

## Function description for Pneumatic bulk conveyors

### General information

The conveyor is a discontinuously functioning feeding unit for transport of bulk material through a transport pipe to a closed pressure-free space.

The transport principle is based on the injection of the material from the conveyor into a transport air stream, which is passed through the transport pipe with a high filling degree and high pressure and the achievement of balance in the system.

The transport air is separated and distributed partly to the conveyor through the fluidizing unit and partly directly via the ejector of the outlet pipe to the transport pipe. The ratio between the fluidization and ejector transport air is adjusted through the degree of opening of the stroke limitation on the seat valves, individually for each transport. The distribution of the transport air is different for each application and is decided by several factors such as type of material, transport length, number and type of bends, transport pipe dimension and available transport air pressure. The pressure switch and plug guard have an opening/closing function in case of different pressures that identify transport status through the conveying cycle, see instruction "Pressure switch and plug guard".

### The following valve status apply to no-current state:

Inlet valve - normally closed

Air release valve: - normally open

Outlet valve: - normally closed

Fluidisation valve - normally closed

Ejector valve: - normally closed

Clean blowing valve (*optional*): - normally closed

Level sensors must be set at maximum safety, i.e. "Normally closed". In case of a filled container or sensor error, the electronic switch is turned off.

## Work cycle

1.  
Upon activation of cycle start, the inlet valve opens after a preset period of time, whereby the bulk material flows into the conveyor.
2.  
When the conveyor is filled, which is by default indicated by a level sensor, the inlet valve and the air release valve close.
3.  
When the inlet valve is closed, which is indicated by a limit switch, the fluidization (top air) valve opens whereby transport air flows into the conveyor at a preset overpressure, which is indicated by a pressure guard.
4.  
Upon indication from pressure guard, the outlet valve and the ejector air valve open so that the material can be fed to the transport pipe.
5.  
As long as there is material left in the conveyor, transport takes place at an overpressure that is specific for each application – transport pressure.
6.  
When the material has left the conveyor the transport pressure falls. When this has reached the preset level this is indicated on the pressure guard whereupon the clean blowing process starts. *(If the conveyor is equipped with a separate clean blowing valve the fluidization valve closes at the same time as the clean blowing valve opens.)*
7.  
When the clean blowing process has ended the ejector and fluidisation air valve / *(clean blowing valve)* close, and the air release process starts. When this process has ended the material outlet valve closes, thereby completing the transport cycle.
8.  
When the outlet valve is closed as indicated on the limit switch the air release valve opens. A new transport cycle may be started once the outlet valve has been closed.  
**NOTE!** The time delay for opening of the inlet valve must be adjusted so that the venting of the conveyor has ended before the inlet valve opens.