

WORKING MANUAL FOR A SEMI-AUTOMATIC FILLING MACHINE FOR POWDER PRODUCTS WITH SERVO-DRIVEN AUGER FILLING



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1. INSTALLATION

1.1 Requirements

- surrounding temperature 15 - 30°C
- humidity in the operating area 35 – 65%
- power supply 220V±10%, 50Hz
- compressed air 4,5 bar, 25l/min; dried and clean air

1.2 Placement

Place the machine on a horizontal, stable and flat space.

The machine has to be placed on a spot, where the working process would not be affected by vibrations, dust and other similar effects, which would prevent its normal operation.

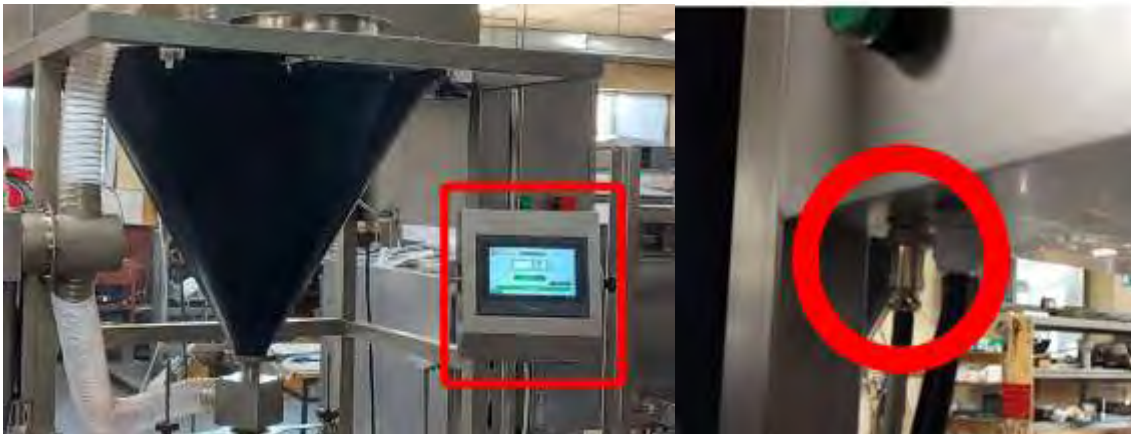
Considering the easy operation of the machine and its maintenance, enough free space should be provided around it.

1.3 Grounding

Ground the machine. Operating with an ungrounded machine is not allowed.

1.4 Connecting the machine

- connect the external HMI to the panel of the weighing system. This HMI will be used for control and setup of the weighing system;

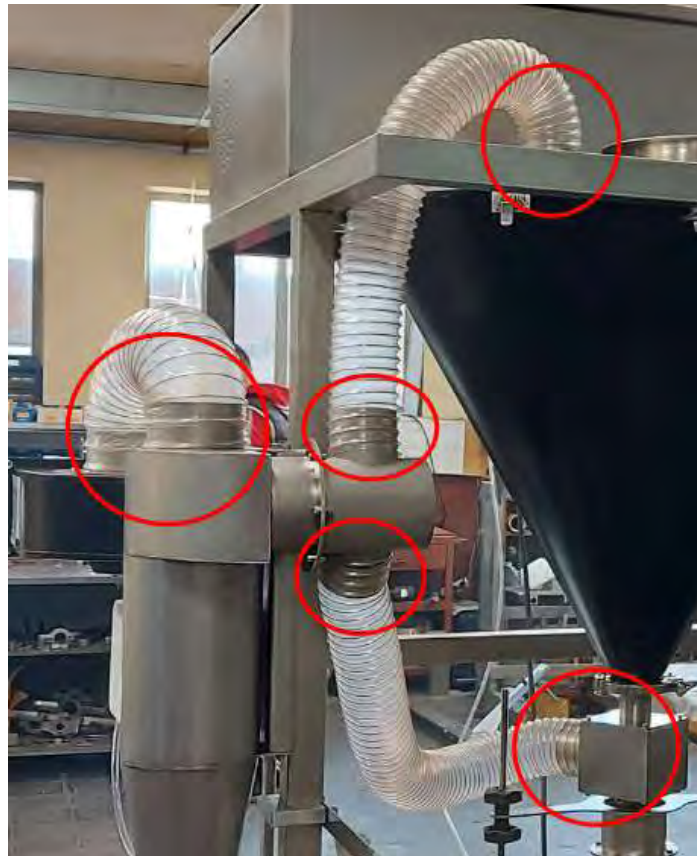


- connect the compressed air to the pneumatic group of the bag-opening module;



8mm external diameter hose

- connect the external aspiration unit;



- connect the power supply of the filler and of the external aspiration;



16A 5-pin industrial plug (filler)



Aspiration unit

2. SAFETY INSTRUCTIONS

2.1 Who is allowed to operate with the machine?

For working with the filling machine are only allowed persons who are:

- age 18 or above;
- passed all the necessary medical examinations;
- passed all of the mandatory briefings and instructions on the work place;

2.2 Physical harm

Before start working with the machine, the operator should get acquainted with all of the machine modules and parts, which may cause any physical harm and could bear risk for his overall health. The potential harmful parts of the machine are marked with the necessary pictograms.

