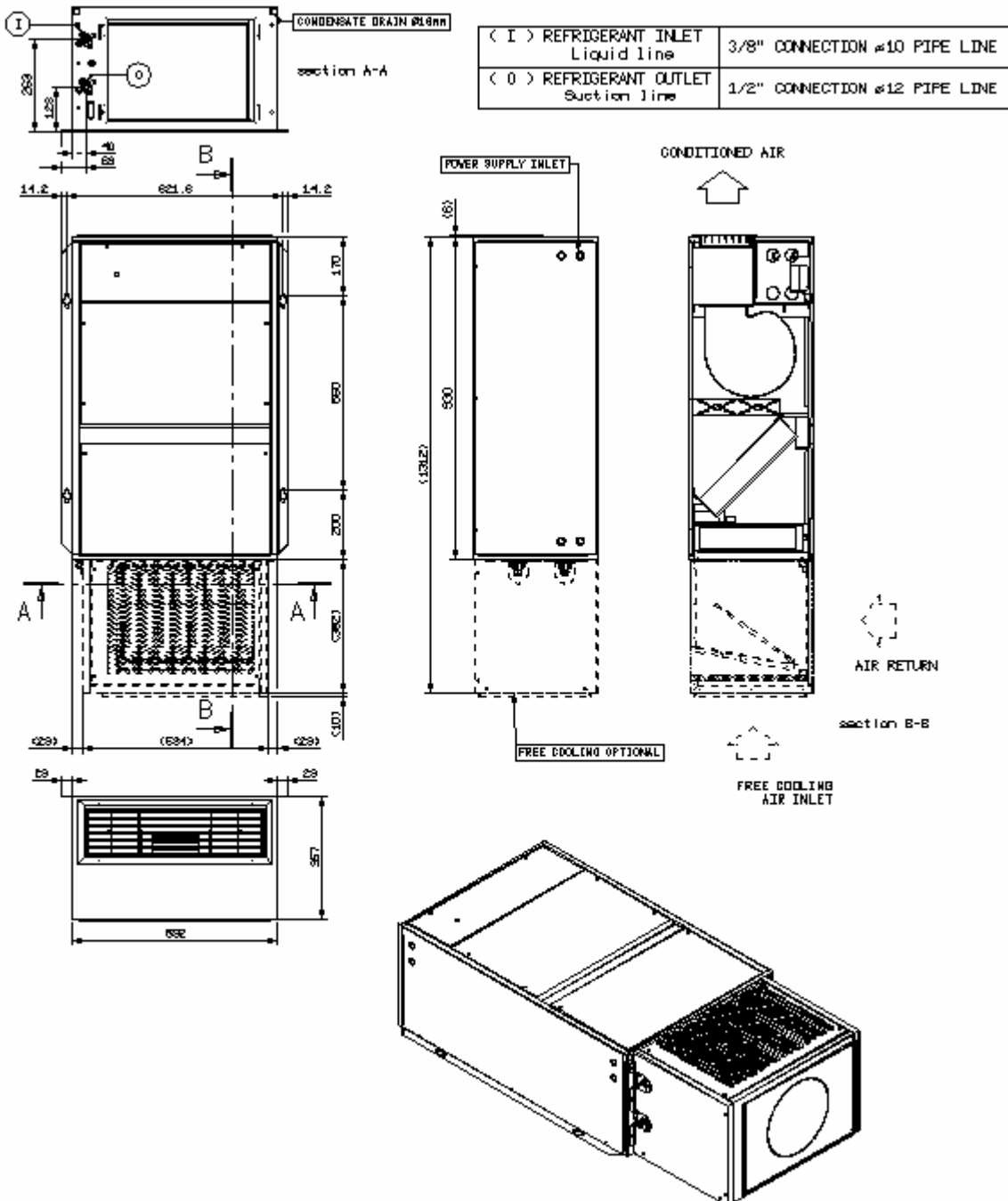
(**) For other power supplies, please contact our Technical Department

