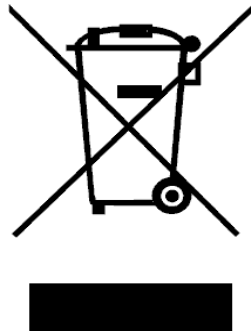




## **FDNF96 DEHUMIDIFIER**



## **USER AND MAINTENANCE MANUAL**



## INFORMATION FOR USERS

For the purpose and effect of Directives 2002/95/CE, 2002/96/CE and 2003/108/CE, relative to the reduction of the use of hazardous substances in electrical and electronic appliances as well as the disposal of waste.

The barred waste bin symbol indicates that the product must be collected separately from other waste at the end of its life.

The user must therefore take the appliance to an approved collection point suitable for differential collection of electric and electronic waste.

## 1. SAFETY WARNINGS

This dehumidifier must always be 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.

Any intervention on the machine using any instrument must be carried out only by a qualified technician.

When the machine is connected to the power socket, it must be in a vertical position and moving should be avoided. Moving whilst connected to power could cause water to come into contact with electrical parts. It is therefore recommended to remove the plug from the socket before moving the dehumidifier.

Correct Distance: this dehumidifier draws in the air from the back and lets out through the front side grill: therefore the back panel, which supports the air filter, must be kept at a minimum distance of 15cm from the wall.

This dehumidifier has been designed and manufactured in compliance with the strictest safety rules. Therefore, pointed instruments (screw drivers, wool needles or similar) are not to be inserted into the grill or in the opening of the back panel when it is opened to remove the filter.

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

The front panel should not be covered at anytime.

The filter should be cleaned periodically (normally every month). In dusty rooms it should be cleaned more often. Remember that when the filter is dirty, the air circulation and consequently, the machines performance is reduced.

# DECLARATION OF CONFORMITY



**(Community directives Low Voltage and Electro-magnetic Compatibility)**

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

*Dehumidifier*  
**FDNF96**

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 2006/95/CE - 12.12.2006;

ELECTROMAGNETIC COMPATIBILITY (EMC) – 2004/108/CE – 15.12.2004.

It is hereby certified that this Dehumidifier conforms to the:

