FRAL
RIGHT HUMIDITY ON DEMAND

INDUSTRIAL DEHUMIDIFIER

FD 750

SERIES

Vers. Std, S, BT, 4kW

Cod. : FD750, FD750S, FD750BT

TECHNICAL MANUAL

CE

FD750 -01 Multilanguage FRAL 27/03/2017

TECHNICAL MANUAL

INDEX

DECLARATION OF CONFORMITY

CE

(Community directives Machine Norms and Electro-magnetic Compatibility)

FRAL Company s.r.l. Vialedell'Industria e dell'Artigianato 22/c – 35010 Carmignano di Brenta – PD – hereby declares that the following products:

Dehumidifiers FD750 series

have been designed, manufactured and distributed by according to safety and electro-magnetic compatibility to European Norms and Regulations:

MACHINES NORMS **2006/42/CE - 17.05.2006**;
SECURITY REGULATIONS FOR LOW TENSION APPLIANCES **2014/35/UE - 26.02.2014**;
ELECTROMAGNETIC COMPATIBILITY (EMC) **2014/30/UE - 26.02.2014**;

It is hereby certified that this Dehumidifier conform to the:

IEC Regulations **CEI-EN 60335-2-40, CEI-EN 55014-1, 55014-2.**

The machine is built according to RoHS 2 European Norms:

2011/65/CE year 2011 and CEI-EN 50581.

Carmignano di Brenta, 21/02/2013,

The Legal Agent
Ing. Alberto Gasparini

LITY AND CONSERVATION OF THE MANUAL

This Manual conforms to the requirements of the Norms 98/37/CE and subsequent modifications.
The Manual gives all necessary indications required for the transport, Installation, start-up and maintenance of the machines, which must be strictly followed by the user for a correct functioning of the same.

To this purpose, the user must also strictly comply with the security norms described in the Manual.

The manual must always follow the machine and must be kept in a place which will guarantee its perfect conservation for the proper use from the operator.

GRAPHIC SYMBOLS AND INDICATIONS INCLUDED IN THE MANUAL:

hat ATTENTION must be paid to all procedures and operations to be carried out for ensuring the correct functioning of the machine, describes the operations that must be avoided, and finally informs the operator about the correct procedure and operations to be followed for the proper use of the machine.

NORMS REFERENCES

The machines described in this manual have been designed according to the pertinent CE Norms, in conformity with the MACHINES DIRECTIVES cited in the previous paragraph.

The machines are also complying with the essential requirements of the following European Rules and *Directives:

- ✓ Machine Norms 2006/42 CE,
- ✓ Electrical Safety Rules for the Low Tension Appliances 2014/35/UE,
- ✓ Electromagnetic Compatibility 2014/30/UE,
- ✓ Under Pressure Devices 97/23/CE.

This machine is designed in order to be installed in an internal environment.
In order to install it in an external environment please contact the headquarters.

GENERAL SAFETY NORMS

When installing or servicing the unit, it is necessary to strictly follow the rules reported on this manual, to conform to all the specifications of the labels on the unit, and to take any possible precautions of the case for workers.

Pressure in refrigerant circuit and electrical equipment present in the unit can be hazardous when installing or servicing the unit.

Therefore, all operations on the unit must be carried out only by a qualified technician.

Not observing the rules reported on this manual, and every modification to the unit done without explicit previous authorisation, will cause the immediate termination of the warranty.

Attention: before every operation of servicing on the unit, be sure that the electric supply is disconnected. Never remove front grille or open any part of the machine without removing first the socket from the plug.

This machine has been designed and manufactured in compliance with the strictest safety rules. Therefore, pointed instruments (screw drivers, wool needles or similar ones) are not to be inserted in the grilles or in any other opening of the panels, especially when it is opened to remove the filter.

Main supply must be protected with a differential switch.

Never modify settings of the safety devices.

Never sprinkle water over the unit and its electrical components.

The machine must not be cleaned using water. To clean the machine use a wet cloth. Remember to disconnect the plug from the socket before any operation.

When the machine is connected with a power socket, it must be in vertical position and any rough move must be avoided because it could cause some water to come into contact with electrical parts; it is, therefore, recommended to remove the plug from the socket before moving around the machine; if any water may have been spread on the machine, following some rough handling of the same, then, the machine must be turned off and can be started up again only after 8 hours.

It must not be used under explosive atmosphere.

The machine is not designed to be used by people (also children) whose physical, sensory or mental capabilities are reduced. Also people without experience or knowledge of the machine can't use it.
People, described above, can use this machine only if there's someone, responsable of their safety, which watches them and gives them instruction regarding the use of the machine.
Children must be watched in order to be sure they don't play with machine.

This machine is designed in order to be used by experienced users or trained in shops, light industry and farms.
People without experiences can use this machine only for a commercial use.

This machine must be always connected using earthed electrical plugs as required for all electrical appliances; FRAL Company declines any responsibility for any danger or damage whenever this norm is not complied with.

PERSONAL PROTECTIVE EQUIPMENT

When operating and maintaining the unit, use the following personal protective equipment.

	Equipment: people who make maintenance or work with the unit, must wear an equipment in accordance with the safety Directives. They must wear accident prevention shoes with anti-slip sole where the paving is slippery.
	Gloves: During the cleanings and the maintenance operations, it's necessary the use of appropriate gloves. In case of gas recharge, It's complulsory the use of appropriate gloves to avoid the risk of freezing.
 	Mask and goggles: Respiratory protection (mask) and eye protection (goggles) should be used during cleaning and maintenance operations.

SAFETY SIGNS
The equipment features the following safety signs, which must be complied with:

	General hazard

	Electric shock hazard

UNIT DESCRIPTION

FRAME

All units are made from galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with anodized extruded aluminum profiles. The condensate pan is present standard in all FD units and it's in stainless steel.

REFRIGERANT CIRCUIT

The refrigerant gas used in these units is R407C. The refrigerant circuit is made in according to 97/23 CE concerning welding procedures and PED regulation.
The refrigerant circuit includes:

- filter drier;
- schrader valves for maintenance and control;
- pressure safety device (according to PED regulation);
- thermal expansion valve with external equalizer;
- compressor;

CONDENSER AND EVAPORATORS

FINNED PACK

It consist of copper tubes mechanically expanded into aluminium or copper fins provided with fullcollars that allow their regular spacing. The best heat transmission is guaranteed by the fincollars that completely cover the tubes.