2.3 Working under the following conditions is strictly prohibited:

- Working with a faulty machine is NOT allowed!!!
- If any damage or indistinctive noises are observed, the work with the machine should stop IMMEDIATELY. If this happen, inform the authorized personnel immediately;
- Working with an opened electrical panel is not allowed. All of the electrical maintenance is done ONLY by an authorized personnel;
- Working with an opened protection covers is not allowed;
- The machine is designed for filling of food products in empty containers. Any other application of the machine may be considered dangerous and inappropriate;
- Any mechanical adjustments and technical maintenance are not allowed when the machine is on. Turn of the machine first;
- STOP the machine before making any adjustments and corrections;

2.4 Additional safety requirements:

- Any waste and spilled product around the machine is not allowed. The space around the machine should be absolutely dry, clean and should be enough to provide easy operation with the equipment;
- A waste disposal container should be placed near the machine so that all of the wasted film to be collected in;
- All of the maintenance operations like knife changing, rollers cleaning and all of the mechanical adjustments are done ONLY by technical personnel and ONLY on a fully stopped and turned off machine;

3. FILLING MACHINE OVERVIEW

3.1 External overview



- 1 Adjustable touch HMI
- 2 Electrical cabinet
- 3 Motor cabinet
- 4 Support frame with mobile construction
- 5 Protective cover
- 6 Intake hopper with a dosing auger
- 7 Adjustable working table

4. WORKING WITH THE FILLING MACHINE

4.1 Initial run

4.1.1 Adjust the working table, according to the container height.



4.1.2 Adjust the filling tube, according to the container.



4.1.3 Turn ON the dosing system from the RED switch on the back of the electrical cabinet.



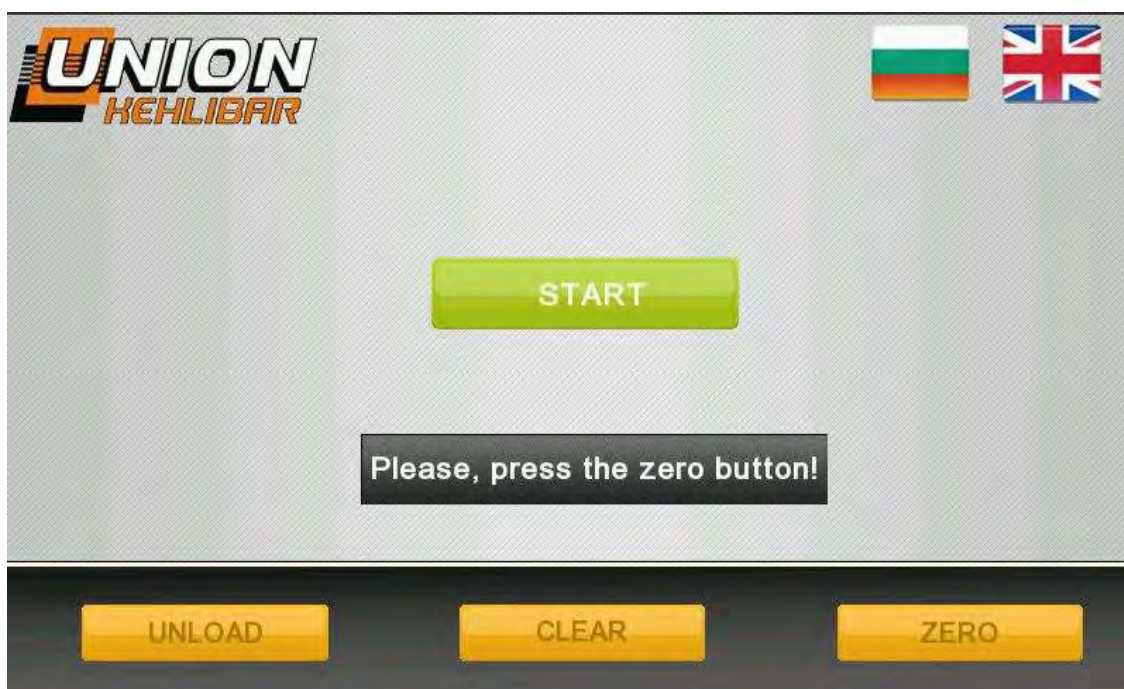
4.1.4 Turn ON the aspiration unit from the black switch.



