



Weigh-scale hopper

Quick Set up guide

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Weigh-scale hopper, Box-filling system

Specifications
Calibration and installation instructions

Part weight accuracy to within 0.5 grams

The weigh-scale hopper was specifically developed to provide maximum weigh-scale accuracy within a wide range of container-filling applications. The system weighs parts in small, extremely accurate batches which are then filled into containers until a final pre-determined count is met.

While the final accuracy of the system is dependant upon a number of factors including the size of the part, the number of parts on the final cleat, etc., the weigh-scale hopper itself is capable of detecting part weights as small as 0.2-0.5grams (depending upon the size of the load cell selected).

HOW DOES IT WORK?

- A part weight and batch weight is determined using an average part weight method taken from a sample batch.
- The number of parts (and batches) required for a full container is entered into the scale system.
- The feeding conveyor fills the weigh hopper until the batch weight is reached. It then stops momentarily while the weigh hopper dumps the batch into the waiting container. At this point, the actual batch total is deducted from the full container total.
- The system continues until the last batch is being filled. It then determines the specific count for the final batch and then fills to that number. As the system nears the correct count, the feeding conveyor will go into a dribble mode, allowing it to accurately fill in the final parts.
- When the container set-point weight is reached, the hopper dumps the last batch and zeros itself out.
- The hopper begins filling again. The container is indexed away and a new one takes its place.

Weigh-scale hopper

Features



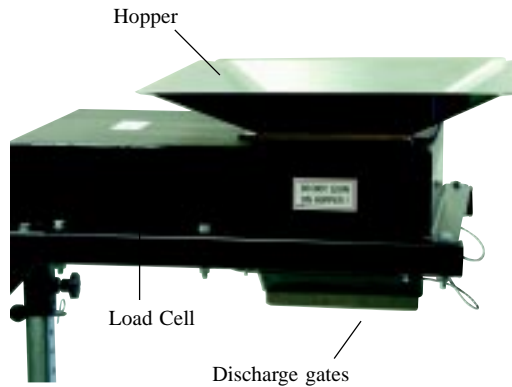
WARNING

This chart is meant to be a quick set-up guide for the basic weigh-scale hopper, box-filling system. Please consult the complete Equipment Installation Manual for specific information concerning safety guidelines, alternate installation options, troubleshooting etc.

Mechanical installation

1 Place the container to be filled in the fill position of the indexing unit. Roll the weigh-scale hopper over the container and adjust up or down to allow room for the gate to open without obstruction. Secure with the leveling pads.

2 The weigh-scale hopper is shipped with screw type supports in each corner of the weigh hopper. These are meant to stabilize the hopper and to protect the load cell during shipment. Locate the supports and remove them



3 Roll the feeding conveyor over the hopper. Do not allow the conveyor to touch or rest on the hopper.

4 Once the weigh-hopper is in the correct position, lock the castors and adjust the vibration absorbing pads at the base of the unit.

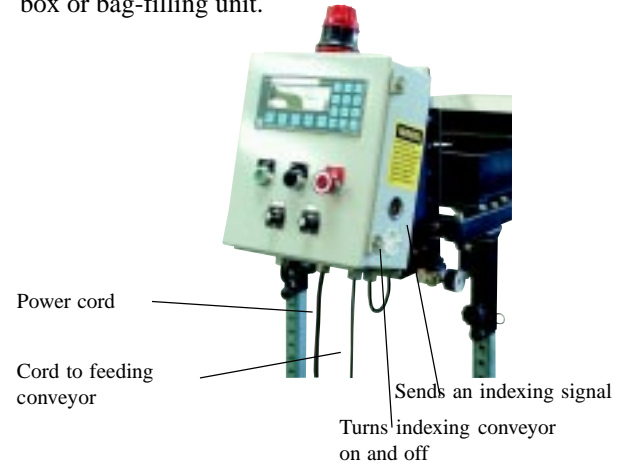
5 Attach compressed air (not to exceed 40 psi) to the regulator located on the side of the control unit.