FINS

They are manufactured by high precision pressing of aluminium epoxy painted, or pre tinned copper sheets. The fin shape is slightly corrugated inorder to improve the heat exchange transmission coefficient withouth heavily affecting the air pressuredrop. Furthermore a good waterdraining is assures and the inside dust accumulation is avoided.

TUBES

For the heat exchangers high quality copper tubes are used. The tubes are suitable for the majority of the primary refrigerant and both cold and warm working conditions.

COMPRESSOR

The compressor is scroll type with crankcase heater and thermal overload protection by a klaxon embedded in the motor winding.
The characteristics of the compressor are the follow:

1. High efficiency for saving energy consumption;
2. Low sound level for quiet operation;
3. Applied HFC refrigerant for protecting environment;
4. High reliability, long lifetime;

FANS

Centrifugal fan type and fan-motor direct coupled.

ELECTRIC BOX

The electric switch board is made according to Electromagnetic Compatibility Norms (2004/108 CE) and Electrical Safety Rules for the Low Tension Appliances (2006/95 CE).
Inside the electric box there are the following components:

1. General disconnector with fuses;
2. Phase Sequenze relay;
3. Compressor Contactors;
4. Relays;
5. Terminals for remote control.

MICROPROCESSORS

The microprocessors check all the function of the machine like: General functioning, automatic defrost system, alarms and set point of the humidty and temperature (only for TCR Version).

VERSIONS

AVAILABLE MODELS AND THEIR ACCESSORIES

HOT GASDEFROST VERSION (S): the frost which covers the battery, obtrsucts the passage of the air, reduces the air contact surface and, consequently, the performance; if the frost accumulation is excessive, it can seriously damage the whole system. All units are provided with Desfrost System. The defrosting is controlled by the electronic system in combination with a thermostat, whose bulb is installed inside the evaporator.
The standard versions have their defrost simply throughly the periodic stop of the compressor and fan ventilation, using the heat of the environment itself. In the versions with Hot Gas Defrost System, fan turns off and compressor continues to work in order to melt the ice in the evaporator.
During the defrosting time the DEFROST light is ON.

HEATERS VERSION (+4kW) : these units are provided with electrical heaters to increase outlet air temperature.

TEMPERATURE CONTROL VERSION (TCR): the units for the control temperature version are equipped with external remote condenser that is connected with the dehumidifier. The use of the remote condenser allows the control of the temperature and humidity at the same time, operating in cooling or dehumidifying mode. In order to use both functions it's necessary to have a thermostat and an hygrostat.
The regulation can be ON/OFF or modulating.

INOX COVER VERSION (INOX): these units are provoded with the external cover made of stainless steel.

LOW TEMPERATURE VERSION (BT): these units are provoded with a hot gas coil placed in the condensed water tank, that don't permitt the ice formation.

TECHNICAL DATA

	modello	750

Drying capacity	l/24h	750(1)
Nominal power consuption (without electric heaters)	kW	9,3(3)
Nominal power consuption (with electric heaters)	kW	13,3 (3)
Maximum power consuption (without electric heaters)	kW	10,7 (2)
Maximun current consuption (without electric heaters)	A	18,2(2)
Maximum power consuption (with electric heaters)	kW	14,7(2)
Maximun current consuption (with electric heaters)	A	22,5(2)
Electric heaters	kW	4,0
Peak current L.R.A.	A	46
Air flow	m^3/s m^3/h	1,7 6100
Available static pressure	Pa	200
Refrigerant	tipo	R407C
Sound pressure level (3 mt free field, internal unit)	dB(A)	67
Temperature operating range	°C	7-35 1-35(4) -1-35(5)
Humidity operating range	%	40-99
Condensate draining connection	“	¾’’ M
Lenght	mm	1460
Dept	mm	1260
Height	mm	1130
Weight	kg	230
Nominal power supply	V/ph/Hz	400/3~+N/50

(1) *Referred to: inlet air temp. 32 °C relative humidity 90%*

(2) *Referred to: inlet air temp. 35 °C relative humidity 80%*

(3) *Referred to: inlet air temp. 26,7 °C relative humidity 60%*

(4) *S version with hot gas defrost*

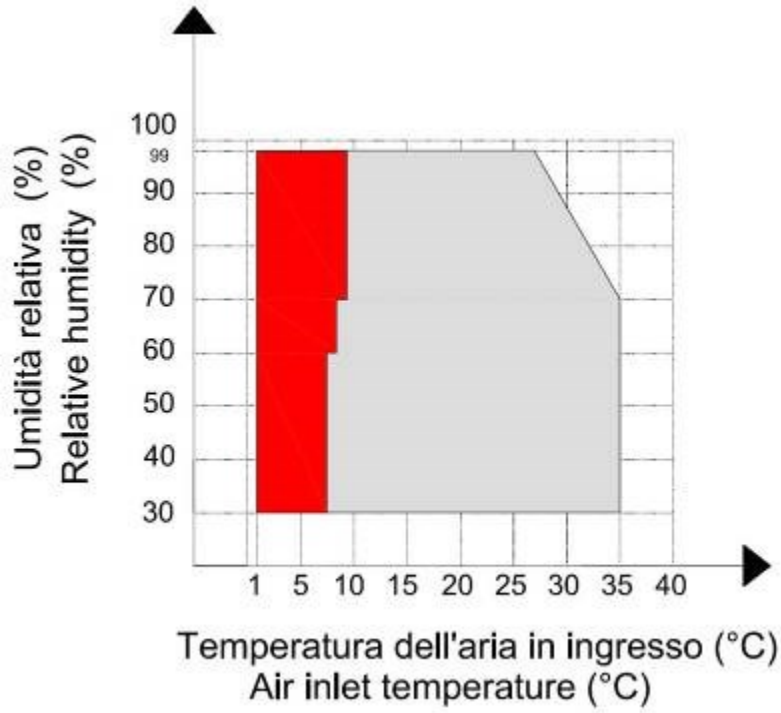
(5) *BT version for low temperature*

FUNCTIONING LIMITS

Following Diagram represents standard FD units application .

