



BKG® Melt Pressure Controlled Venting Start

Control option for all continuous BKG® piston-type melt filters with ACS control (patented)

The Challenge

The Venting Process After Filter Change

Venting of the filter cavity after a filter change is crucial for a successful continuous filtration process. When the cavity moves back into the inlet flow channel after the filter change, two main concerns can arise:

1. *Air Bubbles*

It is important that no air is trapped in the cavity. If air bubbles get entrapped into the final product, this can result in holes and process disruptions reducing the overall product quality.

2. *Pressure Fluctuations*

Pressure fluctuations caused by a fast filling of the cavity after the filter change can result in film and tape ruptures, fish eyes, and thin spots in films, and the worst case, a complete line shutdown.

Standard Venting

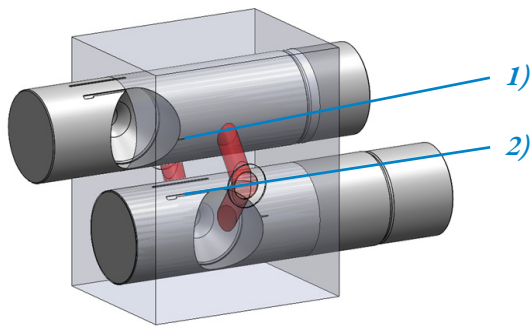
Procedure for Continuous Melt Filters Equipped with a Manual Slide Valve

A sensitive filling of the filter cavity after a filter change is key to process stability and high end-product quality. If the filter cavity is filled too quickly, two main issues can arise:

1. Gas-charged polymer melt (distribution of small air bubbles in the cavity)
2. Pressure drops

Therefore, BKG® melt filters are equipped with pistons that have three venting grooves. They allow air to escape during the filling process. The goal is that melt emerges from all venting grooves evenly and without any bubbles. It is also equipped with a triangular-shaped pre-filling groove which allows a very slow and controlled filling of the empty filter cavity.

Venting and controlled, sensitive filling of the filter cavity needs to be done through slow movement of the piston in a stepwise manner. If the pauses between the different venting stops are too short, or if the venting steps are too long, pressure drops occur. As the pressure must not drop further, the piston needs to be moved backwards. The ideal state, however, is to avoid this backward movement.

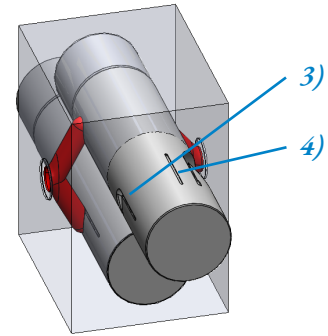


1) Pre-filling groove

Controlled, sensitive filling of the screen cavity with polymer melt

2) Venting groove on inlet side

Venting before the screen



3) Venting groove on outlet side

Venting of the outlet channel of the filter cavity

4) Middle venting groove

Venting immediately behind the breaker plate

The process of venting and sensitive filling is very complicated. The first venting position is the most important one. If the timing is set right here, the other venting positions follow along and line performance can improve significantly. No matter if you operate a melt filter equipped with a manual control valve, or one with an ACS control where the machine operator predefines the three venting positions, the challenge is to find the first venting position. This procedure can take some time. The perfect point depends on the material itself, the viscosity, throughput, and the temperature (since higher temperatures can lower the viscosity of a material).

Once found for a specific material, the process is fine and stable. But with any material change, the process of finding the right position must be repeated. For a different material, the perfect first venting stop is also different. It is very rare that you process the same material with the same operating parameters all the time.

The Nordson Solution

Feature: BKG® Melt Pressure Controlled Venting Start (patented)

Control Option for All BKG® Piston-type Melt Filters With ACS Control

Nordson has developed an automatic venting procedure that allows for more flexibility when it comes to material, or throughput changes. The automatic venting procedure is based on the constant monitoring of the outlet pressure at the melt filter. The screen bearing piston moves in gradually in little steps to find the exact position for the first venting stop.

Key Benefits

- Reduction of end-product defects
- Time savings due to reduced start-up procedures
- Less operator intervention
- Reliable, repeatable, and independent from material, throughput, temperature, system pressure, and viscosity changes
- Patented design

Upgrade of Existing Systems

BKG® NorCon™ und HiCon™ continuous melt filters (except BKG® HiCon™ V-Type 3G)

Retrofitting is possible for all BKG® continuous melt filters shipped **after January 1, 2020**.

- Option 1:** Your melt filter is already equipped with an ACS control, measures the differential pressure and you use a PLC-input card.
→ A software update will need to be installed by a Nordson service technician.
- Option 2:** Your melt filter is already equipped with an ACS control but does not measure the differential pressure.
→ You will need to install melt pressure sensors on the inlet and the outlet side, plus obtain a PLC-input card and BKG® software. The installation needs to be done by a Nordson service technician.
- Option 3:** Your melt filter is only equipped with a manual hand valve.
→ A complete ACS control needs to be installed, together with this new feature. The installation needs to be done by a Nordson service technician.

Please contact our Aftermarket Team for more information and installation assistance.
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