

Ferlin

plastics automation

**IMPROVING
PLASTICS *TOGETHER***

**USE AND MAINTENANCE MANUAL FOR
HOT AIR DRYER DEHUMIDIFIER
TYPES OF MACHINE**

HDCPS.00xx

PREMISE

This manual was drawn up with the intention of providing operators with the right information for proper use and maintenance of the machine. It is therefore essential to carefully read the manual, in its entirety, in order to prevent any inconvenience that could compromise proper operation or possibly cause irreparable damage to the machine. The use of these components is prohibited on all materials other than plastics in non-toxic granules (eg powdered plastics, explosive mixtures, flammable, harmful and food products).

Here are some general points which are recommended to be followed:

- *we recommend that you read this manual entirely before carrying out any maintenance operations and before using the machine for the first time.*
- *the machine is equipped with all the safety devices essential for checking operation and preventing possible accidents. However, these devices tend to prevent injury but not to exclude it. In no case, therefore, must dangerous manoeuvres be carried out without first making sure that the safety devices are in perfect working order and that you are operating in completely safe conditions.*
- *the machine must not be used for purposes other than those for which it was designed and built.*
- *this manual contains the technical characteristics and work performance provided by the machine. These services must not be changed.*
- *the performance and good operation of the machine are guaranteed if the connections to the electrical, pneumatic and water networks always comply with the power supply characteristics and the connection methodology reported in this booklet.*
- *the user must be perfectly familiar with the technical and operating characteristics of the machine. Any problems or faults generated by incorrect use and maintenance will invalidate the warranty conditions. The manufacturer is relieved of all responsibility even in the event that the units it produces are not used for the intended uses.*

The copyright of these instructions for use, descriptions, drawings and attachments remains the property of the manufacturer and can be duplicated or made accessible to third parties only after express authorization from manufacturer.

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1 MANUFACTURER

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Manufacturing company name:

Legal and administrative residence:

Chamber of Commerce registration number:

Tax code and VAT number:

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2 RISKS AND DANGERS

2.1 Symbols shown

Table 2.1 shows the risks for the operator together with the mandatory signs regarding the use of personal protective equipment to be worn when using the machine.

Table 2.1: risks to the user



GENERIC DANGER



DANGEROUS ELECTRICAL VOLTAGE



DANGER OF BURNS



SAFETY FOOTWEAR



PROTECTIVE GLOVES



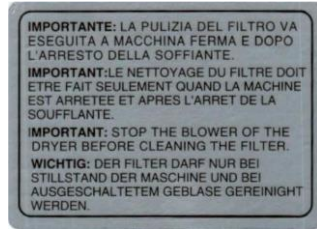
PROTECTIVE VISOR



2.2 Warnings and danger warnings

Filter cleaning

Filter cleaning must be performed with the machine stopped and after the blower has stopped.



Opening the side panel of the machine

Operating with the side panel open is very risky. Therefore make sure that the electrical circuit is suitably sectioned.



Presence of multiple levels of tension

Pay the utmost attention even with the panel open in Section.



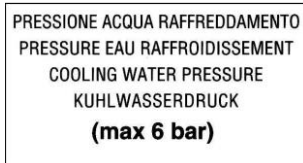
Presence of compressed air

Make sure that there are no leaks in the compressed air circuit which is essential for controlling the pneumatic valves/



Machine plate

Figure 2.5 shows the plate data indelibly so that they cannot be modified or eroded over time.



Cooling water pressure

Figure 2.6 indicates the presence of a cooling circuit which is not mandatory in the installations of MD type dehumidifiers.

2.3 Noisiness

The noise level is measured in free field at 1 m from the source and 1.5 m from the ground and is less than 80 dB or below the legal limits. Even if the limit threshold is not exceeded, it is still advisable for the operator to use hearing protection devices (earplugs, headphones).