It is strongly recommended to let the units operate within the below reported limits. Exceeding these limits it is not garanted neither normal operation nor unit reliability and integrity (for special applications, please contact our Company).

Operating Table – standard units



In standard unit applications Table, on the left side is indicated operating limit extension, if unit is provided with hot gas defrost.

INSPECTION, TRANSPORT AND SITE HANDLING

The machine must not be set running in narrow areas, which do not allow a proper diffusion in the room of the air coming out from the grille. It is, instead, allowed to set the machine on the sides near the walls.
The outdoor unit cannot be used in narrow areas. The air inlet is in the motor fan side and the air outlet is from the opposite side, trough the holes located in front of the finned heat exchanger. Minimum distance between the outlet air side and front wall is 3 meters.

The front panel should not be used to lay over it cloths or other things: it could cause damages or dangers.

INSPECTION

After receiving the unit, immediately check its integrity. The unit left the factory in perfect condition; any eventual damage must be questioned to the carrier and recorded on the Delivery Note before signing it. Our company must be informed within 8 days of the extent of the damage.
The Customer must prepare a written statement of any severe damage.

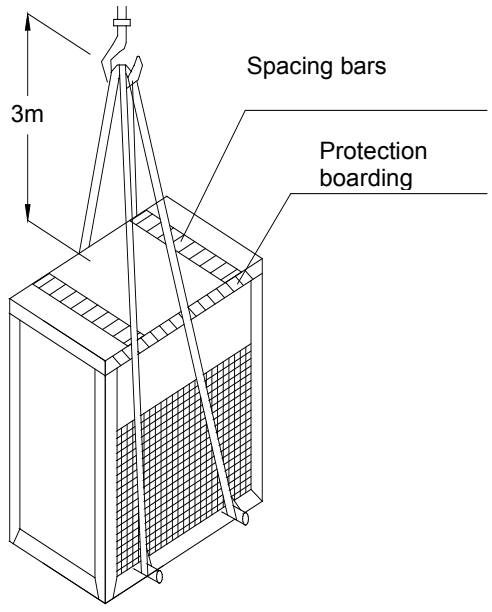
LIFTING AND SITE HANDLING

The lifting is obtained by using a forklift: fork must be inserted in the base pallet, and care must be taken in order that the fork does not hit the section base or panel (see the picture below).
To unload the unit with a crane, pass bars under the machine and attach the necessary cable or chain lifting devices to the bar, ensuring that they are clamped firmly; protect the sides of the chiller with boarding or material of a similar nature.

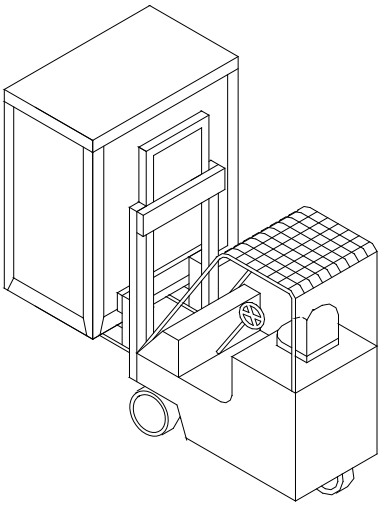
UNPACKING

When unpacking the unit pay attention not to damage the unit.
The package is made up by different materials: wood, paper, nylon etc.
It's a good rule to keep them separately and deliver to the proper collecting centre in order to reduce their environmental impact.

Lifting method with a crane



Lifting method with a forklift



LOCATION

Consideration must be given to the following points when determining the most suitable site for the unit installation:

- ✓ location arrangement in order to guarantee adequate air flow (no narrow spaces);
- ✓ electrical power supply location;
- ✓ accessibility for servicing/maintenance and repair of the unit and/or its components;
- ✓ floor loading strength and ability to support the operating weight of the unit;
- ✓ possible objection to operating noise.
- ✓

This machine is designed in order to be installed in an internal environment.
In order to install it in an external environment please contact the headquarters.

The place of installation must be chosen in order to avoid water goes inside the appliance.

This machine can't be installed in laundries.

This machine can't be installed in places which are easily accessible from the public.

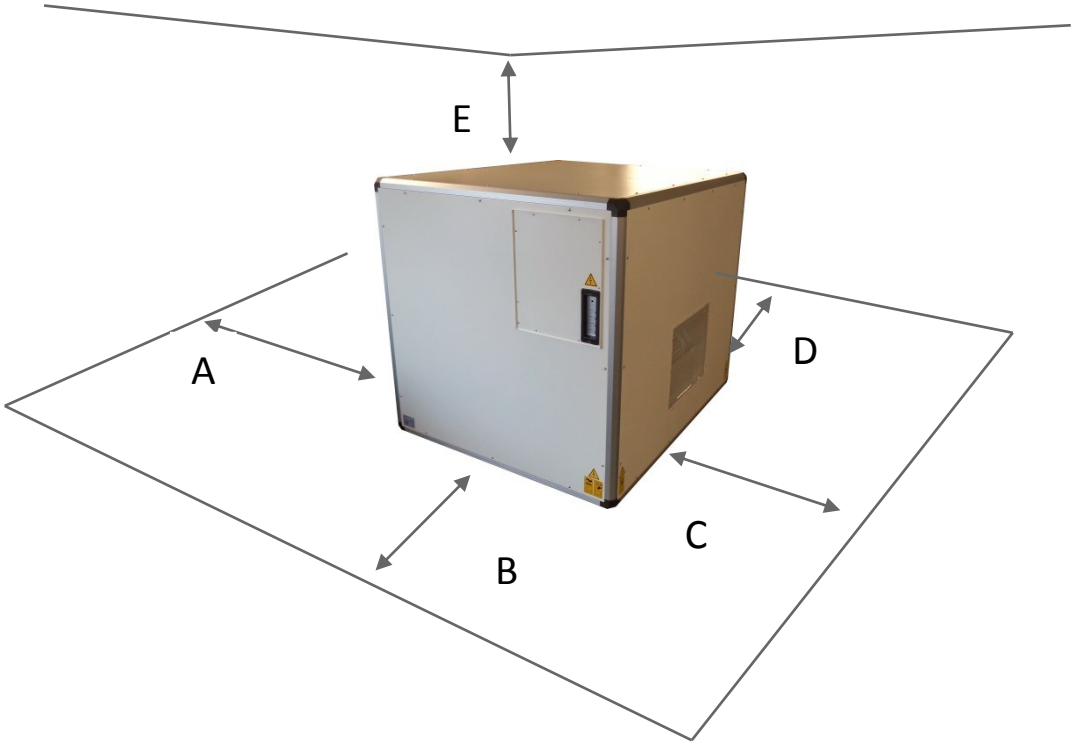
INSTALLATION

Machine must be installed respecting the national rules regarding plants.