4.1.5 Perform **ZERO** procedure of the dosing system.

NOTE!!! Every time you start the machine, ZERO procedure should be done

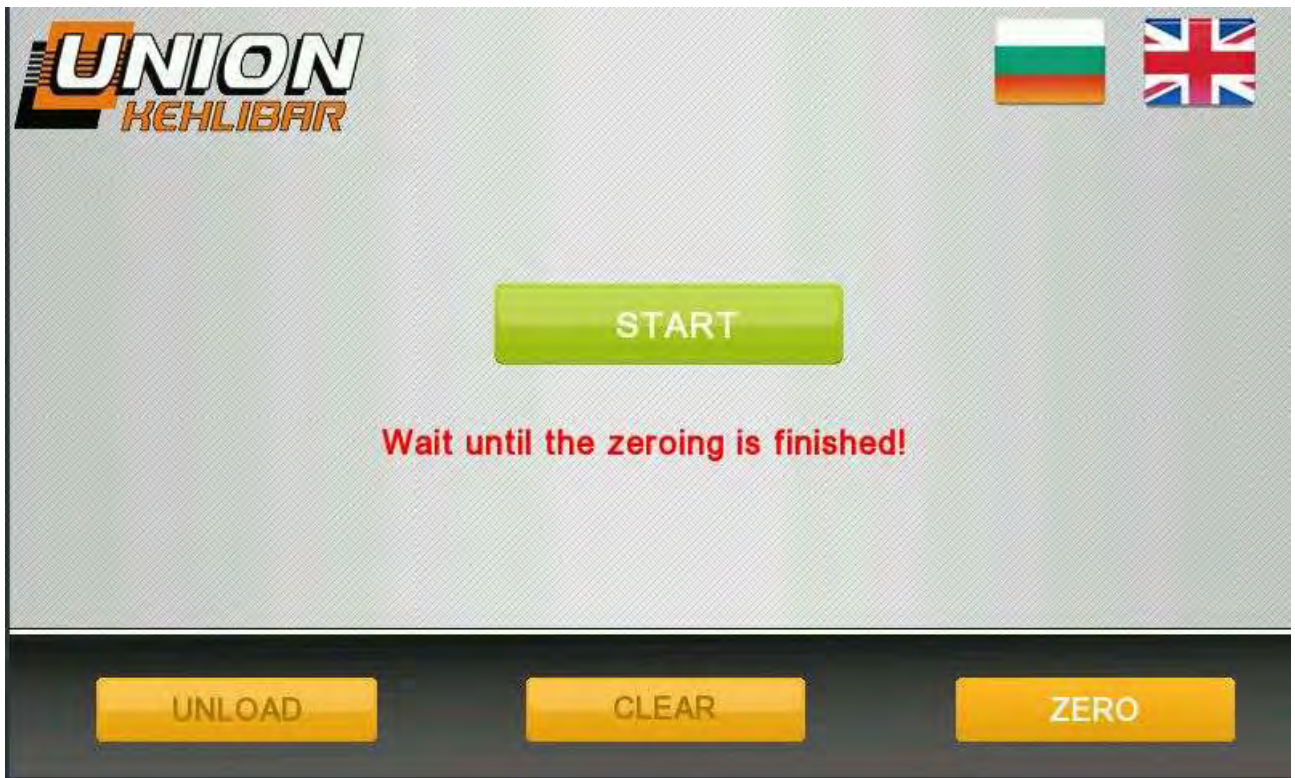
After turning on the filler, the control panel will visualize the following screen:



Every time you start the machine, ZERO procedure should be done!!!

Press Zero button and wait until the text **Waiting until the zeroing is finished!** disappears.

Notice: Do not touch the weighing machine during Zeroing because you could affect the correct zeroing of the scales.



In order to proceed to the main menu, press the button **START**.