2.4 User obligations

The operator is obliged to:

- prohibit non-workers from approaching the operating range of the machine in operation;
- do not remove the risk warnings provided;
- use protective gloves to avoid cuts and / or burns;
- use protective mask to avoid toxic inhalations;
- never rest your hands on the edges of the hopper when its lid is open;
- strictly dehumidify only non-toxic material;
- equip the system (if necessary) with a special extractor hood;
- never remove the safety devices installed on the machine;
- do not smoke near the dehumidifier;
- arrange fire prevention measures in the vicinity of the dehumidifier;
- carry out maintenance operations on the machine EXCLUSIVELY with the machine stopped and disconnected from the power supply (disconnecting switch on the machine board open);
- do not remove the filters from the machine in operation;
- do not use the machine outdoors (outdoors);
- if it is necessary to move the machine, move it only with the hopper empty.

2.5 Transport and unpacking

The means of loading, unloading and transport must comply with the regulations in force. The machine must be handled by lifting it from the bottom, inserting the tips of the lifting trolley (figure 2.8). It is recommended NOT to use ropes or chains to harness the packaging. Before lifting, check that nothing can fall during lifting operations.



During unpacking operations, the operator must use protective gloves and clothing to avoid possible cuts or grazes due to the presence of wooden parts and plastic bands. The machine is delivered inside a carton or on a wooden pallet.

3 DESCRIPTION OF THE MACHINE AND OPERATING CYCLE

3.1 Description

The drying unit generates hot air which is necessary for absorbing humidity from the granular plastic treated. This air is detoured inside the hopper where it passes through the damp material. Afterwards, the air is unloaded outside or kept inside the system thus creating a close loop. This choice can be adjusted simply by rotating the manual valve for hot/cold air depending on the level of water that the user wants to remove. The overall system is formed by an heating group always attached to an hopper that stores a certain amount of dried material. The following components are also present:

- air fan forcing the fluid to enter in the hopper.
- an electric panel.
- resistances for the air heating.
- hopper whose size varies with the chosen model.

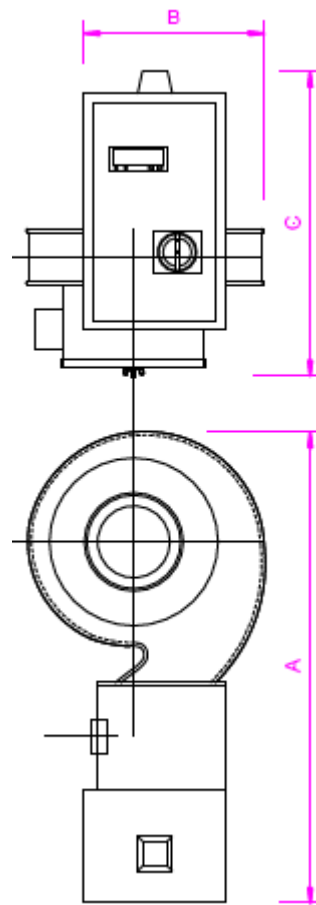
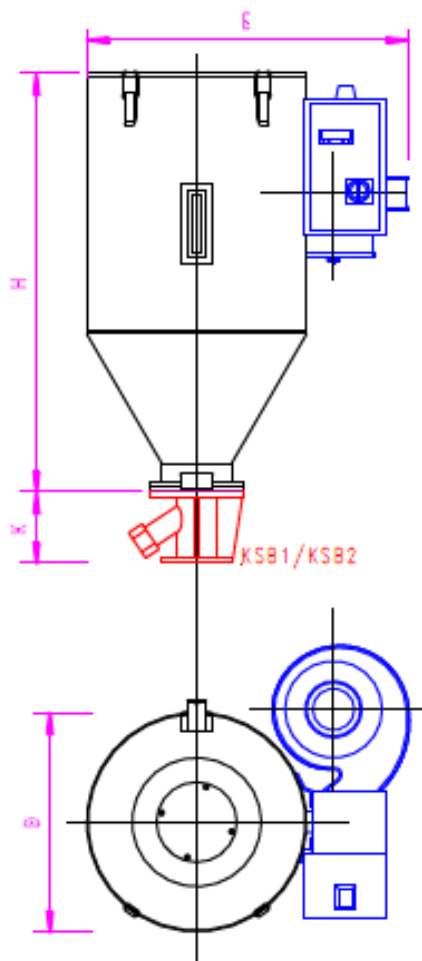
The available models are collected in table 3.1. The references are taken by figure 3.1a while an image is depicted in figure 3.1b. The dryer and the hopper connection assembly either with or without cart, has the size gathered in table 3.2 where the references are contained in figure 3.2.