CLEARANCES

Absolute care must be taken to ensure adequate air volume to the air intake and fan discharge, and to avoid air recirculation through the unit that will deeply reduce its performances.
For these reasons it is necessary to observe the following clearances (see the pictures in the following pages):

Mod.	A Suction Side	B Electric board side	C Supply Side	D	E
FD750	500	800	800	500	200



For top outlet versions E is equal to 800mm.

CONNECTION TO THE CONDENSED WATER DRAINAGE FITTING

Connect condensed water drainage fitting (¾'' M) to a draining pipe.
It should be always avoided to form a double siphon, which could obstruct the water flowing with the consequent risk of flooding the area.

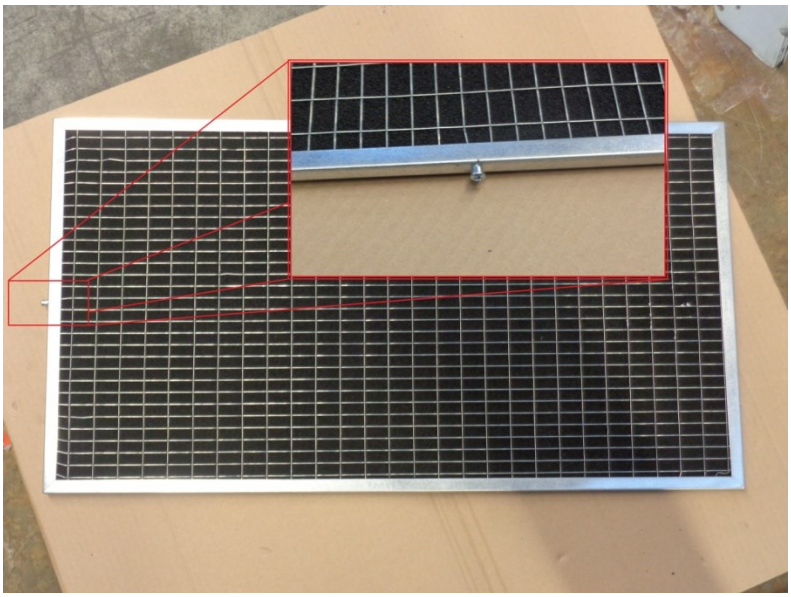
DUCTWORK UNIT CONNECTION

All the units are provided with a centrifugal fan that can be ducted.
If only one side should be ducted, a flanged connection with overall dimensions larger than discharge hole should be used.
If either suction side should be ducted, remove suction air filter and its panel, use a flanged connection with overall dimensions larger than suction hole located on the front of the unit and install an air filter into the suction ductwork.

It is very important to install an air filter into the suction ductwork if the filter of the machine itself has been removed. If this filter should not be present, serious damage could occur to the units.

See pag.37 for airflow performances.

In case of extractable air filter use the specific screw to remove the fiter, (see picture below).



ELECTRICAL CONNECTIONS

Machine must be installed respecting the national rules regarding plants.

GENERALITIES

Power supply FD750	V/ph/Hz	400/3N~/50	Control circuit	V/~/Hz	230/1~/50

This machines series belongs to the electric appliances functioning at low tension (230/400 V).

Before every operation on the electric section, be sure that the electric supply is disconnected.

Main supply must be protected with a differential switch.

Close to the unit, a multi-pole power switch must be present. It must ensure the complete disconnection in the conditions of the III overtension category and the respect of the rules regarding plants and installation.

When lateral panels must be removed for installation or maintenance, keep the internal wires at a proper distance from lateral panels in order to avoid contacts.

It must be verified that electric supply is corresponding to the unit electric nominal data (tension, phases, frequency) reported on the label in the front panel of the unit.
Power connections must be made using a three-wire cable + neutral wire + ground cable.

Power cable and line protection must be sized according norm and laws according with absorbed current of the machine (see technical data).

Power cable must be inserted in the slots of the disconnector like in figure.

The line voltage fluctuations must not be more than ±5% of the nominal value, while the voltage unbalance between one phase and another must not exceed 2%. If those tolerances should not be respected, please contact our Firm to provide proper devices.

Electric supply must be in the limits shown: in the opposite case warranty will terminate immediately.

Electrical connections therefore must be always done according to the instructions reported on the wiring diagram enclosed with the unit and norms and laws.

Ground connection is compulsory. Installer must connect ground cable with a dedicated terminal on the apposite terminal block.

MAIN SUPPLY CONNECTION

The Electric Power Supply Connection must be carried out according to the indications given in the Electric Diagram, by connecting the cable supplied with the machine and according with safety norm and national rules regarding plants.

This machine must not be connected to the electric power distribution through a plug.

It's very important to keep ground wire longer than the others: in this way if the cable is pulled, the ground wire is the last to be removed.

Since there's no fixing device for the main supply, the power cable must be fixed with cable ducts or similar. The cable duct must enter inside the machine (like in figure) through the apposite holes.

The compressor has only one allowable rotation direction; therefore, the machine has a control device for the phases sequence; in case that it may show a wrong sequence, the device inform you with a blinking light; in this case two phases must be interchanged.
Pay much attention to above indications because the compressor will be damaged if the rotation direction is not correct.

Respect the phase order like in the label inside the electric panel.

Fuses

The fuses which are mounted on the disconnecting switch are: 32 A for STD and HGD series. See the electrical scheme for 4kW resistances series.

Remote humidostat connection

It is possibile to use a remote humidistat to control the machine. In this case it need to connect a remote humidistat switch to the specific clamps in the electrical panel inside the machine.

The connection must supply at least 10 A in 230V AC.