Electrical installation

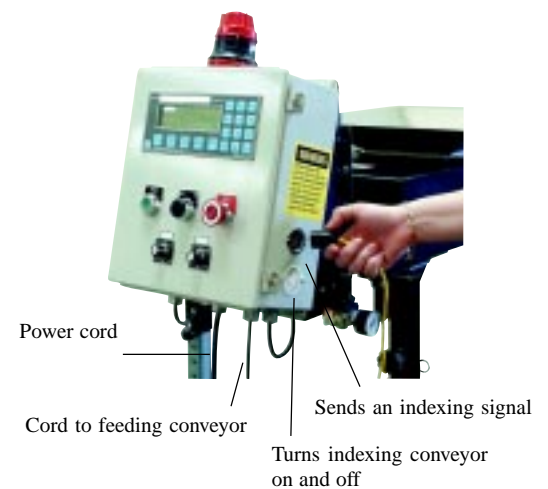
Each weigh-scale hopper comes pre-wired with plug and play receptacles located on the control box.

Quick disconnects allow the unit to be easily connected to the feeding conveyor and to an indexing box or bag-filling unit.



1 The cord to the feeding conveyor is located on the underneath, right side of the control box. Attach this cord to the feeding conveyor.

2 If it is not already attached, attach one end of the yellow power cord to the upper receptacle on the side of the control unit. Attach the other end to the container-filling system.



3 Plug the power cord into the power source.

Once the mechanical and electrical installation is complete, the weigh-hopper is ready to be programmed .

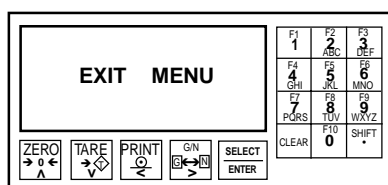


Calibrating the Weigh-hopper controller

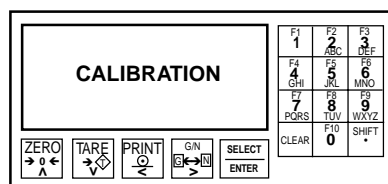
Using a 1 KG calibrated weight

The Weigh-hopper should be calibrated before it is used for the first time. It is not necessary to re-calibrate after use unless desired. Before beginning calibration, the hopper and the load cell must be free of all external forces. Failure to comply could produce inaccurate results.

Step 1 Access the menu

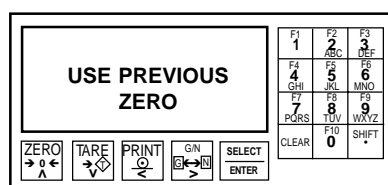


Press **F6** and enter the passwork **2001** on the keypad. Press **ENTER** three times. **EXIT** and **MENU** should be displayed on the screen. Scroll to **MENU** using the arrow keys **▲ ▼** Press **ENTER**.

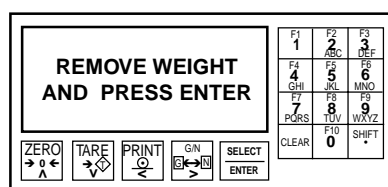


Press the arrow keys **< >** until **CALIBRATION** is displayed. Confirm by pressing **ENTER**.

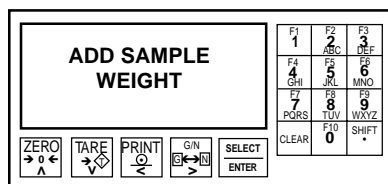
Step 2 Enter the calibration parameters



The question **USE PREVIOUS ZERO** will appear. Enter **0** on the keypad and press **ENTER**.

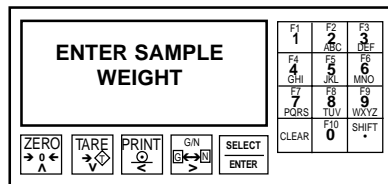


The instruction **REMOVE WEIGHT AND PRESS ENTER** will appear. If there is anything in the hopper, remove it and press **ENTER**. The scale will internally calculate a base zero for measurement.



When completed, the screen will prompt **ADD SAMPLE WEIGHT**. Place a calibrated weight into the hopper and press **ENTER** to confirm.

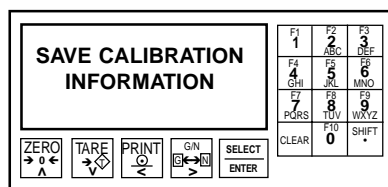
Calibrating the weigh-scale hopper continued . . .