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

The machine is built according to RoHS European Norms

Carmignano di Brenta, 15/01/2009



The Legal Agent

**Ing. Alberto Gasparini**

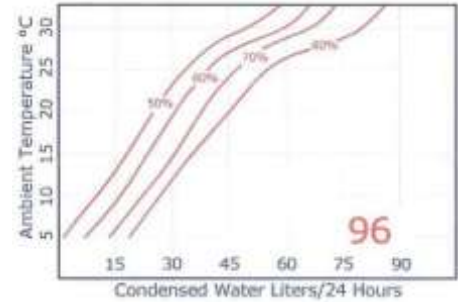
## 2. TECHNICAL DATA

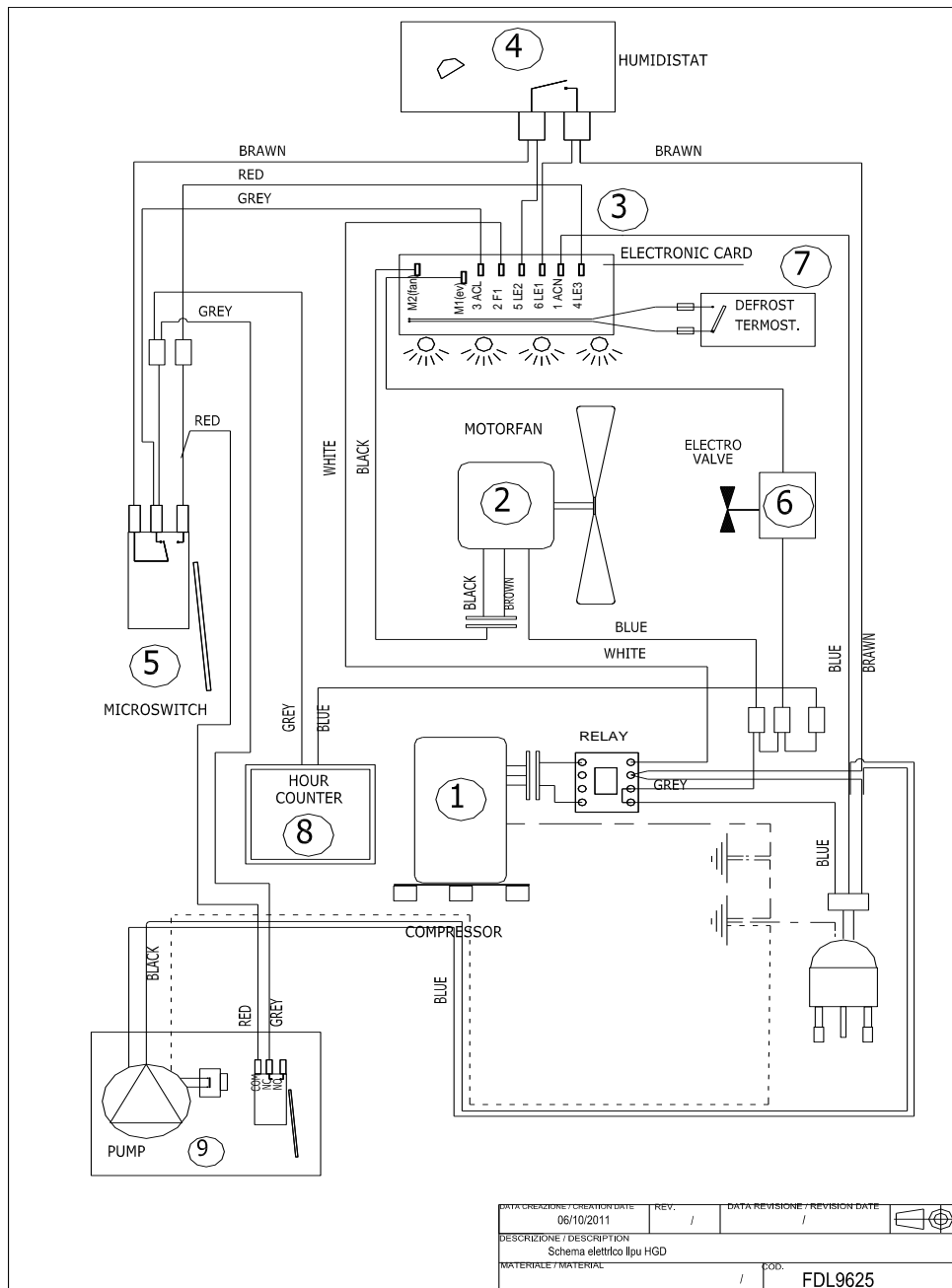
### CONDENSED WATER AT DIFFERENT AMBIENT TEMPERATURE AND HUMIDITY CONDITIONS

10°C 60%	10°C 80%	15°C 60%	15°C 80%	20°C 60%	20°C 80%	25°C 60%	25°C 80%	27°C 65%	27°C 80%	30°C 80%	32°C 90%
18 l/d	26 l/d	24 l/d	37 l/d	30 l/d	45 l/d	36 l/d	52 l/d	45 l/d	56 l/d	80 l/d	96 l/d

### TECHNICAL DATA

Power Consumption (at 20°C, 60% rh)	980 w
Power Consumption (at 35°C, 95% rh)	1350 w
Absorbed Current (at 35°C, 95% rh) standard ver.	7.2 A
Locked Rotor Current LRA	29
Air Flow	1000 cm/h
Noise level (at 3 meters)	52 dB
Refrigerant	R134a
Standard Defrosting Control System	Electronic
Hot Gas Defrosting Control System (optional)	Electronic thermostat
Water Tank Capacity	15 kg
Continuous Drainage Pipe Connection	25mm
Temperature Range standard version	7-35° C
Temperature Range (hot gas defrosting system)	1-35° C
Relative Humidity Range	35-99%
Condensation Capacity (at 30°C, 80% rh)	80 l/24 hr
Condensation Capacity (at 32°C, 90% rh)	96 l/24 hr
Weight	52 kg
Dimensions	90cm x 55cm x 41cm





LEGEND	
1	COMPRESSOR
2	FAN MOTOR
3	ELECTRONIC CARD
4	HUMIDISTAT ELECTRONIC
5	MICRO SWITCH
6	ELECTRO VALVE
7	THERMOSTAT
8	HOUR COUNTER