START UP

PRE-START CHECK

Check that all power cables are correctly connected and all terminals are fastly fixed.

The voltage at the phase R S T clamps must be the one indicated on the unit label ± 5% tolerance. If this should not happen, please, contact our Factory.

Caution: before proceeding to start up, check that all the cover panel be located in the proper position and locked with fastening screws.

Before the first Start-up, the machine must be kept in STAND-BY position at-least for 5 hours.

Before to proceed to start up, close electrical line main switch (not supplied with the unit): the green led (line) will be lit up.
All the units are provided with microprocessor control that manages all the various functions of the unit.
To start the unit, activate the humidity switch by rotating the knob or by pressing the instrument keyboard (depending on the type of instrument installed): the green light (**WORKING**) will be **ON**.

For temporary stop (night-time, weekend, etc.) never break the power supply and strictly follow the procedures illustrated in the paragraph “Machine Stop”.

SIGNALLING LEDS PANEL

Units are provided with signalling light panel that indicates unit operational status.
Below is reported a brief description of their meaning.

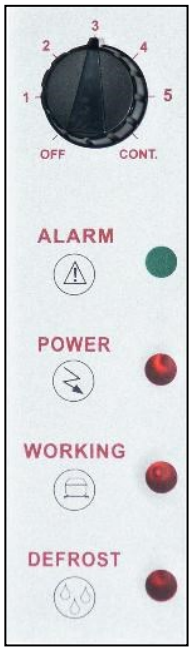
Electrical supply RED Light (POWER):
indicates that unit is properly electrically supplied.

Compressor RED Light (WORKING):
indicates humidistat call and running compressor status.

Alarm GREEN Light (ALARM):indicates the unit alarm status.

Defrost Light (RED):indicates that the defrost cycle is on.

Led status signalling panel



MACHINE STOP (STAND BY)

If the machine is connected, it works with automatic system controlled by a humidostat.
When the humidostat activates the defrost system, only the light **Power** is **ON**
When one wishes to turn off the machine, the knob of the humidostat must be set on position **0**.

Before the first Start-up, the machine must be kept in **STAND-BY** position at-least for 5 hours.

REMOTE CONTROL

It is possibile to use a remote control with the machine. In this case must be used a remote humidostat to be connected to the terminal boxes of the electric panelboard in place of the standard humidostat.
It is also possible to have an ON-OFF switch to be electrically connected in series to the humidostat.

CONTROL AND SAFETY DEVICES

CONTROL DEVICES

All the control devices are tested on factory before the unit is delivered.
Their operating mode is described in the following paragraphs.

HUMIDITY CONTROL SWITCH

Humidity control switch enables or disables unit operation depending on the desired humidity value.
To verify its correct operation, rotate the control knob clock wise (or set the desired value through the instrument keyboard if a keyboard instrument is present) and set the humidity desired value close to lower limit. At this point verify that fan and compressor (after a time delay) will be started in sequence. Verify as well that the unit is stopped when humidity set is reached.

SAFETY DEVICES

All the safety devices are set and tested on factory before they are delivered.
Their operating mode is described in the following paragraphs.

All service operations on control and safety devices must be done by TRAINED PEOPLE ONLY: wrong setting values of the mentioned devices could cause serious damage to the unit and injuries to the people.

HIGH PRESSURE SWITCH

High pressure switch stops the unit when the discharge pressure exceeds its pre-set limit value.
The reset is manual (by pressing the push-button at the top of the pressure switch located in the electric panel) and can be done only when pressure is decreased below the device reset value (see table below).

LOW PRESSURE SWITCH

Low pressure switch stops the unit when the suction pressure decreases below its limit pre-set value.
The reset is automatic and it occurs only when pressure is higher than the device differential resetting value (see table below).

DEFROST THERMOSTAT

This device signals to electronic control that defrost procedure is needed.
When defrost cycle is activated, defrost thermostat will control its conclusion.

CONTROL DEVICES	ACTIVATION	DIFFERENTIAL	REINSERTION
High pressure switch (bar) R410A	42	9	Manual
High pressure switch (bar) R407C	29	7,7	Manual
Low pressure switch (bar)	0.7	2.2	Automatic
Defrost temperature switch (°C)	1,5	2,5	Automatic

CONTROL DEVICE OF THE PHASE SEQUENCES

Since the SCROLL compressors can function only in one rotating direction, this device controls that the phases be correctly connected.
In case phases are not correctly connected, the machine will not start, a light will begin to flash in the relay and on the panel the green light ALARM will be ON.

THERMOSTAT (only for TCR versions)

The thermostat enables or disables unit operation depending on the desired sharptemperature value.
To verify its correct operation, rotate the control knob clock wise (or set the desired value through the instrument keyboard if akeyboard instrument is present) and set the temperature desired value close to lower limit. At this point verify the fan is all the time running and that compressor, after a time delay, starts running.
Verify as well that the compressor is stopped when temperature set is reached.

If temperature switch should be present, it takes priority on the humidity switch. The humidity switch is enabled only when temperature set is reached.

MAINTENANCE AND PERIODIC CHECK

IMPORTANT WARNINGS

All this operations described in this chapter MUST BE DONE BY TRAINED PEOPLE ONLY.

WARNING: Inside the unit some moving components are present. Be very careful when operating in their surroundings even if the electric supply is disconnected.

WARNING: The unit should be installed so that maintenance and/or repair services be possible. The warranty does not cover costs due to lifting apparatus, platforms or other lifting systems required by the warranty interventions.

WARNING: The top shell and discharge line of compressor are usually at high temperature level. Be very careful when operating in their surroundings.

WARNING: Aluminium coil fins are very sharp and can cause serious wounds. Be very careful when operating in their surroundings.

Before every operation of servicing on the unit, be sure that the electric supply has been disconnected.

After servicing operations, close the unit with cover panels, fixing them with locking screws.

When lateral panels must be removed for installation or maintenance, keep the internal wires at a proper distance from lateral panels in order to avoid contacts.

GENERAL OBSERVATIOTIONS AND ADVISE

It is a good rule to carry on periodic checks in order to verify the correct working of the unit:

Check that safety and control devices are working correctly (monthly).

Make sure that all the terminals on the electric board and on the compressor be well locked. Periodic cleaning of the sliding terminals of the contactors should be done: if any damage is found, please replace the contactors (monthly).

