

General Information on Loss-in-Weight Feeder Refilling

Loss-in-weight feeders work according to the principle of continuous and controlled extraction of bulk ingredient from a weighing hopper integrated in the loss-in-weight feeder. As a result, the weighing hopper needs cyclic refilling whenever a minimum filling level is reached (see illustration below). During refilling gravimetric feeding is not possible. Thus, a working cycle consists of the following phases:

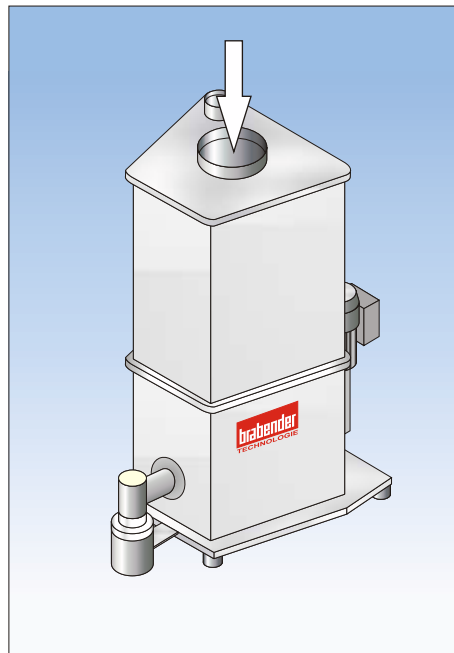
- Gravimetric (regulated) phase
- Volumetric (unregulated) phase

The volumetric phase consists of the actual refilling phase and a material stabilization time, during which the feeder is also deaerated. The ratio of these two phases should not be lower than 1:10 at a refilling time of no more than 10-15 s. The number of refills per

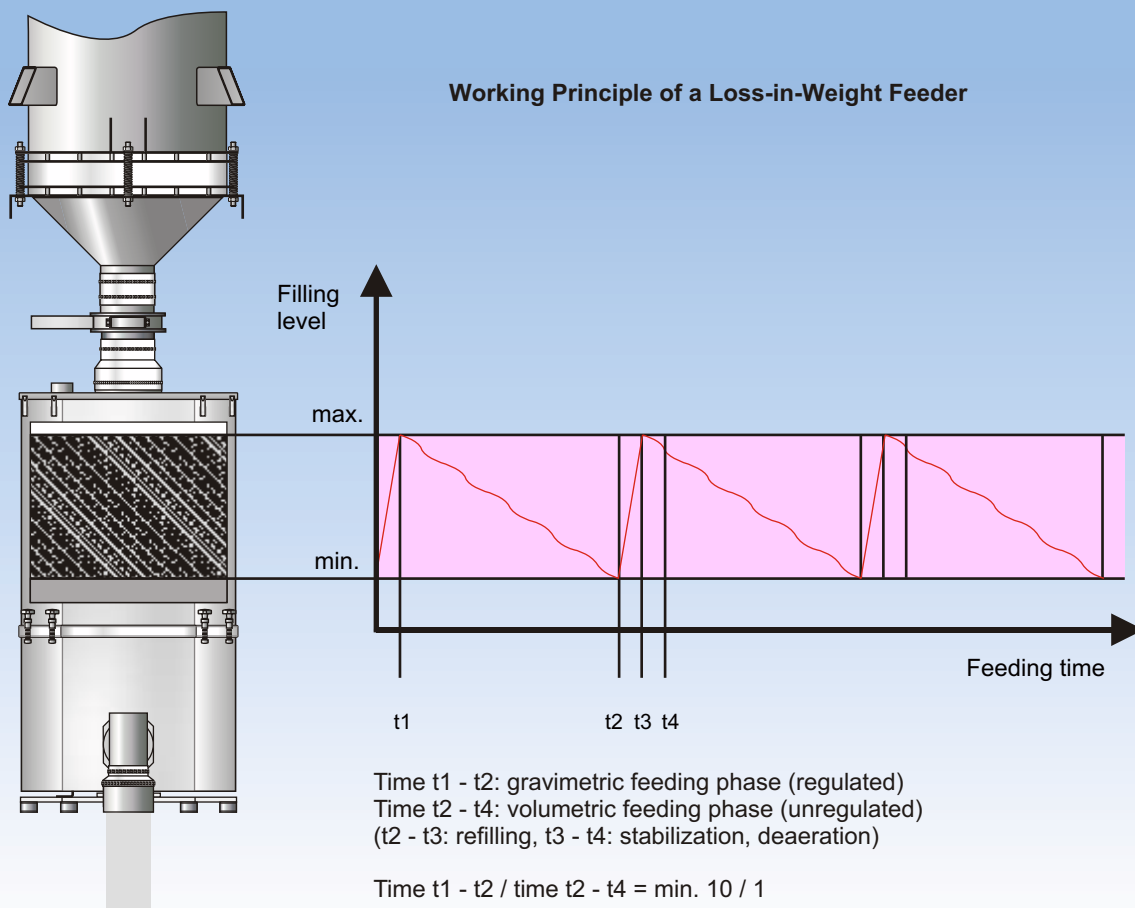
hour depends on the ingredient flow characteristics and the feed rate. The better the flow characteristics and the higher the feed rate, the more refills are permissible.

