

**Incident:**

During unloading at one of our customers one of the manhole lids expelled during discharging. It went to the roof of the plant and broke the roof.

The pressure on the lid was during unloading with discharge pressure of around 0.9bar, 11000N.

There were no personal injuries in this case.

**Root cause:**

The female screw of the lid was broken (inner screw-thread broke)



**Type of man lid system:**

The man lid system was one of the older systems. The lid is fixed on the silo with three bolts. See pictures.

Newer systems are equipped with 4 fixing bolts and a hinge, which is connected at the silo. Most of these newer systems have also a safety head (see below pictures) on the screws which will prevent that the female lid of the screw can be expelled from the lid. This system is reducing the risk of expelled lids as happened during this incident.

Note: According to the carrier there was no over pressure, it was at normal discharge pressure. Silo had an annual revision.



3 bolt system



System with 4 bolts and a hinge and safety head.