Make sure that there is no oil leakage from compressor (monthly).

Check that the electric resistance in the compressor crankcase be properly functioning (monthly: low temperature units only).

Clean draining pan and pipeline (monthly).

Clean finned coils filters with compressed air in the opposite direction of the airflow. If filters should be fully clogged, clean them with a water jet to be sprayed against the air flow side(monthly or more frequently if the unit operates on a dusty environment).

Check mounting of fan blades and their balancing (every 4 months).

POWER SAVINGS

To reduce power consumption, take care of following suggestions :

Make sure that room in which unit should operate has doors and windows firmly

Set the humidity control switch to the proper value: lower set values than necessary (even few points) may cause great capacity loss with consequently longer operating periods: it is advisable to set humidity values below 60% only if strictly necessary.

For the machine which has a second condenser (monoblock or split system) check every month if the heat exchanger is clean and free from room dust, and check the efficiency of the motorfan.

DISPOSAL OF THE UNIT AT END OF ITS LIFE

Once the unit is arrived at the end of its life and needs to be removed or replaced, the following operations are recommended:

The unit refrigerant has to be recovered by trained people and sent to proper collecting centre;

Compressor lubricating oil has to be recovered and sent to proper collecting centre;

The frame and various components, if no longer usable , have to be dismantled and subdivided according to their nature; in particular, copper and aluminium, which are present in conspicuous quantity in the unit.

These operations allow easy material recovery and recycling process, reducing environmental impact.
It is recommended to follow the pertinent norms in the disposal of the wasted materials.

TROUBLE SHOOTING

In the following pages are reported the most common troubles that can cause the unit to stop orto operate in an uncorrect way.

Concerning the solutions, it is necessary to take an extreme care on the actions to adopt: an excessive confidence may cause serious accidents to inexperienced people. It is advisable, once the cause is detected, to contact our servicing people or trained people only.

UNIT UNDER ALARM

When red light is lit up, the unit is stopped and set under alarm condition.

To restore normal operating mode, it is necessary to detect and remove the cause of the alarm.

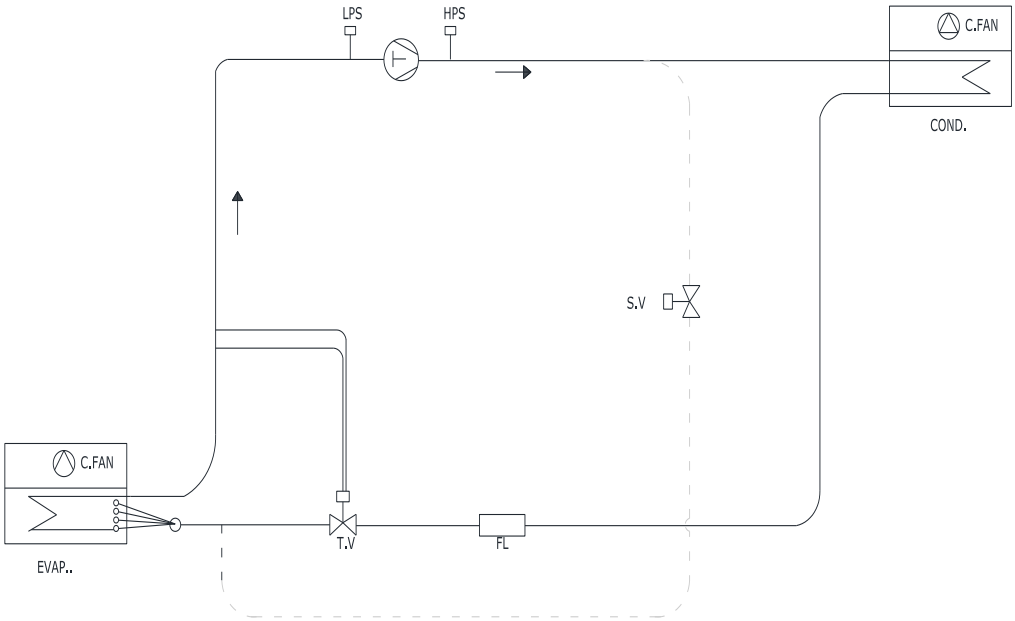
PROBLEM	LED ON	PROBABLE CAUSE	CORRECTIVE ACTION
A			
Unit does not start but alarm green led is off	*None*	*Power supply missing*	*Provide power supply, replace fuses*
	Power supply led	*Humidistat on set*	*Set a lower set point*
	Power supply led,	*Compressor thermal protection enabled, compressor defective*	*Let the compressor cool down, replace compressor defective*
	Power supply led,	*Compressor thermal protection enabled, compressor defective fan defective*	*Let the compressor cool down, replace compressor defective, replace fan defective*
	Any led	*Electronic board or led Board defective*	*Replace defective board*

PROBLEM	LED ON	PROBABLE CAUSE	CORRECTIVE ACTION
B			
Fan starts, compressor does not start, but green alarm led	*Power supply led, running led*	*Compressor thermal Protection enabled, compressor defective*	*Let the compressor cool Down, replace compressor defective*
	Any led	*Electronic board or led Board defective*	*Replace defective board*