Dimensional Drawings



Dimensional drawings

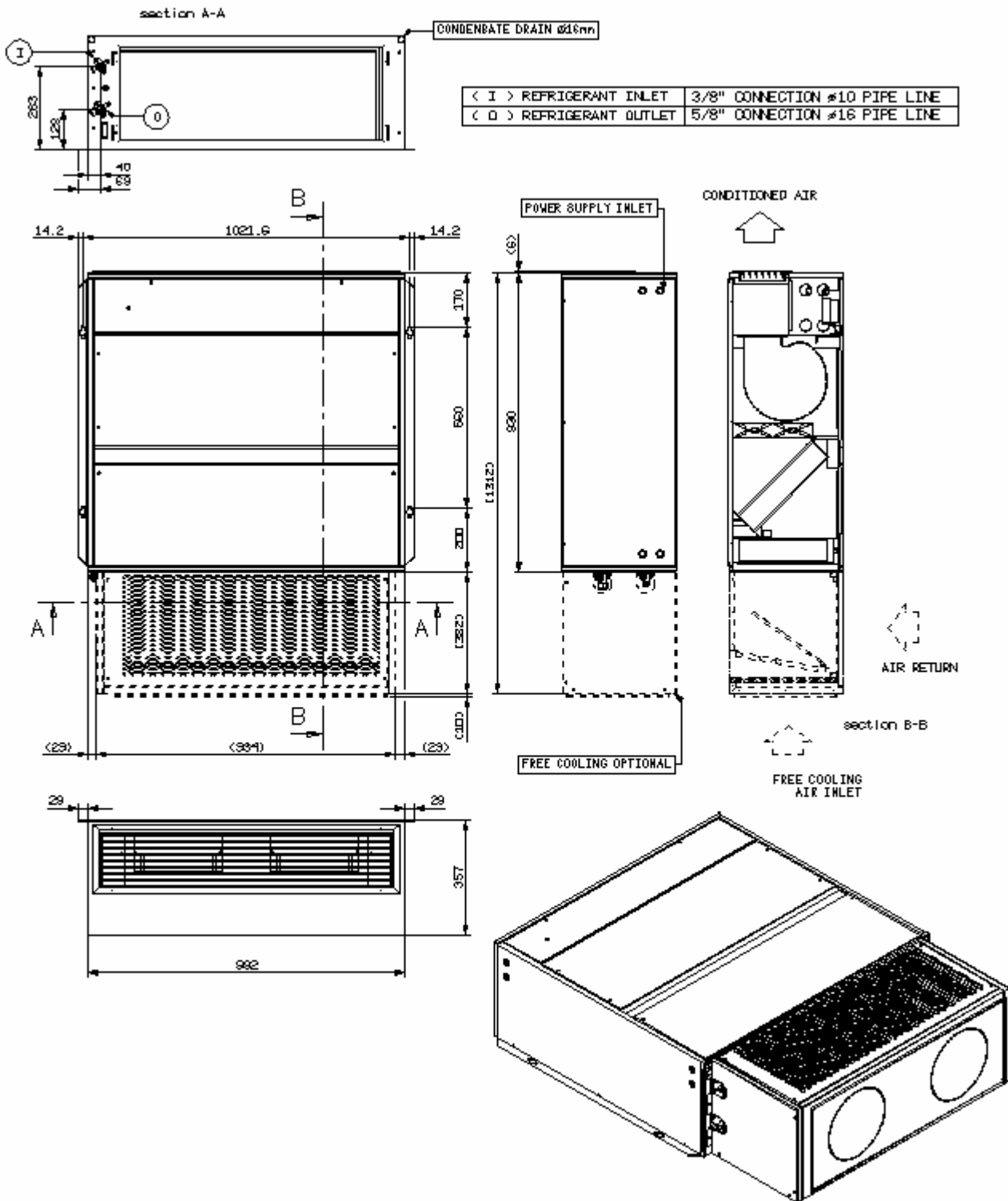
EVAPORATING UNIT: MOD. HTI 025 - 035



