

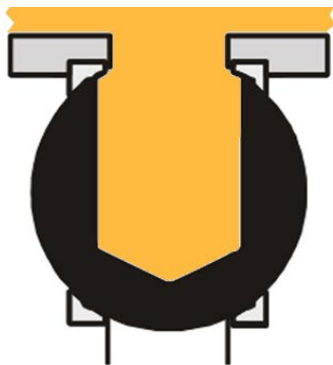
## Sample ball valve problems

**Inline Sample valve:**

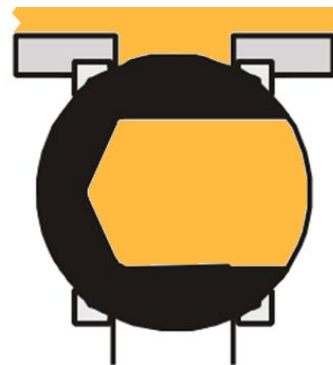
**Ball type 1**



Problem with this system is that it has dynamic seals around the ball that are subject to wear and will increase maintenance cost.



Sampling



Airlock



Draining

## Sample ball valve problems

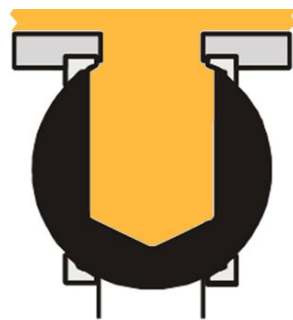
**Inline Sample valve:**

**Ball type 1**

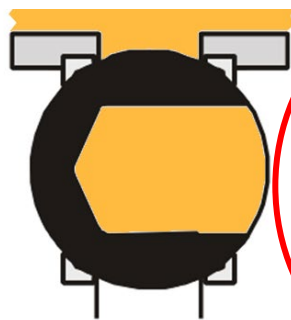
**Industrial Hygiene +**

**Sample quality**

**problem**



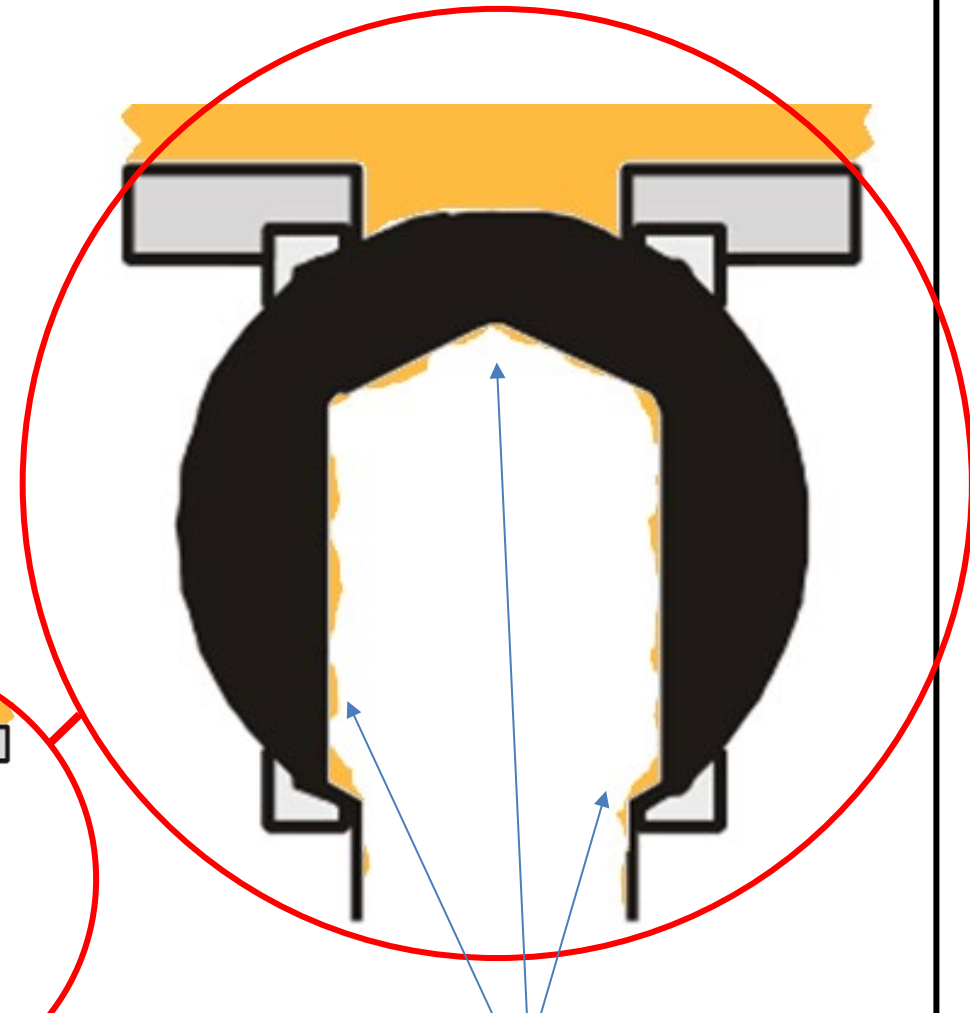
Sampling



Airlock



Draining

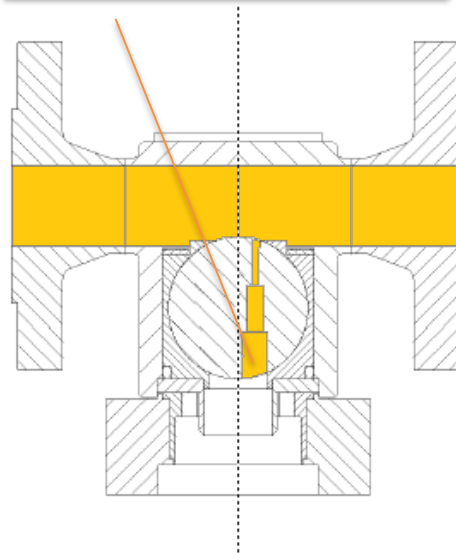


How to clean residue?

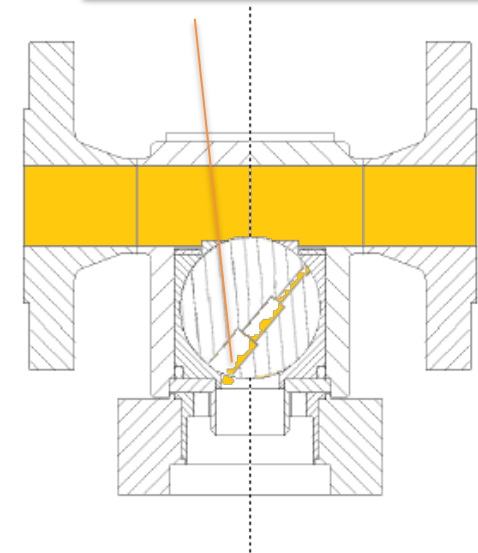
# Sample ball valve problems

## Inline Sample valve: Ball type 2

When taking the sample, the product flows through the hole drilled in the ball valve



After the sample is taken, residue of the product may stay in the hole. Cleaning is thus REQUIRED.



Important consequences that may happen if the sampling chamber and blind hole are not cleaned:

- **The product will obstruct the hole**
- **Plugging will occur**
- **Valve will become inoperable**
- **Cross-contamination / residue will contaminate the next sample**
- **Sampling will not be representative**
- **Cleaning is very difficult, ESPECIALLY if temperature is high and / or product is toxic**
- **SECURITY HAZARD: The operator will become exposed to the product**
- **The valve will need to be maintained / replaced in a very short time**

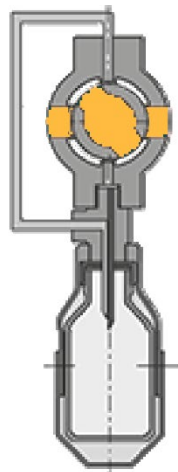
# Sample ball valve problems

## Inline Sample valve:

### Ball type 3



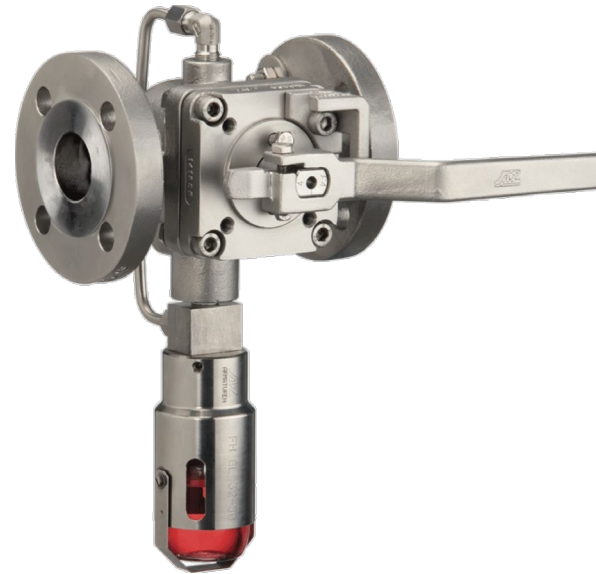
Filling



Closing



Draining



#### Frequent issues / common problems:

- Small product passage likely to plug
- Impossible to get a representative sample without purging / flushing
- Cross-contamination / residue will contaminate the next sample
- Dynamic seals = increased maintenance cost
- Product / vapor remains in vent line and may plug
- **SECURITY HAZARD:** The operator will be exposed to vapors after removing the bottle
- The valve will need to be maintained / replaced in a very short time