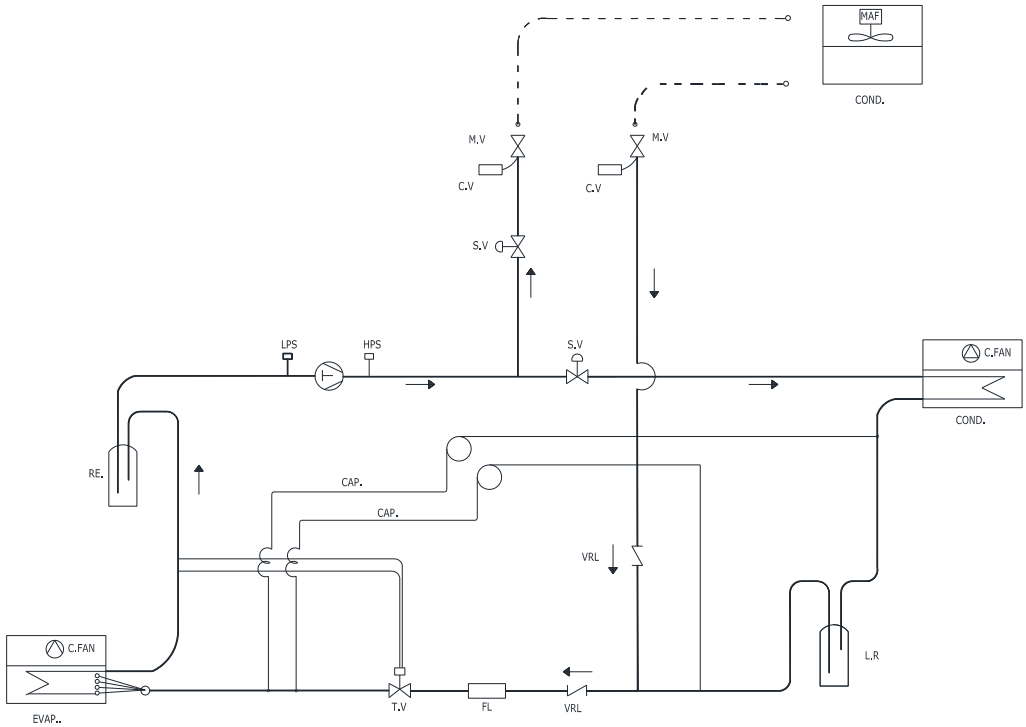
PROBLEM	LED ON	PROBABLE CAUSE	CORRECTIVE ACTION
C			
	Green alarm led, phase control relè lamping (only for machines with 3 phases)	Wrong phases sequence	Invert two phases
Fan starts, compressor does not start, but green alarm led is on	Green alarm led	High pressure switch not enabled. Air filter clogged	Clean filter and reset high pressure switch
	Green alarm led	Low Pressur Switch alarm. Low refrigerant charge	Charge the system
	Green alarm led	High pressure switch not enabled. Open panel, low air flow, suction side obstructed, high pressure switch on	Close the panel, clear Suction side, reset high pressure switch
	Any led	Electronic board or led Board defective	Replace defective board

CIRCUITO FRIGORIFERO / REFRIGERANT LAY-OUT

VERSIONI FD-FDS / FD-FDS VERSION

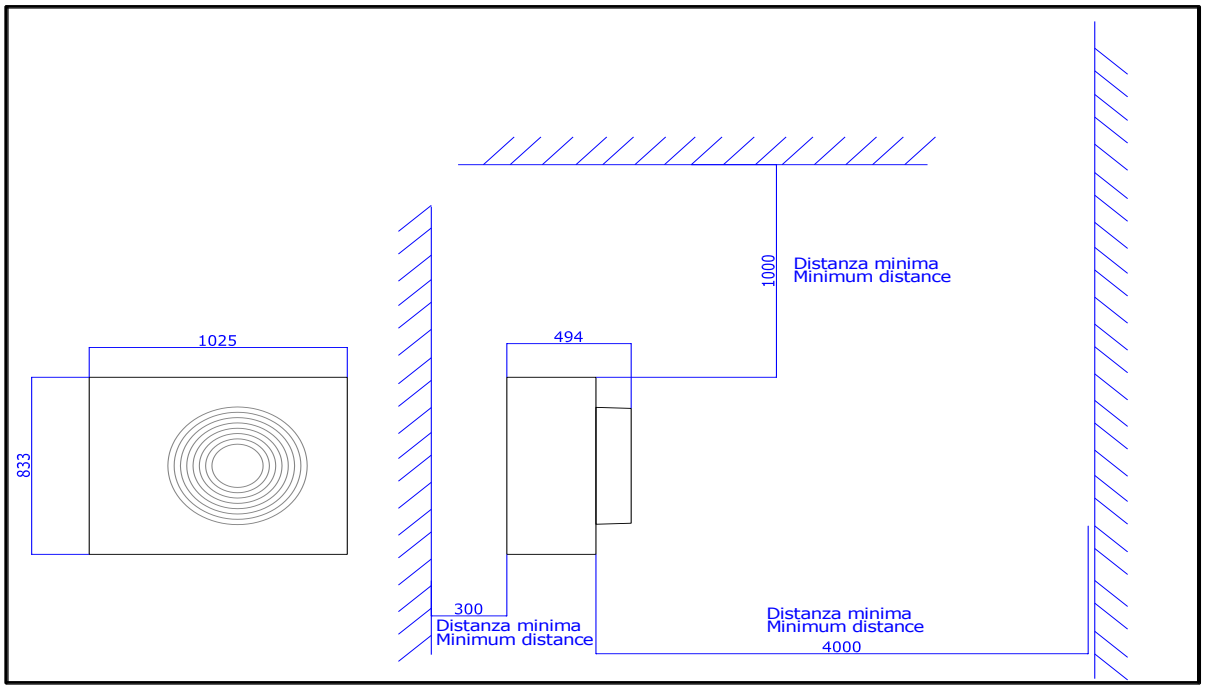


VERSIONI FD-TCR / FD-TCR VERSION



	Only for “S” version	T.V	Valvola di espansione / Expansion Valve
COND.	Condensatore/Condenser	S.V	Valvola a solenoid / Solenoid Valve
EVAP.	Evaporatore/Evaporator	VRL	Valvola di ritegno / One way valve
FL	Filtro per liquid/Liquid Line filter	C.FAN	Ventilatore centrifuge / Centrifugal fan
LPS	Pressostato di bassa pressione/ Low pressure switch	MAF	Ventilatore assiale / Axial fan
HPS	Pressostato di alta pressione/ High pressure switch	L.R.	Ricevitore di liquid / Liquid receiver
M.V	Valvola manuale / Manual valve	CV	Valvola di carica / Charge valve
RE	Separatore di liquid / Liquid separator	CAP	Capillare / Capillary