Dimensional Drawings



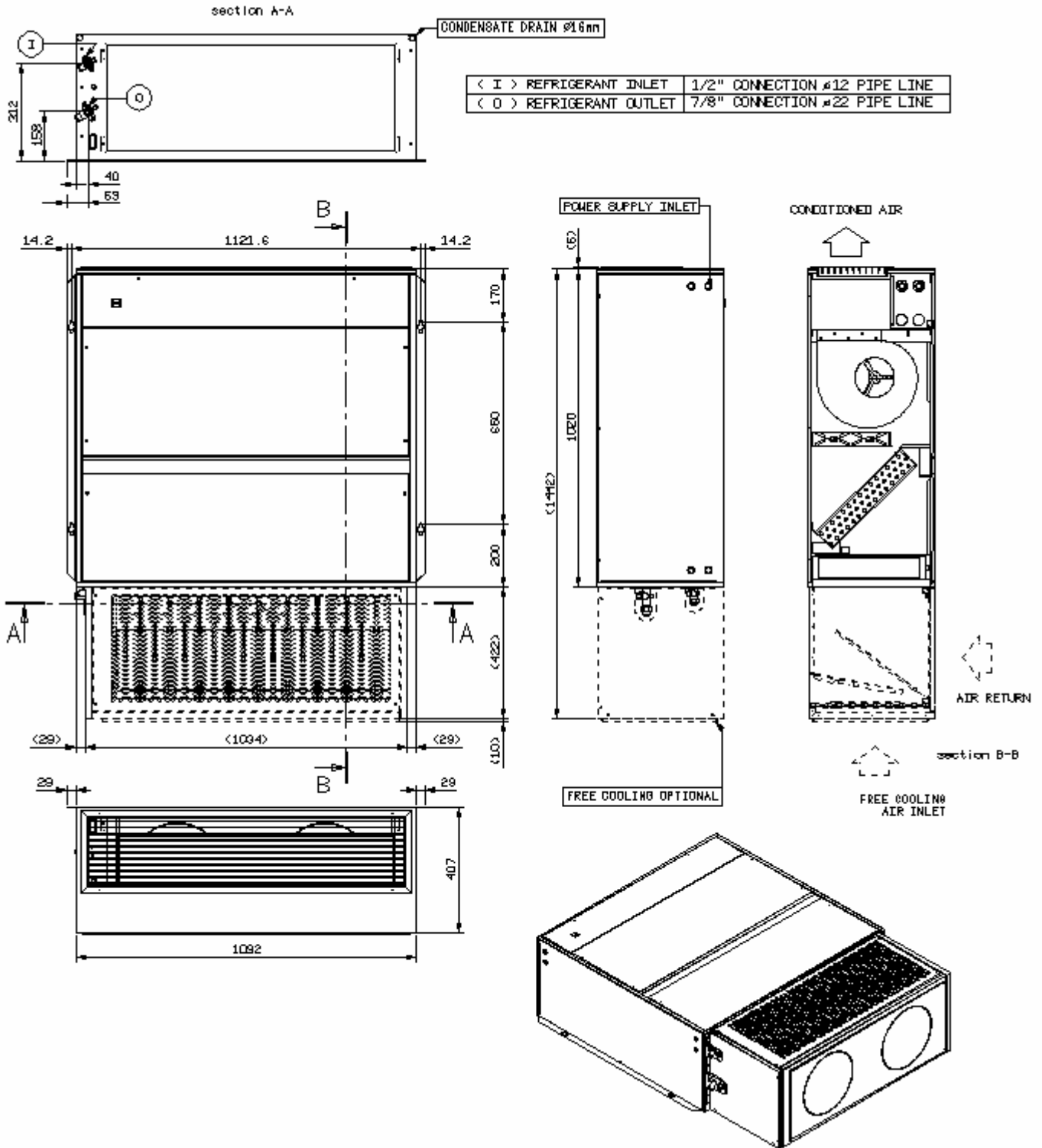
EVAPORATING UNIT: MOD. HTI 045 - 056 - 073 - 090 - 105