4.1.6 Start the machine with a preset program

A) Start the dosing system with a loaded preset program:



By pressing the big button **START** on the main menu, the dosing system will be put in **WORKING MODE** and now will be waiting for a signal from the operator. The START BUTTON will change to a **RED STOP BUTTON**



4.2 Operation with the DOSING SYSTEM

4.2.1. DOSING SYSTEM: CHOOSING A DOSING SCREW AND A HOLDING GRID

The filling machine with auger dosing, is used for all kinds of powder products, each with different characteristics. Due this reason, in order to achieve the best balance between speed and accuracy of the dosing, you need to perform the following actions:

- **You need to choose a dosing screw with an adequate diameter-** The filling machine for powder products is capable of dosing up to 3000gr. In order to achieve the optimal balance between speed and dosing accuracy, you can choose between dosing screws with different diameter. The required dosing range is specified by the customer in advance, which allows our specialists to choose the number of the dosing screws and the diameter of each of them, so that to cover the entire dosing range with optimal dosing speed and accuracy. The smaller is the dosing range, the smaller is the diameter of the dosing screw



- **You need to choose a holding grid, depending on the mealiness of the product-** The different powders have different characteristics. One of the most important characteristics

when dosing powders, is their mealiness. When the product is too mealy, some additional product falling occurs after the dosing process is finished. This additional product falling affects the dosing accuracy and leads to overweighing. In order to avoid the additional product falling, different holding grids are used. The right holding grid is determined by testing.



ATTENTION: If you use too fine holding grid with too dense product, it could lead to a screw overloading and eventual damage to the holding grid.

4.2.2. DOSING SYSTEM: Dosing screw replacement

- Replacing the dosing screw:
 1. Be sure that the machine is **TURNT OFF!!!**
 2. Remove the screw's tube following the illustrated procedure:





3. Carefully release the dosing auger



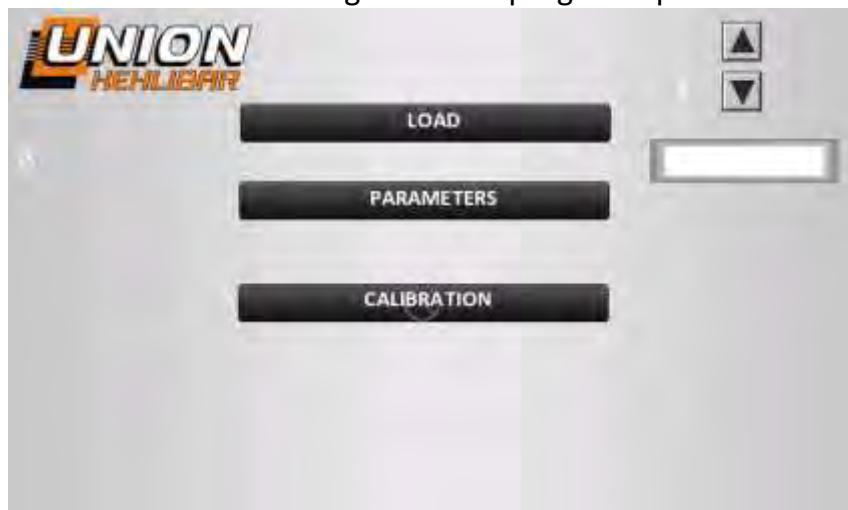
4.2.3. DOSING SYSTEM: Choice and loading of a work program



After pressing the button **WORK PROGRAM** from the main screen,



the following window for choice and loading of a work program opens:



Via the arrow buttons up/down in the upper right corner of the menu, the already created operation programs can be changed, as each working program is marked with a number (1,2,3,etc...)