Specifications	Unit	HD 30	HD 50-75-100	HD 100H-150-200
Fan throughput	M3/h	50	70	170
temperature				
Fan power	W	70	90	250
Resistance power	kW	1,6	2,8	3,0
Max temperature	°C	150	150	150
Dimensions A	Mm	400	485	615
Dimensions B	Mm	150	155	300
Dimensions C	Mm	300	330	410
Total weight	Kg	9	15	20
Power supply	V/ph/Hz	230/1/50	230/1/50	400/3/50

3.1

Specifications	Unit	TD30	TD50	TD75	TD100	TD150	TD200
Hopper capacity	Dm3	30	50	75	100	150	200
H	Mm	370	490	490	550	550	550
		740	740	940	940	1240	1540
Weight	Kg	20	25	29	35	42	51
H+K	mm	670	750	750	870	870	870
		150	150	150	150	150	150
		890	890	1090	1090	1390	1690
O	Mm	690	690	690	720	720	720
		571	571	571	571	571	571
		1225	1455	1455	1465	1625	2095
		900	900	900	900	900	900
		381	381	381	381	381	381

3.2



4 INSTALLATION

The installation must be carried out by authorized and qualified personnel respecting the current laws and regulations. This procedure has to be executed in condition of full safety for both the operator and who is nearby. In order to respect this requirement, the user needs to wear proper protection garments as well as putting band signals for delimiting the working zone.

The machine is manufactured for working within the following limit conditions:

- Ambient temperature +5°C +40°C
- Storing temperature -10°C +50°C
- Relative humidity of input plastic 30% 95%
- Maximum altitude 2000 m a.s.l.

4.1 Electric connection

The electric connection must be carried out by authorized and qualified personnel. Before starting, check if the plaque data depicted in figure 2.3 matches the installation country power supply rates (i.e. number of phases, frequency, means voltage). Furthermore, check the protection devices upstream as well as connect the machine to an efficient earth leakage circuit.

Connect the machine to the power supply through the electric cable. If the cable is damaged, replace it with another one having the same specifications. The feeding can be performed in 2 ways:

- **PLUG IN-SOCKET:** the assembly of the three loose terminals of the cable has to fit into a socket according to the country's site of installation regulations;
- **EXTERNAL ELECTRIC SWITCH BOARD:** the feeding cable must be tied up to the switchboard with an extra installation of safety devices mounted upstream (thermal-magnetic circuit breakers and earth leakage CB). It is assumed that the maximum short-circuit current is 10kA.

5 HUMAN MACHINE INTERFACE

The only component that assures a communication between the user and the machine is represented by the ATR thermoregulator depicted in figure 5.1 which gives 2 temperature values during the functioning. In detail, the greater one consists in the real time temperature. Meanwhile the other one refers to the process temperature. In order to modify it, simply use “ “ and “ “. Pressing “SET” once, “AL.1” is visualized along with the number “25”. This means that the alarm is set 25°C higher than the process temperature. This margin cannot be edited by the user This series has 2 temperature controllers dedicated respectively to safety control and process control.