# 3. DESCRIPTION OF THE MACHINE

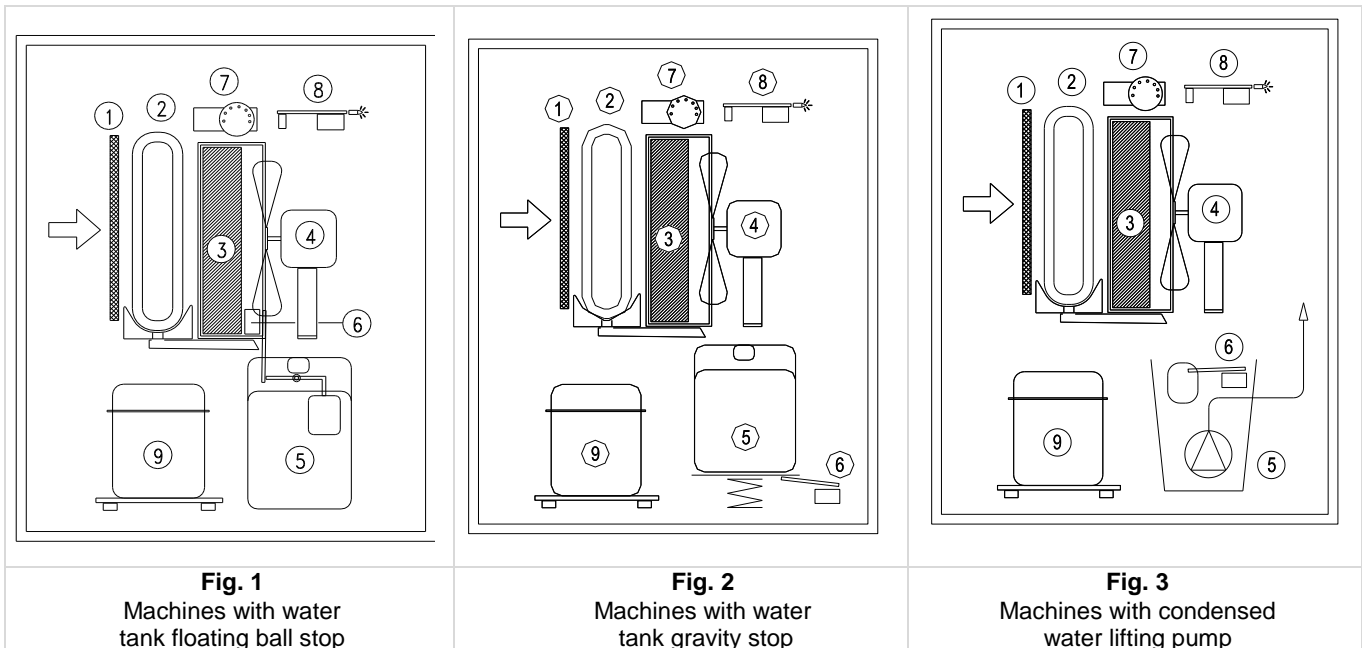
## How Dehumidifiers Work

This dehumidifier is called a refrigerant dehumidifier. It is capable of lowering humidity down to as little as 35% relative humidity (rh).

This action of lowering the humidity is achieved by damp moisture-laden air (referred to as vapour) being drawn through the dehumidifier by a quiet, powerful fan. The dehumidifying process turns this water vapour into liquid which is then either collected in a tank or drained away via a hose.

This happens when the incoming vapour is drawn by the fan over cold refrigerated coils. These coils are chilled down by the compressor. This cools the damp vapour and water droplets form on the cold coils. These water droplets begin collecting in a water collection tray. Next the cold air passes through a warm heat exchanger which slightly heats up the air and returns it to the room via an outlet, as clean, dry, slightly warm air.

Simply put, vapour is removed from the room and turned into a solid form, water. This water is then collected and drained away.



With reference to the drawing (fig. 1), the air is drawn in through the rear side of the dehumidifier, then it passes through the filter (1), through the aluminium refrigerated coil or evaporator (2), again through the heat-exchanger or condenser (3). Finally, the fan motor (4) expels the air back into the room through the front grill panel. The condensed water is collected in the tank (5). A micro-switch (6) stops the machine when the water in the tank reaches the correct level by raising the water float lever. The humidistat (7) starts the functioning of the dehumidifier when the humidity is higher than the preset level. An electronic circuit (8) controls the defrosting function and prevents the compressor from excessive starting.

Some models have a different water tank stop device and use a gravity system (fig. 2) instead of the floating ball. Fig. 3 refers to the machine with lifting pump, which includes a water collection tank (5) and a floating ball stopping device for full tank (6).

### Machines provided with Hot Gas Defrosting System

The models with hot gas defrosting system have one by-pass solenoid valve and a special electronic card.

The functioning of Hot Gas Defrosting is an exclusive Fral system for the dehumidifiers: this system consists of a thermostat and one electronic control, which use the hot gas by-pass system only when it is necessary and for the period of time required; this will lengthen the life of the machine by reducing the hot gas functioning phases.

