TECHNICAL INFORMATION
ABOUT THE CONSTRUCTIVE ADVANTAGES AND DISADVANTAGES OF

Ball Valves with PTFE seat rings

Advantages:

1. **Full-bore,** however **frequently reduced-bore.**

2. **Low torque** in new condition, assuming that there are:
   - **no crystallizing and sedimentary products**
   - **no specific pressure difference**

Disadvantages:

1. **Stuffing box** (or other spindle packing) is required, because full pressure gets behind the ball **(very critical by floating ball and high pressure difference).**

2. **Not free of dead spaces (body cavities):** In order to avoid metallic contact between the ball and body surfaces, interspaces (clearances) are necessary. Particles of solid matters can settle down here (also dangerous by crystallizing products). During operation the seat rings are compulsory damaged. Also so-called "cavity-fillers" do not bring any improvement.

3. **When in open position the seat rings are constantly exposed to aggressive products.**

4. **Not adjustable.**

5. **High friction on the seat rings by floating ball** (depending on the pressure of the product) causes more wear.

6. **Strong torque increase:**
   - **by crystallizing and sedimentary products,** which can lead to complete sticking of the ball
   - **by floating** ball because of pressure difference.

7. By coagulation blocking of the ball, so **torsion of the** spindle is possible.

8. **Maintenance of stuffing box is required.**

9. **Only by specific pressure difference reliable tightness.** By low pressure (few millibars) always leakage (floating ball). **Not applicable for vacuum.**

10. **As the seat rings are not "chambered" (cold-) flow is possible.** For this reason max. allowable temperature is approx. 140°C. Even glass-filled seat rings give no improvement and moreover the ball can be damaged because of remaining glass particles.

AZ-Plug Valves with self lubricating PTFE sleeve

Advantages:

1. **No stuffing box:** Total sealing between valve body and plug is already obtained by means of the PTFE sleeve.

2. **Free of dead spaces (= no body cavities):** The plug is totally encircled by the PTFE sleeve. Particles of solid matters and crystallizing products are not dangerous, because the PTFE sleeve is non-adhesive. During operation there is no damaging of the PTFE sleeve (even not after a long stationary period).

3. **When in open position, sealing surfaces totally covered by the PTFE sleeve - no dead spaces -** therefore protected against aggressive products.

4. **Adjustable during operation.**

5. **Low friction,** which means **long durability** of the PTFE sleeve.

6. **Low torque increase, even by crystallizing and sedimentary products.** Therefore suitable for most severe services.

7. **Blocking of the plug is impossible.**

8. **Maintenance free.**

9. **Absolutely tight-shut-off** also when there is no pressure difference. No leakage by low pressure (few millibars). **Applicable for vacuum.**

10. As the **PTFE sleeve is totally "chambered"** between plug and valve body, there is no possibility of (cold-) flow. Max. allowable temperature is approx. 280°C.

Disadvantages:

1. **Standard Plug Valves** with slightly reduced rectangular plug in all sizes available.
   Note:
   Full-bore Plug Valves Type **"EXTRA"** also available (piggable).

2. **Torque** in new condition a little higher compared to Ball Valves.

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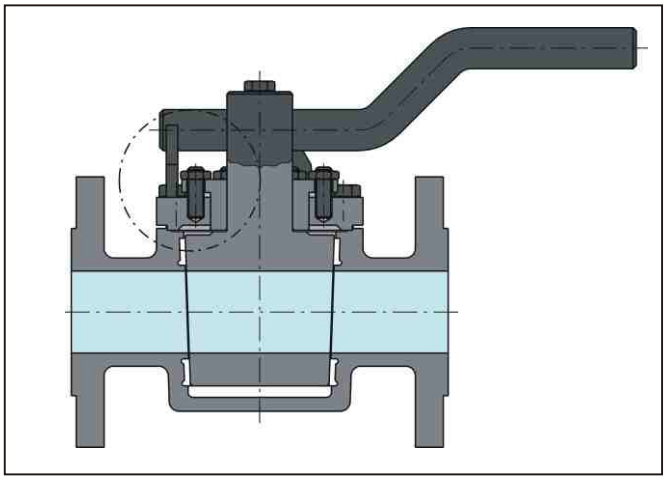
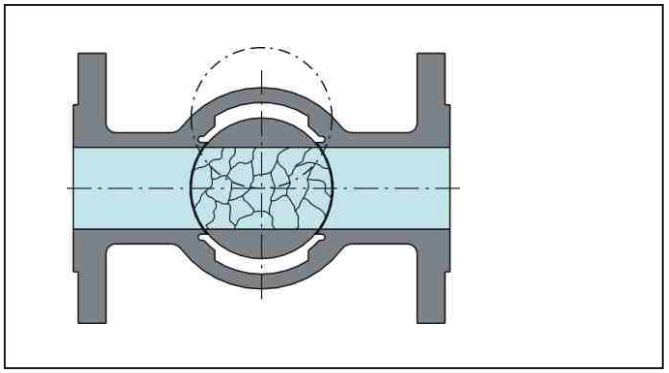
Plug Valve with PTFE sleeve

