Weighing error control of Muyang LCS-50 Single Hopper & Belt Feeder type Bagging Machine

By Yin Rufei (Service Engineer of Muyang I.B.D)

In some cases, when changing the product to be packed, the difference of actual weight and desired weight of Muyang LCS-50 Single Hopper & Belt Feeder type Bagging Machine (hereinafter referred to as "the bagging machine") will be out of the allowable range. So how to control the weighing error properly in the allowable range will be discussed as follows.

First of all, the working process of bagging machine should be well known. At the beginning of a packing circle, from the top down, the pneumatic cylinder of flow control gate is actuated and the flow control gate comes to the fast feeding position by withdrawing, meanwhile the product cut-off gate is opened to let product flow into the weigh hopper from the fast running feeding belt. When the product weight reaches the fast-slow feeding shift value (LL), the feeding belt turns to run slowly, and the flow control gate shifts to the slow feeding position by protruding its cylinder to control the product flow of feeding belt and minimize fluctuation of on-scale weight. When the meter weight of product reaches to the stop-feeding value (LO), the belt feeder is stopped and the product cut-off gate is closed by withdrawing its cylinder to stop product from flowing into the weigh hopper. In this instance, there still some in-flight product between the product cut-off gate and the scale, which finally will fall down on the scale and the weighing process is completed. If the actual weight of product in the weigh hopper is higher than the allowable upper limit value (HH) of the desired weight or lower than the allowable lower limit value (HI), the alarm will sound.

After weighing, if bag clamper is at clamping position, the scale gate will be opened to fill product into the bag. After thoroughly discharges product, the scale gate will be closed and the bag clamper is delayed to loosen.

It is clearly that the setting of weight values is very important to the control of bagging speed and that of weighing error. Take the weight value setting of a PT650 weighing instrument that applied in Muyang LCS-50 bagging machine as an example, there are four weight values need to be set: the allowable upper limit value (HH), the allowable lower limit value (HI), the stop-feeding value (LO) and the fast-slow feeding shift value (LL).

Here's the weighing error control for the bagging production of quantitative weight 40kg/bag:

Press function the key $\boxed{\frac{ON}{OFF}}$ and then the key $\boxed{ZERO}$ to get into weight values setting mode.

At this time, the allowable upper limit (HH) of a desired weight shows on the weighing instrument. As we all know, error always exists for a weighing process because of the error of moving elements. The actual weight is different from what we desired. Error can't be eliminated, however, it can be controlled within an acceptable range. That's why the allowable upper limit (HH) and the allowable lower limit value (HI) are needed and used to define the error range. Once the actual weight is out of the range, the buzzer of the bagging machine will alarm. As for the
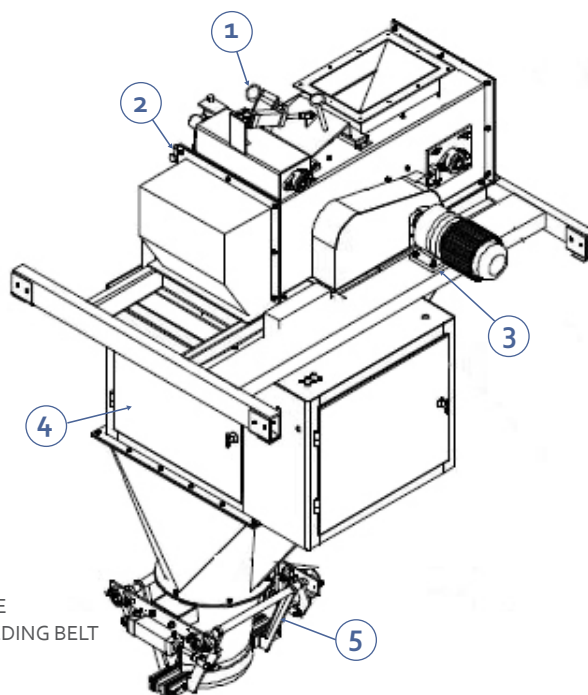
1- FLOW CONTROL GATE
2- PRODUCT CUT-OFF GATE
3- SPEED REDUCER OF FEEDING BELT
4- WEIGH HOPPER
5- BAG CLAMPER

quantitative weight 40kg/bag, HH could be set to 004010, which means the buzzer will alarm if the actual weight exceeds 40.10 kg.

After the success of setting the allowable upper limit (HH), press the key $\boxed{\frac{ON}{OFF}}$ switching to the setting of the allowable lower limit value (HI). As for the quantitative weight 40kg/bag, HI could be set to 003995, which means the buzzer will alarm if the actual weight lowers than 39.95kg.

When setting the HI value, press the key $\boxed{\frac{ON}{OFF}}$ to enter into the stop-feeding value (LO) setting. As mentioned above, at the moment of product weight on the scale reaches the stop-feeding value (LO), the belt stops feeding and the product cut-off gate is closed, but there still has some in-flight product which needs to be taken into account when setting the LO. However, the in-flight weight is controllable through adjusting the distance between belt feeder and flow control gate. It is recommended to control the in-flight weight within 0.2~0.3kg for Muyang LCS-50 series Bagging Machine. Therefore, it is capable of presetting the LO value to be 003975, i.e. once the weight of product on the scale reaches 39.75kg, the motor of belt feeder is stopped and the product cut-off gate is closed to stop product from flowing into the scale hopper. Wait until the reading is stable, then the in-flight weight could be calculated by subtracting the preset LO value from the reading weight. After getting the in-flight weight, it is necessary to reset the LO value. For instance, if the in-flight weight is 0.18kg, then the stop-feeding weight = desired weight − in-flight weight =40.00-0.18=39.82 (kg). Set LO to be 003982.

After the success of setting the stop-feeding value (LO), press the key $\boxed{\frac{ON}{OFF}}$ switching to the last weight value setting—the fast-slow feeding shift value (LL). It is also needed to preset LL and the value usually is small. If it is set to 001500, when the weight on scale reached 15kg, the belt feeder runs at low-feeding speed, the flow control gate is pushed to a slow feeding position and minimize the fluctuation of on-scale weight. If it takes too much time to reach LO with slow feeding, the LL needs to be increased to appropriate value. However, special attention must be paid to

that the larger the stop-feeding value (LO), the bigger error brought to final weight.

At last, press the key [ON/OFF] twice back to the weight values setting mode.

In a word, only the stop-feeding value (LO) and the fast-slow feeding shift value (LL) are set correctly, the bagging machine can work stably and precisely.

INFORMATION OF AREA SALES MANAGERS OF INTERNATIONAL BUSINESS DEPARTMENT

President of I.B.D.
Mr. Liu Guangdao
liuguangdao@gmail.com

Thailand
Mr. Xia Guoxin
mybjxgx@163.com

South America
Mr. Tim Xu
timoncf2003@gmail.com

Europe
Mr. Tempe Liang
liangtongbin@gmail.com

Asia Pacific
Mr. Mani Qian
mymaniqian@163.com

Middle East
Mr. Arron Liu
myliugang@gmail.com

Russia
Mr. Ou Yong
scouyong@gmail.com

Africa (North & West)
Mr. Sam Yin
samyzsa@gmail.com

South Asia
Mr. Bob Chen
bobchent@gmail.com

North America
Mr. Justin Huang
huajustin@gmail.com

CIS
Mr. James Xie
muyangxcy@gmail.com

Africa (South & East)
Mr. Kevin Zhong
zds1212@gmail.com