Dimensional Drawings



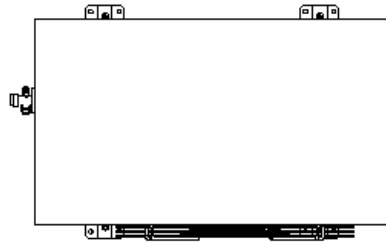
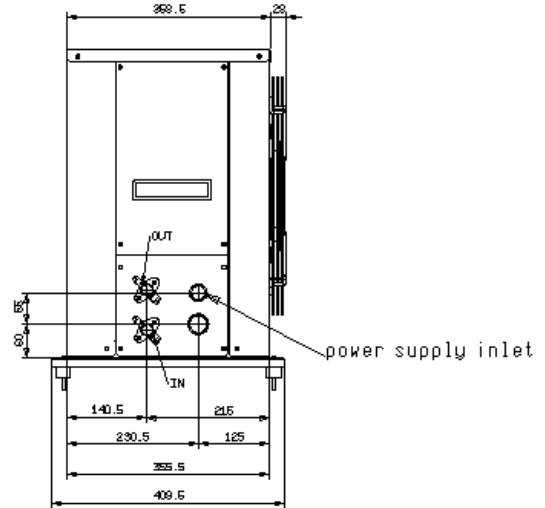
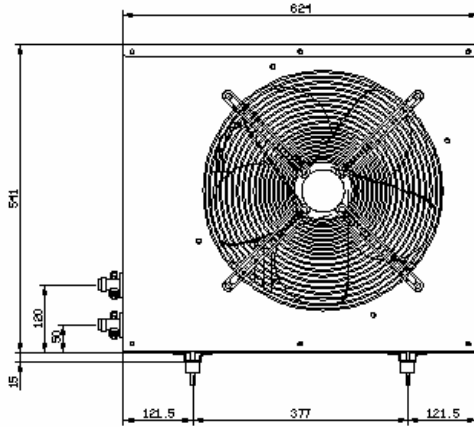
EVAPORATING UNIT: MOD. HTI 120 - 145



Dimensional Drawings



CONDENSING UNIT: MOD. HTC 025 - 035

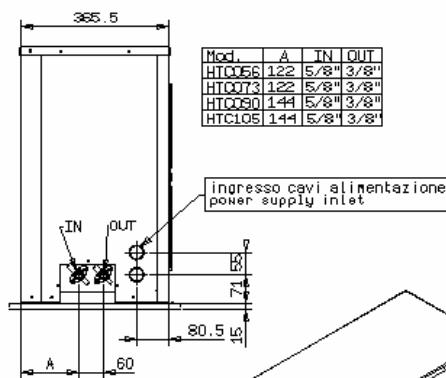
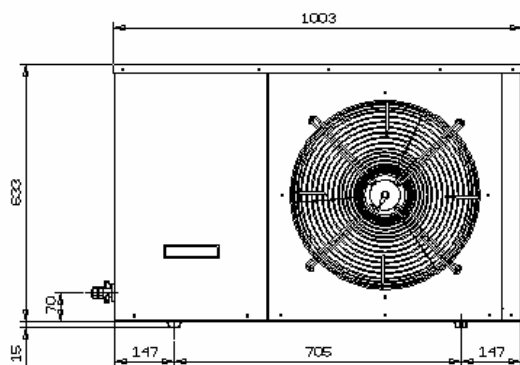


Mod.	IN Gas Line	OUT Liquid line
HTC025	1/2"	3/8"
HTC035	1/2"	3/8"

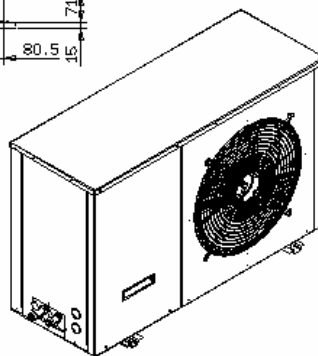
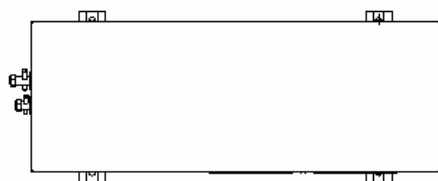
Dimensional Drawings