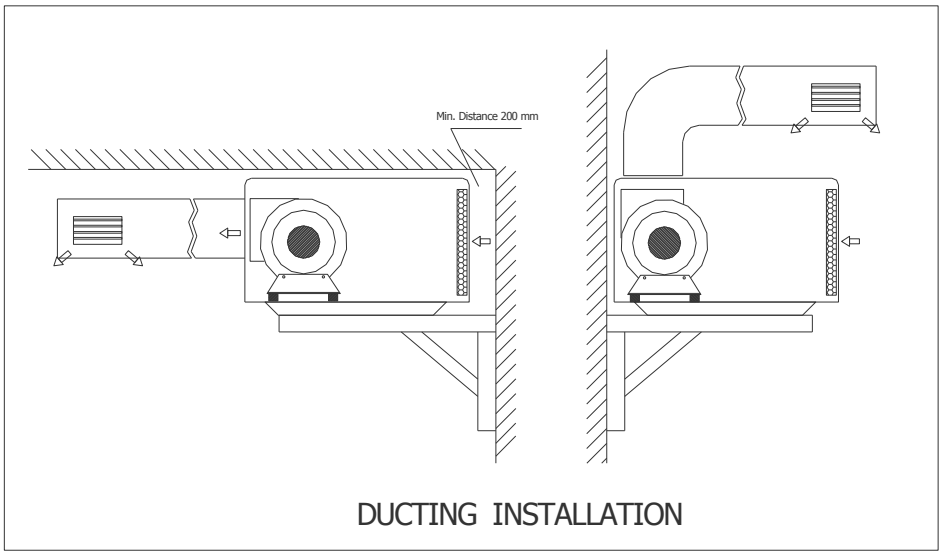
UNITA' ESTERNA (solo modelli TCR) / EXTERNAL UNIT (only for TCR models)



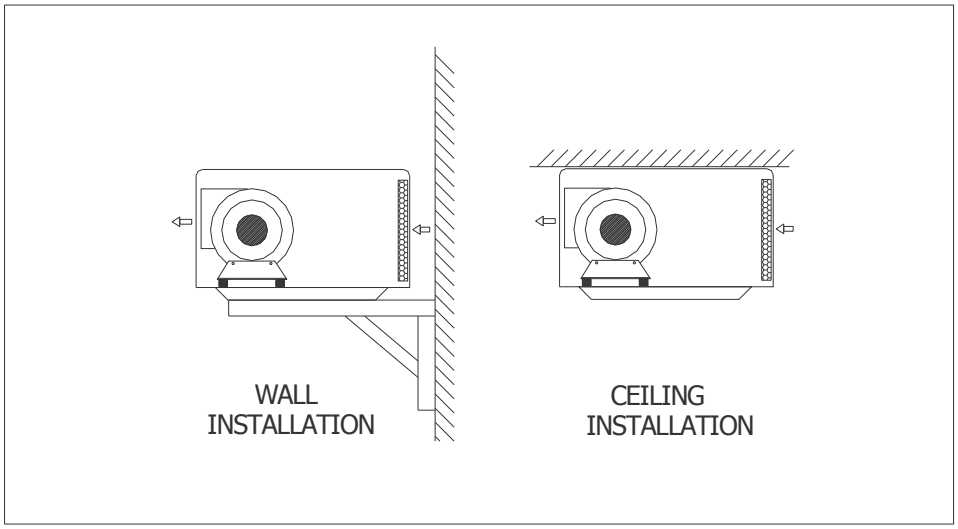
La distanza massima tra le due unità è di metri 12. Diametro tubazione di mandata gas al condensatore esterno 22 mmx1, diametro tubazione di ritorno del liquido dal condensatore esterno di 16mmx1. Per ogni metro di linea di ritorno del liquido (Ø16mmx1) aggiungere circa 142 grammi di R407C.
Distanza verticale tra le due unità (Hv): -2m(*)<Hv<+8m [(*)con sifone]
Per consentire il corretto ritorno dell'olio nella fase di scambio delle funzioni da deumidificazione a raffrescamento la pendenza delle tubazioni deve essere di almeno il 2%
Collegamento elettrico tra le 2 unità: 3x1.5mm²+terra,mentre per il cavo di alimantazione guardare gli assorbimenti della macchina

The maximum distance between the two units should be 12 mt. The diameter of liquid refrigerant pipe is 16x1mm, and 22x1mm for the refrigerant gas pipe. For each mt of returning piping line (Ø16mmx1) add 142 grams of R407c.
Vertical distance between the units (Hv): -2m(*)<Hv<+8m [(*)with siphone]
Cause the oil return to the compressor during the function's chance, (from dehumidifing to cooling),the pendence of piping towards the indoor unit should be minimum 2%
Wiring connection between the units: 3x1.5mm²+ground,for power cable section look machine absorption.

LAY OUT

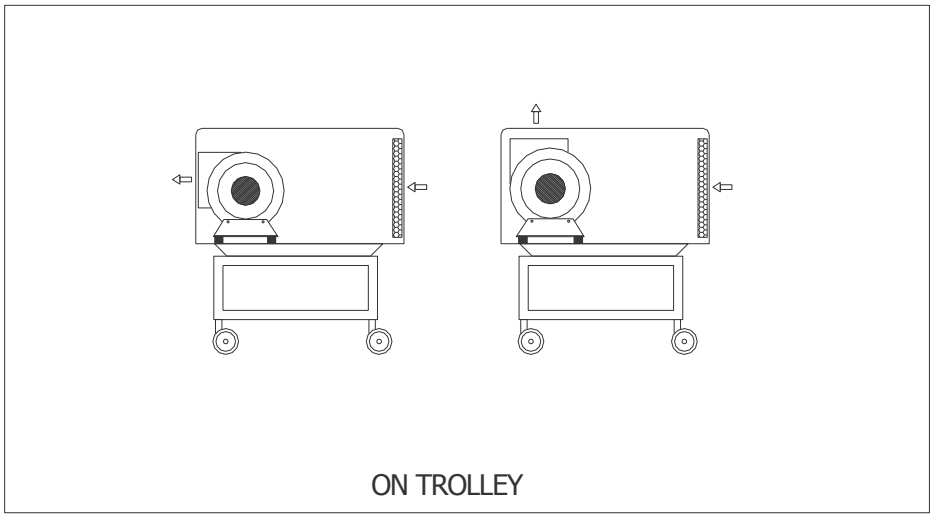


DUCTING INSTALLATION



WALL INSTALLATION

CEILING INSTALLATION



ON TROLLEY

DISEGNI DIMENSIONALI / DIMENSIONAL DRAWINGS

FD750