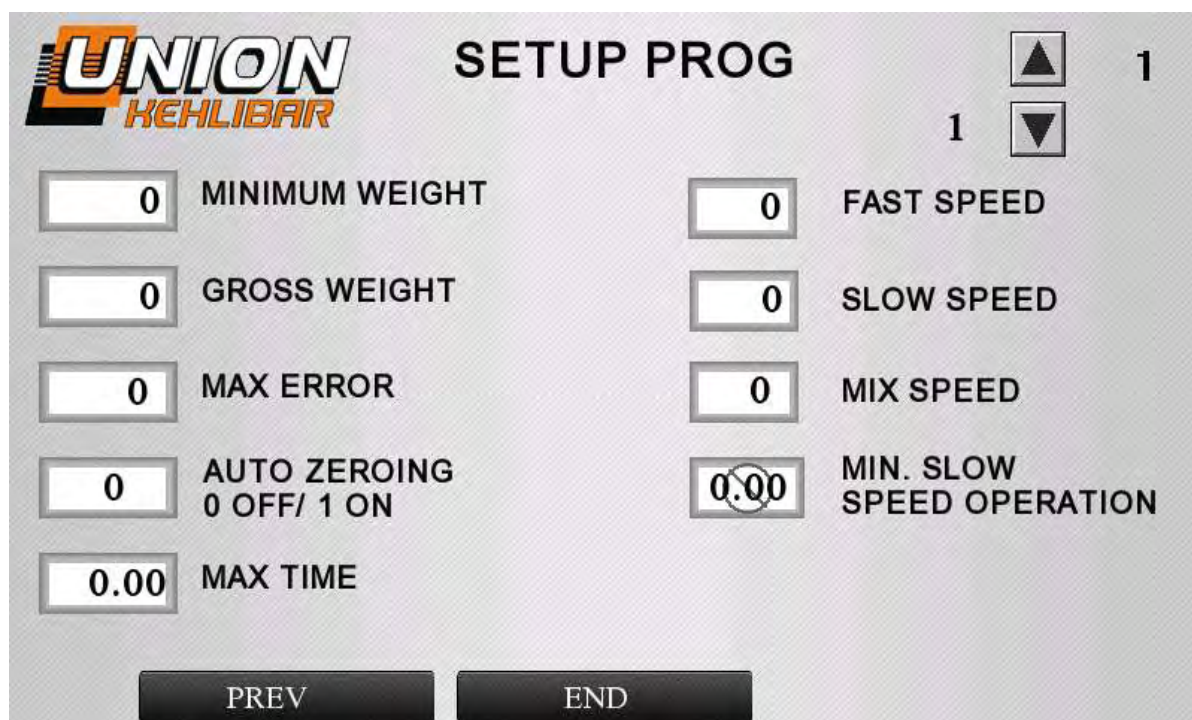
After choosing a work program, it is necessary that it is loaded to the filler. This happens by the button **LOAD** in the upper part of the menu. After pressing it, you will return to the main menu, with the chosen operation program loaded.

The button **PARAMETERS** opens the menu for setting and modification of different work programs. More information for the menu for setting different operation programs can be found in the section [Setting a work program.](#)

The button **CALIBRATION** opens the menu for calibration with a control/sample weight. More info for this menu can be found in the section [Calibration.](#)

4.2.4. DOSING SYSTEM: Setting a work program

When pressing the button **PARAMETERS** from the previous menu, the following window for work program settings opens:



The buttons with arrows up/down in the upper right corner of the window change the operation programs which will be modified. After the done changes, to save the operation program, it is necessary to press the button **END**. The parameters that can be changed are the following:

MINIMUM WEIGHT – Sets the minimum acceptable weight.

Example:

If your target weight is 100g and you would like to allow 2g underweight, then this parameter value should be set to 98g

GROSS WEIGHT – Sets the weight, after which the vibration switches to a slower (more accurate) speed.

Example:

If you have minimum weight set to 98 and gross weight set to 70, the machine will feed on fast speed until reaching 70g and after that will switch on slower speed up to 98g.

MAX ERROR – Sets the maximum error (above the precise weight), in the range of which the weigher will accept the dose for correct.

Example:

If you have set minimum weight to 98g and max error parameter set to 4g, then the machine will accept the doses in range 98-102g as correct doses. If the target weight goes above this interval, an overweight error will be displayed on the screen.

This overweight hopper will wait until operator takes some product off from the container.

AUTO ZEROING – Turns ON/OFF the auto zeroing function before the dosing process. When the function is ON, the software zeroes the scale after the container is put on it. This ensures that the right NET weight of product will be discharged in the container, no matter the weight of the container itself.

MAX TIME – Sets the maximum time for the making of a dose. If there is no ready dose in this time, the machine stops working and NO PRODUCT error is displayed on the screen.

FAST SPEED– Sets the required speed of the **FAST DOSING** from 0-499. The filler works on FAST SPEED until it reaches the set GROSS WEIGHT.

SLOW SPEED – Sets the required speed of the **SLOW DOSING** from 0-499. The filler switches to SLOW SPEED, after reaching the set GROSS WEEGHT. The SLOW SPEED proceeds until reaching the set MINIMUM WEIGHT

MIX SPEED – Sets the speed of the internal agitator in range 0-99

MIN. SLOW SPEED OPERATION– System parameter. Sets the minimum time on which the filler works on SLOW SPEED (0.00-0.50s)

NOTICE: the speed settings are usually done using the shortcut button DOSING SPEED on the main screen (see below)



4.2.5. DOSING SYSTEM: CALIBRATION

When pressing the button **CALIBRATION** from the menu,



a window for calibrating the scales opens. The menu for calibration is protected with a password.

The access password is 333. The window that opens is the following:



The first step is to set a value for the control weight, which will be used in the calibration. This is done via the button **CONTROL WEIGHT** in the upper right corner of the menu.

For calibrating, the following procedure is used:

1. Press the button **ZERO**, for calibrating the weigher.
2. Put the control weight on the weigher and press the button **FULL**, to finish the calibration.

To save the calibration, press the button **PREV**