CONDENSING UNIT: MOD. HTC 045 - 056 - 073 - 090 - 105



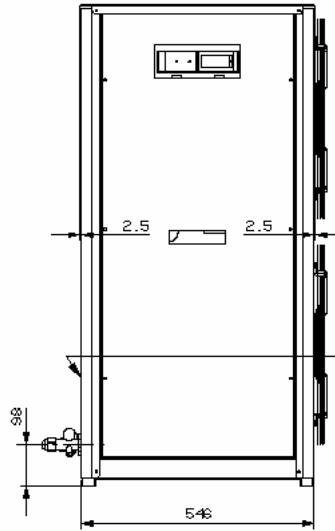
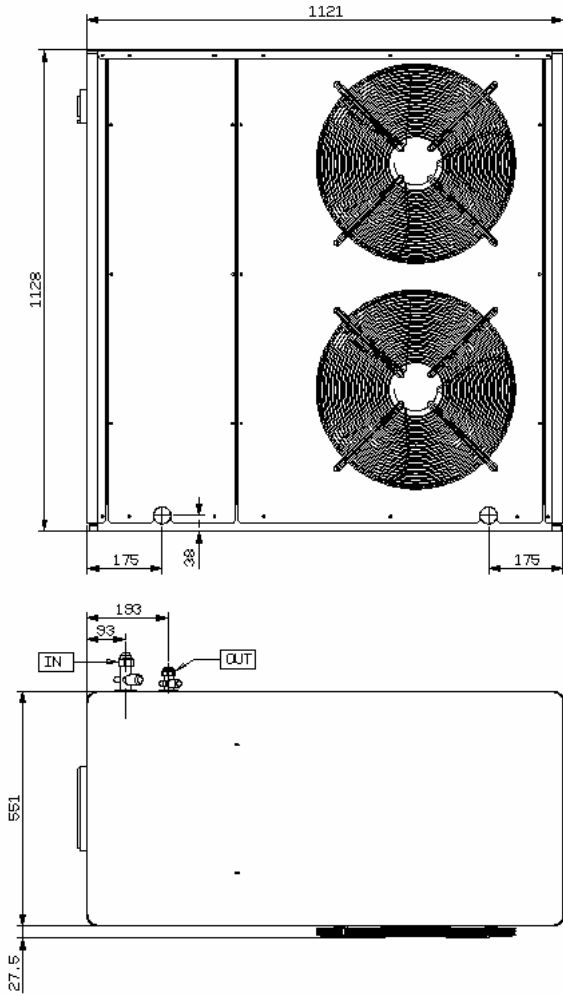
Mod.	A	IN	OUT
HTC056	122	5/8"	3/8"
HTC073	122	5/8"	3/8"
HTC090	144	5/8"	3/8"
HTC105	144	5/8"	3/8"