6 MAINTENANCE

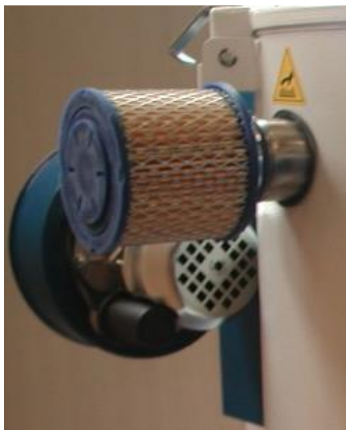
Maintenance of the machine shall be carried out by authorized and well qualified personnel according to laws and regulations of the country's site of installation. The intervention has to be done in full safety for the operator and who is nearby. In order to respect this requirement, the user needs to wear proper protection garments as well as putting band signals for delimiting the working zone. Work on maintenance with the machine turned off and not connected to any power supply.

6.1 Ordinary

Maintenance program takes into account the perfect machine condition goals. Therefore it is essential to set and follow a regular and clear inspection schedule.

Ferlin Plastics Automation dismisses every liability for damage toward people and/or things caused by a missed observance of the regulations of the country's site of installation and/or an irregular use and/or a not proper usage of the machine.

The dryer as well as the hopper contains an air filter (shown in below picture) that impedes to the majority of the impurities to take part in the heating cycle, maintaining the overall system clean as well as guaranteeing high performances. It is strongly recommended to clean the filter frequently. In addition, when a material change is acted, air piping cleaning must be undertaken in order to avoid possible contaminations.



6.2 Every three months

Check and if needed replace the hopper filter (different from the dryer filter), the process resistances and the contactors.

7 MACHINE END OF LIFE (RECYCLE)

When the machine needs to be eliminated, it is necessary to uninstall it from the system and place it internally in the warehouse until it is disposed of in a suitable environment, taking care to apply a sign with the wording:

MACHINE NOT AVAILABLE. TO BE DISPOSED

Before disposing please always get in touch with Ferlin Plastics Automation. In many cases we can give a refund for a used machine. This also enables us to recycle the machine as much as possible.



WE BELIEVE IN A
BRIGHT AND
SUSTAINABLE FUTURE
FOR PLASTICS

8 WARRANTY

Ferlin Plastics Automation (hereinafter referred to as the SELLER) guarantees the BUYER, but not its ASSIGNORS, the machinery produced under the SALE contract, for a period of 12 months from the invoice date. The guarantee is applied for the free repair or replacement of parts found to be unserviceable due to faults or defects in material, construction or workmanship, provided that these parts are delivered ex factory of the SELLER. The general terms and conditions of delivery formulated by Metaalunie are applicable. In the event of a contradiction between the general terms and conditions of delivery of the Metaalunie and this manual, the general terms and conditions of delivery shall apply

In addition to the repair and replacement referred to above, the SELLER does not have any obligation and the BUYER is in particular excluded from the right to demand the termination of the SALE contract or any compensation for damages. If the repairs and replacements must be made in the place where the machine is installed, the travel (round trip) and accommodation costs of the SELLER's technicians will be billed to the BUYER based on the specially published rates.

In the execution, the SELLER company uses materials, organs and mechanisms of type, state and quality deemed at its sole discretion, suitable for the machine to be built, even after receipt of the order and can make constituent changes to the machines, always at its sole discretion. , the appropriate improvements.

The SELLER company will not be responsible for defects deriving from materials or designs supplied by the BUYER. The SELLER will be responsible only for defects relating to the conditions of use provided for in the use and maintenance manual and if the machine is used correctly and not for defects due to causes that arise after delivery. The warranty does not extend to failures or breakages resulting from natural wear and tear, negligent maintenance, inexperience, neglect or misuse of the machine by the BUYER and ceases if payments are not made by the BUYER at the agreed deadlines or if the machine, or parts of it have been modified or repaired without the written authorization of the SELLER.

The warranty of the electrical and electronic parts supplied with the machine ends with its regular start-up. In any case, any legal action for defects, deficiencies in quality, lack of performance or of certain requirements for any other reason or claim must be brought to the BUYER under penalty of forfeiture, within 12 months from the invoice date and will be or will become unacceptable when the BUYER is in arrears in the payment, even of a single instalment. In the event of a dispute, Dutch law will be competent.