The screen will prompt to **ENTER SAMPLE WEIGHT**. Enter the weight of the calibrated weight on the keypad and press enter to confirm.

Note: Be certain to use the same unit of measurement for the calibrated weight as you will be using for the parts. eg. if the parts will be entered as grams, a 1 KG calibrated weight would equal 1000 grams.

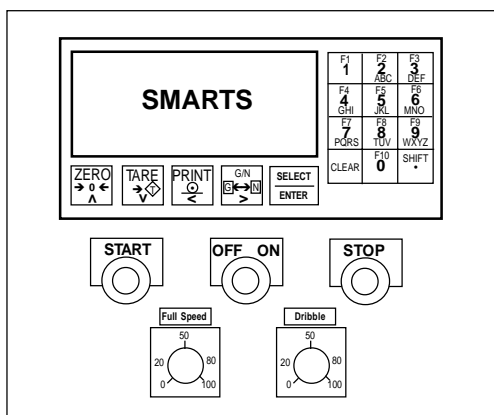
Note: This function may take the programmer some time to complete.



When complete, the screen will prompt to **SAVE CALIBRATION INFORMATION**. Press **ENTER** to save, **ZERO** to abort the calibration setup without saving.

Remove the weight.

Step 3 Leaving the calibration set-up



The calibration is done. Use the arrow keys < > to exit back to **SMARTS**. Confirm by pressing **ENTER**.

Function Keys Quick Reference

- F1** Program a new set up.
- F2** Toggle between weight display and part count.
- F3** Fine tune average piece weight (during set up).
- F4** Enter hopper capacity.
- F5** Abort current filling cycle.
- F6** Access menu (enter password).
- F7** Open / close hopper gate. *Note: Red stop button must be pulled out.*
- F8** Recall previously stored values.
- F9** Change default setup parameters
- F10** Enter total number of parts desired in container.

Programming the Weigh-scale hopper controller

These instructions are to be used with the basic weigh-scale hopper box-filling system. Systems with additional features may use variations of these directions, or may include additional steps. Please see the specific directions that come with your system.

Note: Before programming the weigh-scale hopper, please see the enclosed calibration instructions.

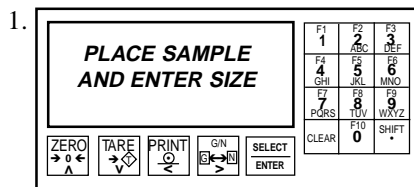
Step 1 Set the tare weight to 0

Plug the weigh-scale control unit into a standard 110/60/1 VAC power outlet. Be sure that the hopper is empty. Turn on the **ON/OFF** switch. The unit will start up and automatically run through a self-check until a weight is displayed. The displayed weight should register zero. If it does not, press the **ZERO** button to reset the unit

Step 2 Program a new set up or recall a previous set up

Do you want to program a new set up or do you want to recall a set up that you have previously saved? If you want to set up a new program, go to **Program a new set up** below. If you want to recall a set up you have previously saved, go to **Recall a previously stored set up** on page 7.

Program a new set up

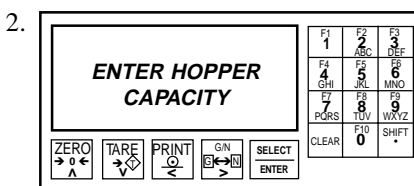


Note: If you obtain an error message, refer to the operators manual, Operational Sequence, Sec. 3.

Press F1. The instruction, **PLACE SAMPLE AND ENTER SIZE** will appear. Place a counted number of sample parts into the hopper until the hopper is approximately half full. Enter the number of parts using the numeric keys and then press **ENTER**. The controller will take the total weight of the parts and divide it by the number of parts that you have placed in the hopper. The result is the average piece weight of your parts.

Place additional sample parts into the hopper and press **F3**. Continue to do this until the hopper is approximately 3/4 full. This will re-calculate and fine tune the average piece weight based on a larger number of samples. This will also determine the optimal hopper capacity (or batch size).

