

# BFM® Case Study - Allgaier Sifter



## Connector Lengths

To allow for sufficient flexibility to take up the oscillating movement of the sifter decks, the flexible connectors typically need to be longer than the usual standard of 100 or 200 mm. The rule of thumb to use is length = diameter x 1.5.

## Installation Height

The outlets of the various sifter decks oscillate to varying degrees, usually stronger on the upper decks and somewhat less the further down you get. The horizontal movement for the sifter type installed in this example, according to Allgaier, is a maximum of 70 mm total, i.e. 35 mm in any direction from the centre. The vertical movement however is around 50 mm. This vertical movement may vary from sifter to sifter, depending on the machine setting which in turn is dependant on the type of product, the amount of product and the desired sieving results. There are two methods for measuring this movement:

**1st Method.** Measure the distances between the outlet and a fixed point (e.g. floor or entry point of the pipe that is to be connected to the outlet) at four different stages during an example run of the machine. The longest measured difference is then the starting point to calculate the optimal installation gap.

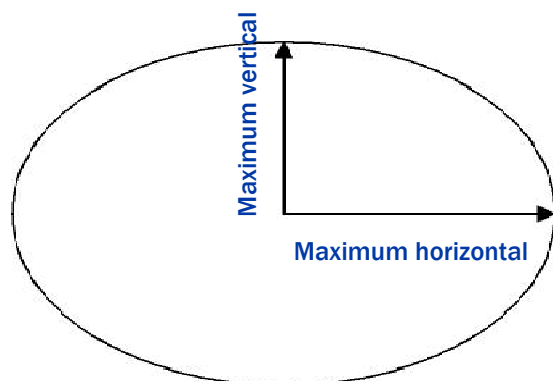
Example: The four distances measured are 395, 370, 340 and 365 mm. 365 mm are the starting point. Longest distance from there is 30 mm (395 - 365 mm)

The first option will deliver approximate results but the max. numbers may still be somewhat higher than whatever was measured so some room will need to be granted for such unknown variances.

**BFM Global Ltd**  
PO Box 66-087  
Beach Haven, Auckland 0749, New Zealand  
Email: [sales@BFMfitting.com](mailto:sales@BFMfitting.com)  
[www.BFMfitting.com](http://www.BFMfitting.com)

 **BFM®**  
**fitting**  
“Keeping You Connected”

**2nd Method.** Draw a motion curve for each outlet and measure the maximum vertical and horizontal distance from there. This method is the more exact way of determining the real movement but requires the necessary tools and some experience in taking those measurements.



The formula for determining the installation height for the standard connectors (Dia x 1.5) would be this:

$$\text{installation height} = \text{connector length} - \text{maximum vertical movement} - 10 \text{ mm}$$

The 10mm gives room for some tolerance in the movement and should ensure that the connector does not get stretched during machine operation as this will diminish both the connector's durability as well as the functionality of the sifter.

**Example:**

Outlet X has a diameter of 300mm.

Length to be used is therefore 450mm (300 x 1.5)

Maximum measured vertical movement is 50 mm.

$$450 - 50 - 10 = \text{installation height of } 390 \text{ mm}$$

So the spigots need to be welded onto the machine and the connecting pipes in such a fashion that the remaining distance between both BFM spigots is 390mm. At this setting, the connector will have a horizontal flexibility of 210mm at the starting point and even when stretched to the maximum of 440mm it still has a horizontal flexibility of 95mm which should more than cover the actual movement of the machine.

**Bear in mind** that the larger the difference between connector length and installation height, the more physical stress the connector will have to endure during and even outside of the sifters' operation and this will cause premature damage to the connector material. The areas where the material folds up will be most prone to abrasion and eventual cracking. Any type of additional chemical stress by the flowing product will show its harm first in those creases rather than in flat areas.

Any such creases will develop primarily in the lower third of the connector length (the sheer weight of the connector material pulls it straight in the upper portion) so switching the connectors upside down regularly will help spread out the burden a little and therefore expand the operating life of the BFM connector. It is also important to install the connectors with the vertical seam in a right angle to the spigot to avoid twisting of the connector which otherwise causes even more creases to appear.

**BFM Global Ltd**  
 PO Box 66-087  
 Beach Haven, Auckland 0749, New Zealand  
 Email: sales@BFMfitting.com  
 www.BFMfitting.com

 **BFM<sup>®</sup>**  
**fitting**  
*"Keeping You Connected"*

### Variables that will effect the life of any connector on a sifter..

All of these points will have their effect on any type of flexible connector installed; regardless of whether it is BFM or a conventional type.

- Extent and duration of operation
- Abrasion from product flow
- Additional stress from chemical products (e.g Acid, Caustic)
- Extreme temperatures
- Installation height: the straighter the connector, the less wear will occur
- Larger diameter connectors will typically tolerate the necessary compression better than a smaller one
- There is often a small vacuum in the system to help product exit the sifter smoothly. This vacuum may slightly suck the connector walls to the inside and cause further creasing with resulting premature damage. If at all possible, pneumatic suction should be avoided in conjunction with strong oscillating movement

### The advantages of the BFM fitting in sifter applications..

- Dust tight and therefore: no product loss, no contamination of the work environment, no risk of dust explosions outside the system
- Perfect closure of the snap band in the spigots every time. The BFM seal can withstand pulling forces due to the equipment movement multiple far better than hose clips. No re-fitting necessary ever
- Higher pressure tolerance than any hose clip connector due to the sealing from the inside
- Atex, FDA and EC approved connector materials
- Quick and easy replacement and cleaning - less equipment down time