

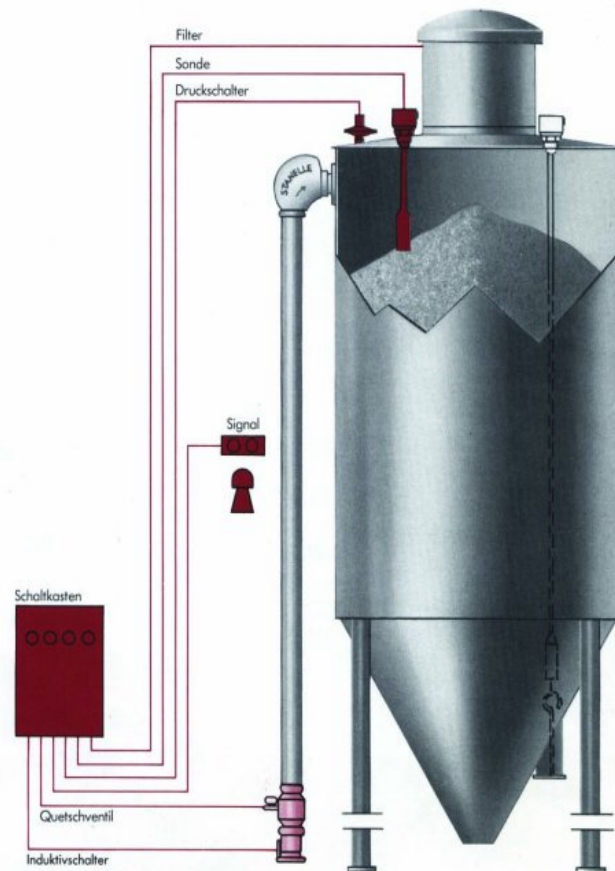
AVOIDS OVERFILLING OF SILOS

When filling silos with dusty materials using a pneumatic filling device it often occurs that silos are overfilled. This can cause dramatic damages not only to the property (e.g. blown of silo roof tops, damaged filters, etc.) but also to people. That is why Stanelle developed various systems and components in order to avoid such accidents. When designing and constructing such security systems for pneumatically filled silos it is extremely important to focus on a lockable fill pipe as well as protection against overfilling. Furthermore a fully automatic dedusting of filters plus a end slosh limitation should be installed within the silo system. In addition to these components a Stanelle filter system with adequate filter material guarantee to meet TA-air demands, reduce dust emissions to a minimum and protect personal and property from damages.

It is absolutely necessary to protect the piping from being filled with outside contaminants. This is ensured through installing a filling pipe gate bracket which is sealed by an additional lock. The keys to the silos filled with different materials cannot be interchanged, which inhibits wrong filling of the silos.

When vehicles connect their fill tube to the silo, the mechanical end switch of the fill pipe gate bracket automatically actuates the filter dedusting. The same effect of filter dedusting kicks in when the fill tube is disconnected.

Inside the silo roof a single operating fill indicator is installed which can be adjusted to any fill material. Furthermore the fill height which depends on the silo diameter and the fill pipe volume can be tuned individually. If the fill level reaches the indicator, a clear acoustic signal informs workers that the fill pipe will be automatically closed down with 30 to 60 seconds. The filling process is interrupted and the fill pipe is emptied out or the pinch valve closes. After the pinch valve is closed, conventional semi-automatic bunker dedusting filters are automatically cleaned. During the filling phase of the silo the pinch valve can be opened with a switch in order to blow out the fill pipe. If the fill tube of the silo vehicle is not locked correctly after finishing of with the filling than the pressure inside the silo reaches critical levels due to the end splash. Dust leaks out of the over pressure protection of the silo and diffuses into the surrounding. To avoid this danger, pressure switches are built into the silo roof. As soon as the critical level is reached, the pinch valve temporarily closes and the filter cleaning kicks in automatically. Afterwards the outlet opens automatically and the filling process can continue up to a maximum level. If this level is reached the pinch valve stays locked until the indicator is cleared again.



Areas of Application

Monitoring the filling process avoids damages to persons and property!