The number of parts that are in the hopper (the hopper capacity) will be indicated in the top right hand corner of the LCD screen. **Remember this number. You will need it for the next function.**



*Note: If more than 1 hopper is required to fill a container, the hopper capacity becomes known as the **BATCH SIZE**.*

Press F4. Enter the password (2001) and press **ENTER**. The instruction **ENTER HOPPER CAPACITY** will appear. This function enters the number of parts you want to have in each hopper load. Enter the number of parts you have noted above and press **ENTER**. *Note: You can enter more or fewer parts if desired. However, for optimal performance, avoid filling the hopper over 3/4 full.*

The average piece weight will appear. Press **ENTER** again and then go to step 3.

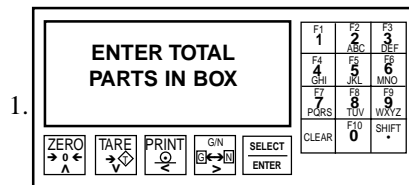
Step 3 Open and close the hopper gate

Note: To perform this function, the stop button must be pulled out.

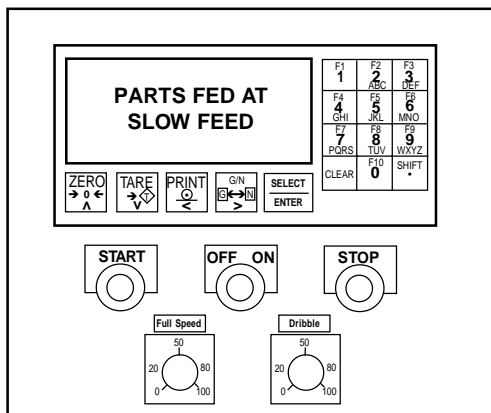
Note: The F7 key is functional only in the set up mode.

Press F7. This will manually toggle the hopper gate open to discharge the hopper contents. Press again to close the gate.

Step 4 Enter the number of parts you want in each container

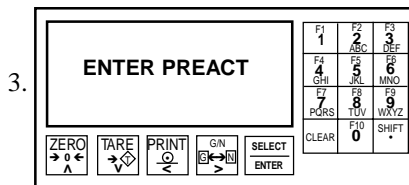


Press F10. The instruction **ENTER TOTAL PARTS IN BOX** will appear. Enter the total number of parts you want to have in each box and press **ENTER**.



The next instruction **PARTS FED AT SLOW FEED** will appear. Enter the number of parts you would like to have dribbled into the final hopper batch (typically 1 or 2 cycles). Press **ENTER**.

Set the dribble speed, located in the bottom right hand corner of the control box. Do not set at less than 30%



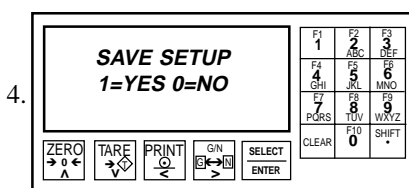
The next instruction **ENTER PRACT** will appear.

Choice 1. To be certain that each container contains the pre-determined number of parts, or possibly more, enter 0 and press **ENTER**.

Choice 2. If you want to be certain that you do not go over the pre-determined number, enter a number equal to the average number of parts that can be expected to be on each cleat and press **ENTER**.

The *preact* refers to the number of parts that may be on the final cleat. If these parts have started to fall after the controller determines the total weight has been met, the final number of parts in the box will be over by this number.

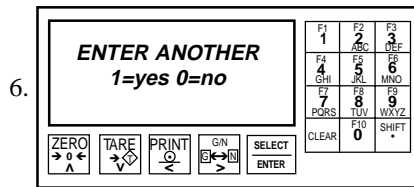
If you would rather be slightly over your pre-determined part count than under, enter 0. If you would rather be slightly under, enter the average number of parts you expect to be on your final cleat.



The next instruction **SAVE SETUP 1=YES 0=NO** will appear.

Choice 1. To use the setup for the current batch without saving, enter 0 on the keypad and then press **ENTER**.

Choice 2. If you would like to save the set up enter 1 on the keypad and then press **ENTER**.



The next instruction **ENTER ANOTHER 1=yes 0=no** will appear. This allows the user to enter multiple setups for the same part and store the parameters in separate registers.

