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MACHINE AND SYSTEM MANUFACTURER

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Specification for the automatic filling machine (production line)

ANT 5 for sowing seeds in multi trays

Area of application;

The automatic filling and sowing line ANT 5 is intended for commercial sowing. Depending on the model type of seeder, it can be used for various types of plants, e.g. vegetables, herbs and ornamental plants.

The line can be used with Styrofoam plates as well as multitrays. It correlates with all types of multitrays that have the following parameters:

- width : 315 – 420mm
- height: 40 – 80mm

The filling line ANT 5 has been designed to guarantee a high degree of hygiene in the production process.

Technical Data:

Overall length:	5700mm – depending on equipment
Width:	850mm
Height:	1600mm
Supply:	AC – 230V 50 Hz
Nominal power:	2kVA
Control:	DC 24V
Weight:	175 – 320 kg – depending on equipment

Construction:

- The filling line ANT 5 consists of modules. The configuration of single modules allows an adjustment of the line to the individual production requirements.
The basic version of ANT 5 consists of the following modules:

1. Main conveyor - TG
2. Module for dispensing perlite or vermiculite (called dispenser in the following)– TM _RP
3. Irrigation module – TM – NW
4. Table for manual tray feeding – SP
5. Table for tray withdrawal – SO

- The **main conveyor TG** is the central part of the line, the body is made of aluminum. The drive motor is mounted at the end of the conveyor, it generates the drive for the conveyor.

The main conveyor comprises the following elements:

1. Elements to adjust the line so that it can handle various types of multitrays
2. Mounting device for the seeder
3. Control box

4. Mounting device for the air pump
 5. Switch box
 6. Modular device to fill the multitrays with substrate
- **Moveable guiding rails** at the sides allow a horizontal and vertical adjustment of the table over which the multitrays pass. The mounting device for the pneumatic seeder is also affixed to these guiding rails.
 - The control buttons are in the **control box**, which is mounted to the front end. It is the central controlling unit of all the line's functions.
 - Due to its versatile usability, **the seeder** is an independent element (cf. 'Specification for Seeders')
 - The **air pump** is an integral component of the pneumatic functional system and it is an independent element. Its purpose is to generate over- and low-pressure necessary to supply the seeder (cf. 'Specification air pump').
 - The **switchbox** contains all the electronic elements of the line, the inverter as well as the fuses. The respective parameters are pre-set by the manufacturer. The operator has access only in emergencies (e.g. outage, only after instruction)
 - The **filling device** serves the purpose of filling the cells with substrate and to compact it. It is driven by the drive motor and is synchronized with the line's other components.
- The perlite or vermiculite **dispenser** is made of aluminum. Akin to the main conveyor system for multitrays, it is also equipped with a conveyor belt. The drive of the conveyor belt is transmitted from the main conveyor system. A perlite dispensing device is mounted above the conveyor belt. The purpose of the dispensing device is to cover the seeds with perlite or vermiculite, in order to guarantee optimal moisture conditions. In order to adjust the dispensing device to the multitray, faceplates with the respective openings to dispense the required amount of perlite can be changed. The device dispenses the perlite in small strips over the central part of the cell. It is synchronized with the motion of the main conveyor system.
- The **irrigation module** is made of aluminum and is also equipped with a conveyor belt above which the irrigation tunnel with spray nozzles is mounted. The purpose of this device is to irrigate the cells on the multitray after they have been sowed and covered with perlite. The activation of the irrigation is controlled by an electrovalve and is also synchronized with the main conveyor. The spray intensity can be regulated with an additional valve.
- The standard version of the automatic line ANT 5 comprises two tables by means of which multitray feeding and dispensing is facilitated. They are mounted at the beginning and at the end of the line. All devices are equipped with soft start, an operating speed regulation and an electric fallback system.

Functional principle:

Line ANT 5 is the most elementary technologic cycle, it comprises the following work steps:

- Filling the multitrays or flower pots with the respective nutrient medium, the substrate's required density is regarded
- Setting the seeds into the multitray's individual cells
- Covering the seeds with perlite, vermiculite or sand
- Irrigation of the cells

Work steps:

- The multitrays are fed manually
- The multitrays passing underneath the filling device are filled with substrate. The substrate is straightened
- Then the multitrays are taken to the puncher. (The puncher is part of the seeder. It punches a small indentation into the center of the cell)

- In the following, the multitrays are led under the sowing drum. The seeds are sucked in from the seed chamber and are precisely set into the indentation made by the puncher.
- The sowed multitray is then pushed under the perlite dispenser, where the sowing is covered with perlite
- In a final step, the sowed and perlite-covered multitrays reach the irrigation tunnel where they are intensively sprayed
- Afterwards the multitrays can be withdrawn manually
- The output ranges between 350 – 450 multitrays per hour

Description:

Sowing is done in a flowing process. The system can be halted and continued at any time without interfering with the sowing process. The main conveyor system, the air pump, the perlite dispenser and the irrigation device are synchronized.

In order to operate the line three people are necessary – an operator (a person that has been trained in using the system), and two hands.

Notes:

Line ANT 5 allows an uninterrupted sowing process. This solution will decisively increase your output at a constant quality level. The system is easy to operate and reliable.

It has been certified to comply with the requirements of the CE mark.

* Features (modules) that can be used on the line :

1. A universal dispenser, to cover the seeds with sand or peat
2. Mechanic seeder to sow herbs (multi grain sowing / punctiform or dispensed)
3. Precise pneumatic seeders
4. Air-pump

*additional information