Dimensional Drawings

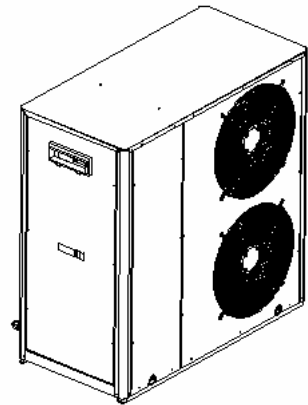


CONDENSING UNIT: MOD. HTC 120 - 145



Mod.	IN	OUT
HTC120	7/8"	1/2"
HTC145	7/8"	1/2"
1/2" CONNECTION Ø12 PIPE LINE		
7/8" CONNECTION Ø22 PIPE LINE		

INGRESSO CAVI ALIMENTAZIONE
POWER SUPPLY INLET

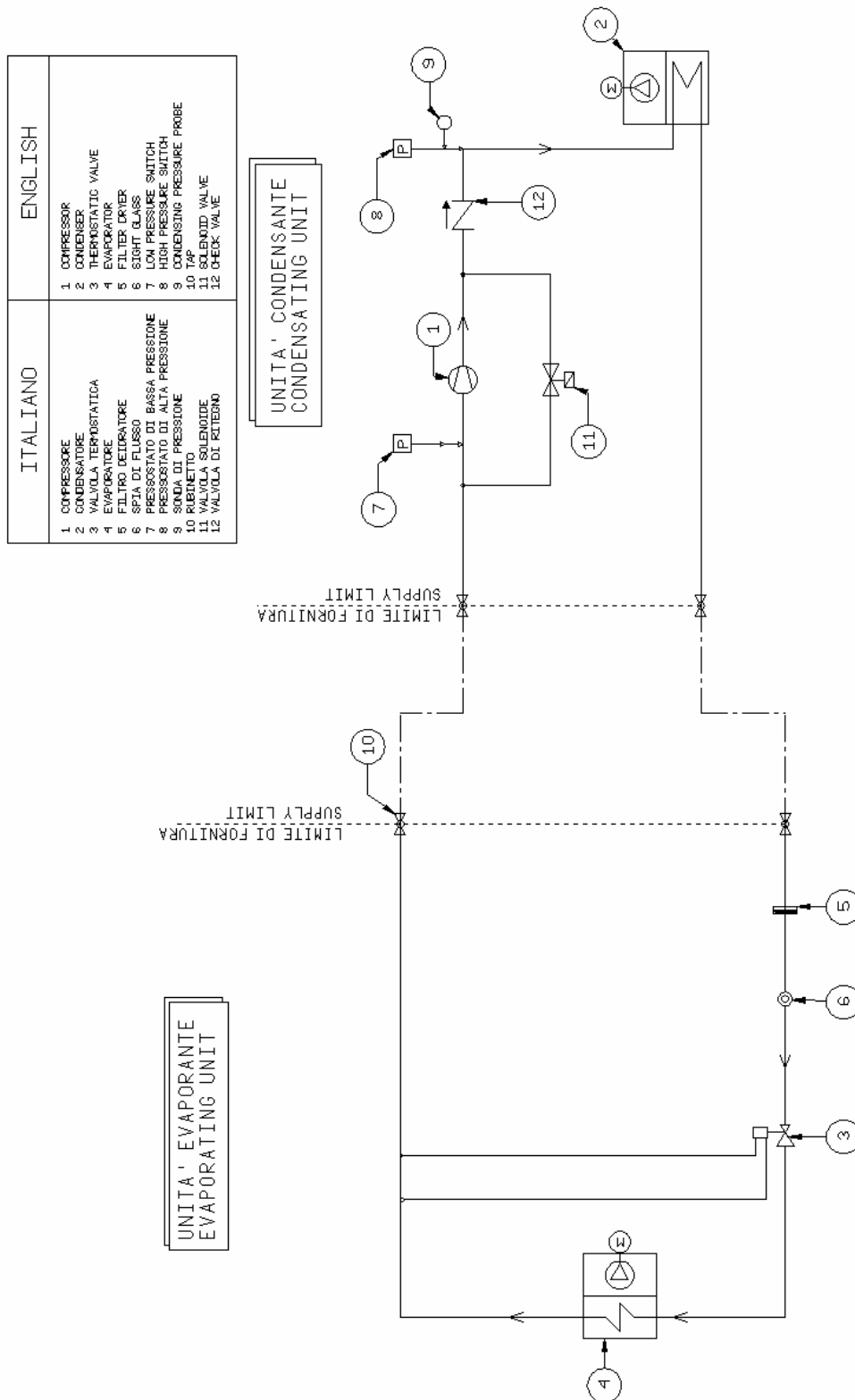


Refrigerant Circuit



Refrigerant Circuit

MOD. HTS 025 – 035 VTE

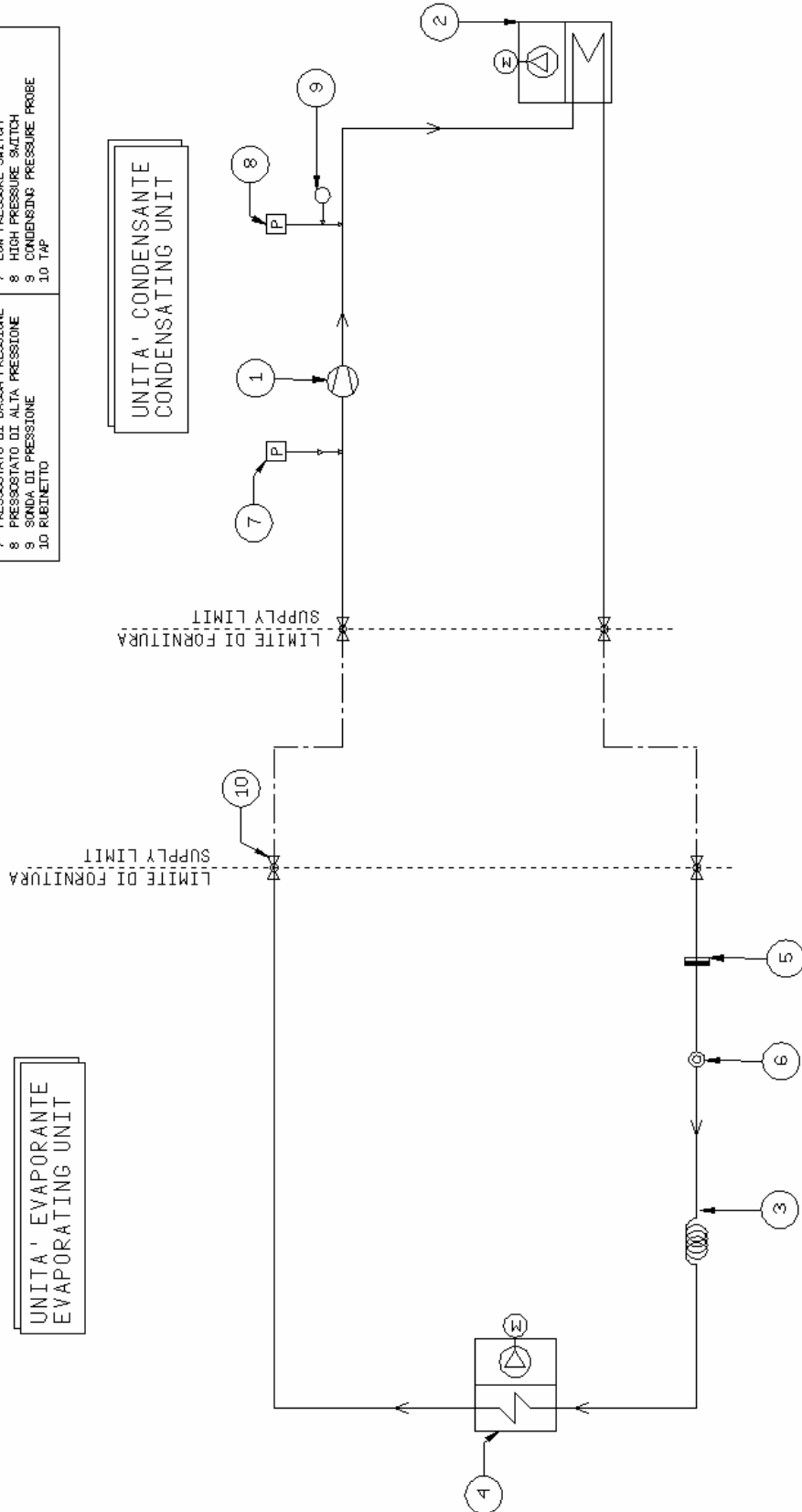


Refrigerant Circuit



MOD. HTS 025 – 035 VTM

ITALIANO	ENGLISH
1. COMPRESSORE	1. COMPRESSOR
2. CONDENSATORE	2. CONDENSER
3. TUBO CAPILLARE	3. CAPILLARY TUBE
4. EVAPORATORE	4. EVAPORATOR
5. FILTRO DEIDRATORE	5. FILTER DRYER
6. SPTA DI FLUSSO	6. SIGHT GLASS
7. PRESSOSTATO DI BASSA PRESSIONE	7. LOW PRESSURE SWITCH
8. PRESSOSTATO DI ALTA PRESSIONE	8. HIGH PRESSURE SWITCH
9. SONDA DI PRESSIONE	9. CONDENSING PRESSURE PROBE
10. RUBINETTO	10. TAP