## 4. CONTROL AND DISPLAY PANEL



The Control Panel is always placed on the upper side of the machine and consists of 4 light indicators:

**POWER (Supply): red light** which turns on when the electric power arrives at the machine;  
**FULL (ALARM): green light** which turns on when the water tank is full, or when the lifting pump is not working properly and then it fills up the water tank. When this light is on, the machine will stop running.

**DEFROST: red light** turns on when the compressor is in 'pause or idle' position for the programmed delayed start.

**WORKING (RUNNING): red light** on when the humidistat starts up automatically.



### HUMIDISTAT

Normally placed on the front or rear side of the machine.

It consists of a number scale ranging from 1 to 5 or from 1 to 7. The minimum value corresponds to 80%, the highest value to 20%; the intermediate value (3-4) indicates that the humidity is at approx. 55%, a suggested good general value.

In the position "CONT", the machine will keep running all the time, independently from the relative humidity in the room.

In the "OFF" position, the machine is not running.



### HOURLY COUNTER

Some models are equipped with an Hour Counter which is normally located in the rear side of the machine: this will show the hours the machine has been working.

## 5. INITIAL STARTING OF MACHINE

Before starting the dehumidifier, make sure that the machine has been standing in vertical position for at-least 8 hours. If one fails to observe this procedure, irreparable damage may be caused to the compressor. Then one can proceed and connect the dehumidifier plug to a 220-240V - one phase power socket.

The red light 'POWER' will switch on confirming correct supply of power to the machine. If the light 'WORKING' is still off, turn knob on the control panel clockwise until the light 'WORKING' is ON. The light 'DEFROST (PAUSE)' will also switch on and, after about 5 minutes the dehumidifier **will start dehumidifying**.

When the red light is "ON" (ALARM), the machine will not start: one must check that the water tank is empty and that it is inserted correctly. With machines that have a pump, check that the pump function is working and that the delivery pump is clear.

### **AND IF THE DEHUMIDIFIER DOES NOT START OR DEHUMIDIFY...**

First make sure the red light 'POWER' is 'ON': If the power supply light is not on, make sure that the connecting plug is properly inserted into the power socket. After checking all this, if the power light is still off, call your dealer for assistance. Make sure that the green light 'FULL' is off. If this is not the case, check the correct position of the draining pipe (see point 4.)

Make sure that the red light 'RUNNING' is 'on'; this means that the humidistat activates the functioning of the machine. When the dehumidifier is set again to functioning, (after an idle period of 5 minutes) due to it reaching the preset humidity or after emptying the water tank. During the 5 minutes long pause, only the fan motor is running and the compressor is off. This operating cycle also takes place every 45 minutes to allow defrosting to occur. If the red light 'Pause' remains off for a period longer than 6 minutes, you should contact your dealer.

When the two central red lights are on and the machine appears to be working correctly, but it is not producing condensed water, it should be checked. If the relative humidity in the room is lower than 40.45%; if the relative humidity is higher than that, contact your dealer for advice

## 6. CONNECTION TO A DRAIN PIPE - LIFTING PUMP (optional)

This dehumidifier can be connected directly with a fixed draining pipe; in this case, the water tank must be removed to allow for the connection of the pipe to the connection fitting.

For the connection, use one pipe provided with a 3/4" female fitting at one end. In the machines with ball-cock, if the water tank is not fitted in, the machine will not work.

Some machines have a switch in order to allow the functioning without water tanks, in other machines one must modify the tongue-shaped device placed near the ball-cock.

In the machines with a tank in the front, a special fitting, which is supplied with the machine, must be placed on the right upper side of the water tank.



### Machines with condensed water lifting pumps

This machine includes a condensed water lifting pump. This allows condensed water to be drained into a floor waste or similar.

The pump will work automatically, controlled by a ball cock placed inside the pump.

Before moving the machine, remember to purge water from water tank.

If the pump cannot work correctly, the compressor stops and the green light turns on. In this case, check the pipe situation.

Maximum head working pressure of the pump is about 3.5 metres.



## 7. PERIODICAL MAINTENANCE

### AIR FILTER CLEANING

The only required periodical maintenance is the cleaning of the filter **once every month**, or more often if the environment is very dusty or the dehumidifier is working for many hours every day.

Clean air filter by vacuuming or light hand cleaning.

After a few years running, it may be necessary to clean the heat exchanger (condenser) by using compressed air.

This operation must be done by a specialized technician. This cleaning will improve the performance and the long life of the machine.

**Note: You can acquire spare filters from your dealer's service.**