**Details / Explanation
Component I**

➤ **Segment I**

1 control panel made of steel plates with built in electronics,
signal-lamp „green“ indicating „operating status“
signal-lamp „red“ indicating „silo is full“
signal-lamp „white“ indicating pinch valve opened
volume of acoustic signal horn about 90 dB (A) and pressure switch,
Connection voltage 220/380 V 50 Hz

1 Pinch valve with fixed clutch and 3/2-ways-magnet outlet 220 V 50 Hz, cover for magnet outlet and operating sign

1 m long cable sensor for cement or similar materials without electronic wiring and installation.

➤ **Accessory 1:**

External signal-lamp „green“ and „red“ with horn and bracket to mount to the fill pipe.

➤ **Accessory 2:**

Bracket to mount the control box on top the fill pipe

The “green” and “white” signal-lamp indicate that the silo system is in operation mode and ready to be filled. As soon as the critical fill level is reached, the cable sensor responds, the signal-lamp switches to “red” and the horn resounds for 10 seconds. The fill process ends and the fill pipe is blown out. After additional 30 to 60 seconds (adjustable) the pinch valve closes automatically (“white” signal-lamp goes out) and stays closed until the cable sensor is not fully covered with material anymore.

**Functionality
Component I**

A pressure switch guarantees the possibility to open the pinch valve after the cable sensor has responded.

Emergency Opener

The activation of the pressure switch can cause damage to the silo due to overfilling. The “green” signal-lamp goes out and therefore indicates that the silo system is not ready to operate, whereas the fill pipe can still be blown out in the meantime.

Attention



**Details / Explanation
Component II**

➤ **Component II**

Semi-automatic filter control

to dedust the filter clothes and filter cartridges using a pressure switch and automatic shutoff.

Fully automatic filter control

to dedust the filter clothes and filter cartridges using the fill pipe gate bracket mounted to the pinch valve.

„Semi-automatic“ variant

The process of cleaning filters with out-of-balance engines is started through a switch. The dedusting process automatically stops after 30 seconds. As soon as the lock switch is activated the dedusting process automatically starts, whereas the pinch valve is closed to prevent any material inflow.

**Functionality
Component II**

„Fully automatic“ variant

When fill tubes are connected or disconnected, the mechanical end switch of the fill pipe gate bracket automatically actuates the filter dedusting. This guarantees that filter clothes and filter cartridges are cleaned before and after every filling process and a damage to the filter cake caused by humidity is prevented.

➤ **Component III**

**Details / Explanation
Component III**

„Final splash limitation“

through pressure switch, only in connection with the filter control. When pressure increases, the pressure switch closes the pinch valve temporarily and filter clothes and filter cartridges are dedusted. The pinch valve opens after 30 seconds again and the fill pipe can be fully blown out or the next filling process can begin.

The installation of this component only makes sense combined with component II.

Through a pressure sensor mounted to the silo roof the pinch valve closes automatically when critical levels are reached and the filter is dedusted automatically. The final splash limitation inhibits any damage to the silo in case of too much inflow of air during the filling process or insufficient maintenance of the filter. If the final splash limitation kicks in too often during the filling process than the conveying air pressure has to be lower; if necessary filter clothes or filter cartridges have to be replaced.

**Functionality
Component III**

Technical Data Overfill Protection

NW	80	100	125	150
Max. temperature	80° C			
Solenoid valves / pieces	1			
Operating pressure	2 bar, over conveying air pressure max. 6 bar			
Compressed-air connection / mm	ø 9			
Voltage	230 VAC			

Variable voltages can be tailored to your special application!

Notice



Article Number

NW 80	Component I	Component II	Component III
Article number	732 10 017	881 10 147	732 10 016

Article Number

NW 100	Component I	Component II	Component III
Article number	732 10 015	881 10 147	732 10 016

Article Number

NW 125	Component I	Component II	Component III
Article number	732 10 019	881 10 147	732 10 016

Article Number

NW 150	Component I	Component II	Component III
Article number	732 10 020	881 10 147	732 10 016

Additional sizes and options (e.g. Ex-proof version) can be tailored to your special application!

Notice



When placing an order please define the materials which are mixed in your silo system (e.g. cement, lime etc...)