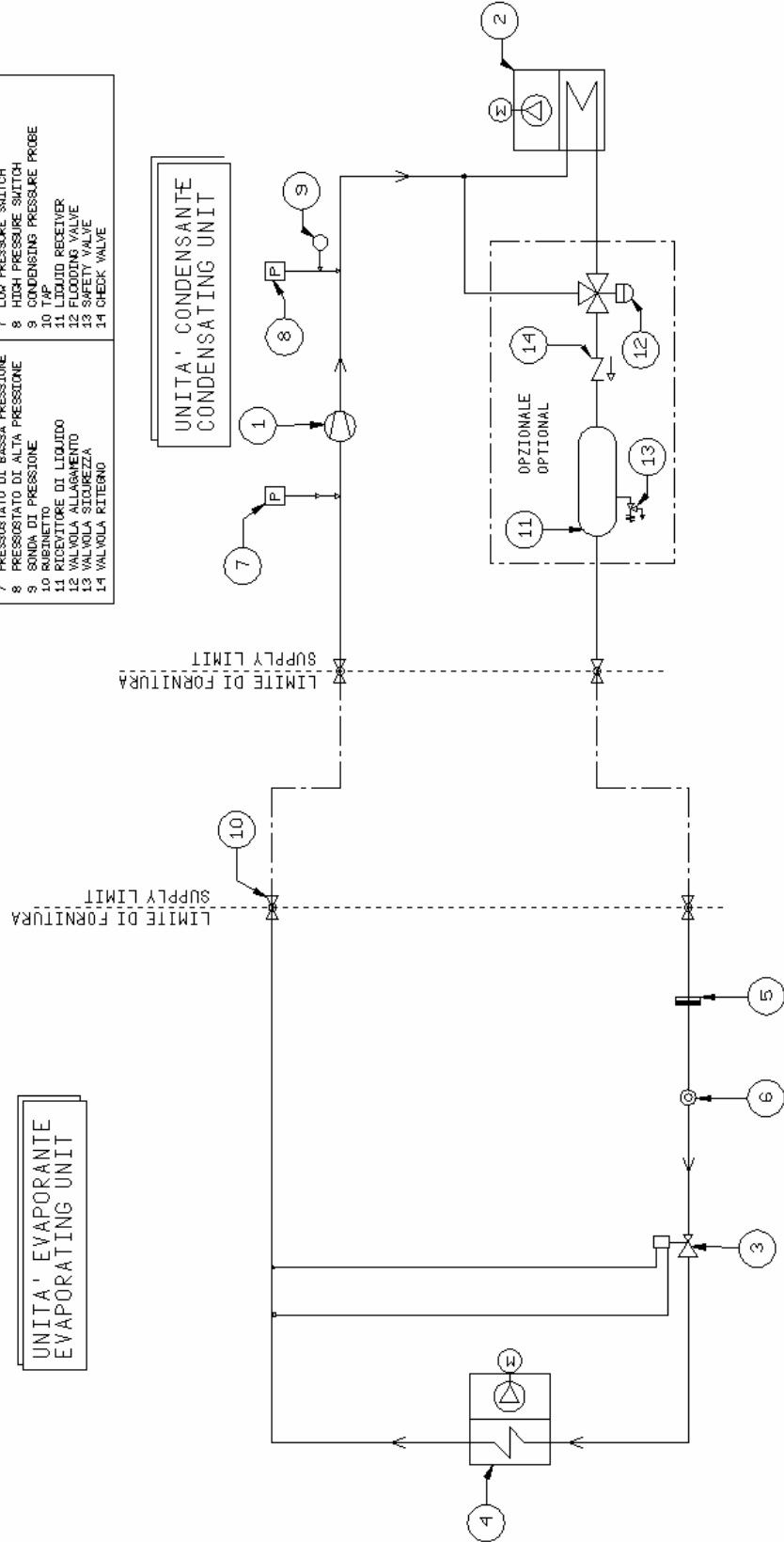


Refrigerant Circuit



MOD. HTS 045 – 056 – 073 – 090 – 105 – 120 – 145

ITALIANO	ENGLISH
1 COMPRESSORE	1 COMPRESSOR
2 CONDENSATORE	2 CONDENSER
3 VALVOLA TERMOSTATICA	3 THERMOSTATIC VALVE
4 EVAPORATORE	4 EVAPORATOR
5 FILTRO DESSICATORE	5 FILTER DRYER
6 SPIGA DI FLUSSO	6 SIGHT GLASS
7 PRESSOSTATO DI BASSA PRESSIONE	7 LOW PRESSURE SWITCH
8 PRESSOSTATO DI ALTA PRESSIONE	8 HIGH PRESSURE SWITCH
9 SONDA DI PRESSIONE	9 CONDENSING PRESSURE PROBE </td
10 RICEVITORE DI LIQUIDO	10 LIQUID RECEIVER
11 VALVOLA ALLARGAMENTO	11 EXPANSION VALVE
12 VALVOLA SIDIUREZZA	12 SAFETY VALVE
13 VALVOLA RITEGNO	13 CHECK VALVE
14	14





High Technology in Refrigeration Devices

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