In case of automatic refilling up to 60 refills per hour are possible (manual refilling should not exceed a maximum of 4 refills).

The required refill rate of the refill system installed can be calculated on the basis of the feed rate, the number of refills and the refilling time.



Working Principle of a Loss-in-Weight Feeder



1. Refill Systems

The type of refill system depends on the respective bulk ingredient. The poorer the flowability, the more time elapses before ingredient flow is induced. If ingredients are not free flowing, it is recommendable to use the Brabender Bin Activator Type BAV or for fibres the Brabender SiloTray Feeder. Refilling directly from bulk bag discharge stations is not possible because these do not discharge the ingredient at a defined rate. Further, direct pneumatic refilling is not possible either. For pneumatic refilling an intermediate storage hopper is required, from which the loss-in-weight feeder is filled. The storage hopper itself may only be refilled during the gravimetric phase.

2. Refill Pipes

The refill pipe diameters must be suited to the refill rate. The distance between refill system and loss-in-weight feeder should be kept as short as possible. If long downpipes cannot be avoided, an intermediate storage hopper should be installed above the weigh-feeder. In addition, in case of bulk ingredients with restricted to poor flowability the diameter must be large enough to avoid jamming of material. In each case the refill pipe diameter must be suited to the inlet diameter of the weigh-feeder. Brabender will suggest suitable diameters.

3. Refill Valves

Each refill pipe must be equipped with a

shut-off valve (refill valve) to interrupt the refilling procedure when a maximum filling level is reached in the loss-in-weight feeder and to prevent ingredient deposits from dropping into the feeder during the gravimetric phase. Depending on the respective bulk ingredient, refill valves may be butterfly valves, flat gate slide valves, squeeze valves or free-flow flap shutters. The refill valve closing time should not exceed one second.

Refill valves should be installed as closely above the weigh-feeder as possible so that as little material as possible is still in flight when the refill procedure is interrupted. Too much in-flight material may cause feeder overfilling.

If the Brabender Bin Activator Type BAV or the Brabender SiloTray Feeder are used as refill systems, the refill valves must not be fixed to them directly because they would affect their function. In this case, a flexible connection is required.

4. Refill Pipe Connection

Refill pipes must be connected to loss-in-weight feeders by flexible connection sleeves. For that purpose only the highly flexible sleeves supplied by Brabender should be used. Best suited are graduated flexible sleeves.

5. Refilling Procedure

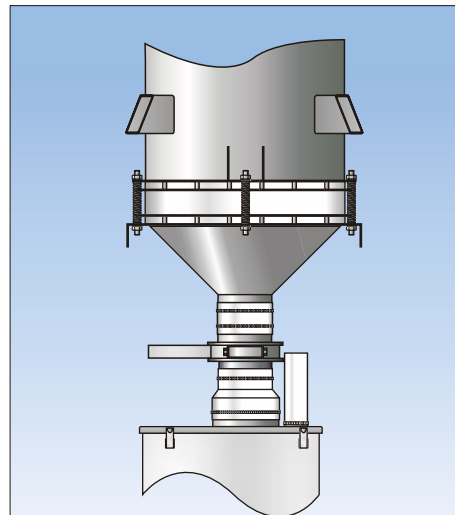
The refilling procedure consists of the following consecutive steps: opening of the refill valve, start of the refilling

system (if any), stopping of the refilling system, time for in-flight material to drop, closing of the refill valve.

Only this order will prevent ingredients from jamming in the refill pipe section between the refill system and the refill valve, where they might be compacted so as to cause complete obstruction.

6. Manual Refilling

Manual refilling is mostly preferred only for small-size loss-in-weight feeders, where the number of refills per hour should not exceed four refills.



Refilling example:

Day bin, Brabender Bin Activator Type BAV, flat gate slide valve and connection to the loss-in-weight feeder by a graduated flexible sleeve

International Headquarters:

Brabender Technologie KG
Kulturstrasse 55-73
47055 Duisburg, Germany
Tel: +49 (0) 203 9984-0
Fax: +49 (0) 203 9984-155
E-Mail: email@brabender-technologie.com
Website: www.brabender-technologie.com

North American Headquarters:

Brabender Technologie Inc.
6500 Kestrel Road, Mississauga
Ontario L5T 1Z6, Canada
Tel: (905) 670 2933
Fax: (905) 670 2557
E-Mail: sales@brabenderti.com
Website: www.brabenderti.com



PR China Headquarters:

Brabender Technology (Beijing) Co., Ltd.
Minying Industrial Area
Xixiaying, Taihu County
Tongzhou District, Beijing 101116, China
Tel: 86 10 6153-6668/-3161/-7057
Fax: 86 10 6153-3733
E-Mail: xiaojun.yin@brabenderbeijing.com

Middle East Headquarters:

Brabender Middle East
P.O. Box 18139
Dubai, United Arab Emirates
Tel: 00971 (0) 4288-7835
Fax: 00971 (0) 4288-1035
Mobile: 00971 (0) 50 6404176
E-Mail: kbigam@brabender-technologie.com

Russian Headquarters:

Brabender Moscow
1-j Tshipkovski per. 20
Office 711, 7th Floor
115093 Moscow, Russia
Tel: +7 (495) 235 73 95
Fax: +7 (495) 959 74 16
E-Mail: julia_krasilova@mail.ru