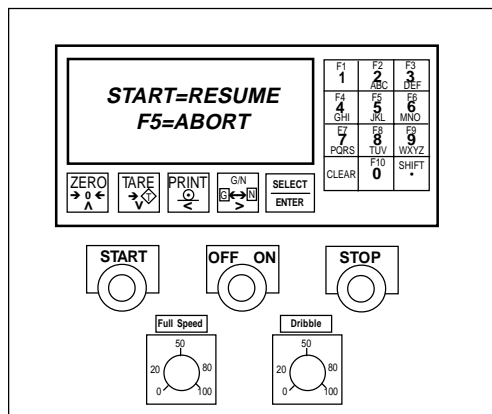
Choice 1. To save additional setups, enter **1** on the keyboard and press save.

Choice 2. To proceed with batch run. Enter **0** on the keyboard and press **ENTER**.

Step 5 Start the automatic sequence

To start the automatic sequence with your stored values, press the start button located in the left hand corner of the control unit.

Step 6 Stop all movement of the weigh-scale hopper



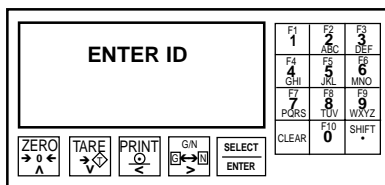
The stop button will turn off all outputs of the PLC and will stop all movement of the weigh hopper. The instruction **START=RESUME F5=ABORT** will appear.

To re-start the unit after a stop interrupt, pull out the stop button and press the **Start** button.

To end the previous sequence, press **F5**

Recall a previously stored set up

Use this step if you want to access a previously entered set-up.



Press F8. The instruction **ENTER ID** will appear. Enter the numerical ID number of the set up you would like to recall on the keypad. Confirm with the **ENTER** key.

Note: If you would like to exit this function at any time, enter 0 on the keypad.

Start the automatic sequence

To start the automatic sequence press the start button located in the left hand corner of the control unit.

Additional notes and instructions

- ✓ If, during the set up process, you want to leave the process and start over, the best way to do this is to turn the controller off and then turn it back on.
- ✓ After programming the weigh-scale hopper, the reset button on the conveyor must be pushed. If this is not done, the weigh-hopper will remain in the stop mode.
- ✓ The pneumatic regulator should be set to 40 PSI. Do not exceed 50 PSI.
- ✓ To refill the system, replace the filled containers and press the clear alarm. This will reset the system and identify the container that is currently filling as container #1.

Options

Calibrating the unit

Trouble shooting

Specifications

Voltage

110VAC, 60 hz, Single phase, 10 Amps

Air input:

Compressed air, max 90 psi.
Sed regulator to max 40 psi

Height range

Approximately 43 - 53 inches.

Indicator

PIC controlled
Memory of product set ups: 20
Optional RS 232 Interface available

Choosing the correct size weigh-hopper

Weigh-scale hoppers come in 3 standard sizes. The choice is determined by the size and weight of the part, as well as the degree of accuracy desired. Weigh-scale hoppers can also be configured in different shapes and sizes to meet specific application needs.

Hopper size	Accuracy	Max. fill weight
6"W x 6" L x 6" H	0.2 grams	
8"W x 8" L x 6" H	0.5 grams	
10"W x 10" L x 6" H	0.5 grams	

Additional sizes and hopper shapes

In addition to the sizes listed above, the weigh-scale hopper can be also be configured in different sizes and shapes to meet the needs of specific applications. Please call for additional information.

Weigh Scale Operation Procedures

1. Remove any full or partially full box from the conveyor.
2. Turn on power.
3. If zero is not displayed after 10 seconds, depress & hold “ZERO” until zero is displayed.
4. Place empty boxes on empty box holding conveyor.
5. Momentarily depress “SELECT” then “DRIBBLE” keys. Depress “ENTER” key until 1. with weight values is displayed. Using the numeric keys enter the weight at which slow speed is desired. Depress the “ENTER” key until zero is again displayed.
6. Momentarily depress “SELECT” then “PRESET” keys. 1. should be displayed.
7. Momentarily depress “ENTER” key two times or until 1. with weight values is displayed. Using the numeric keys enter the weight at which final cutoff is desired. Depress “ENTER” key until zero is again displayed.
8. Depress reset on main panel to start system in motion.