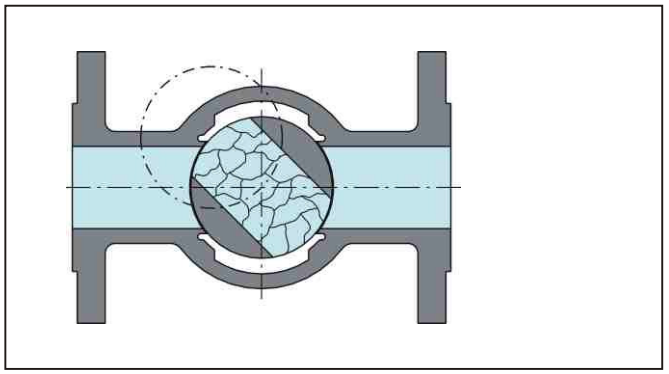
No stuffing box necesarry. Adjusting ring and PTFE diaphragm for adjustment of the conical plug. **Sealing to the outside is obtained by means of the PTFE sleeve itself.**



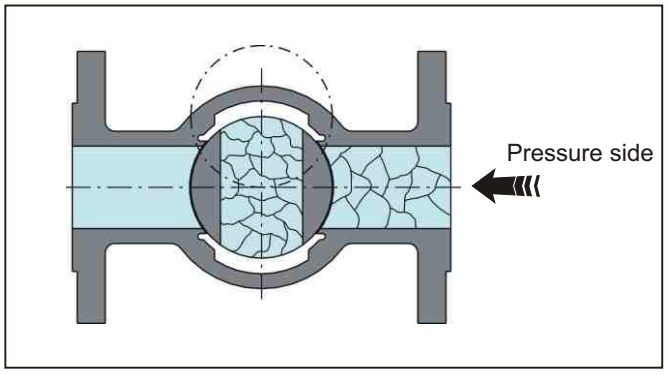
Sealing surface totally covered by the PTFE sleeve - no dead spaces - therefore protected against aggressive products.



The plug is totally encircled and protected by the PTFE sleeve. Solid matters cannot damage the sleeve, because this sleeve is non-adhesive.

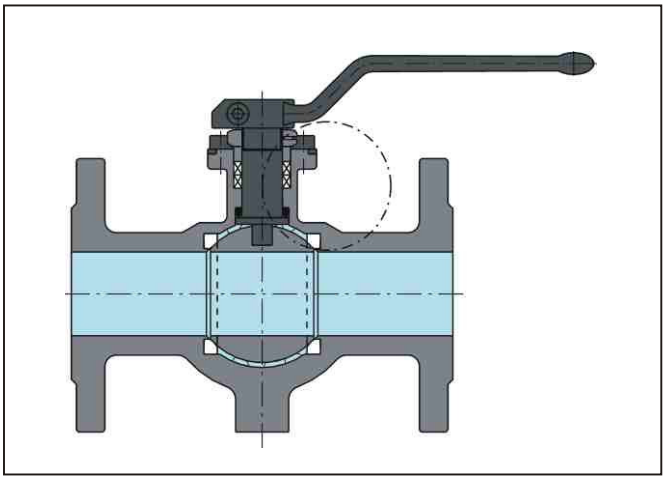


By crystallizing and sedimentary products: Even by coagulation **no danger for sealing or operation of the plug.** There are **no dead spaces, therefore products cannot accumulate or stay behind.**

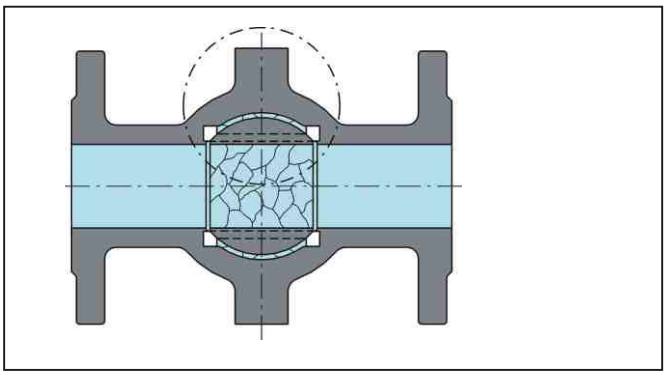


Ball Valve with PTFE sealing ring

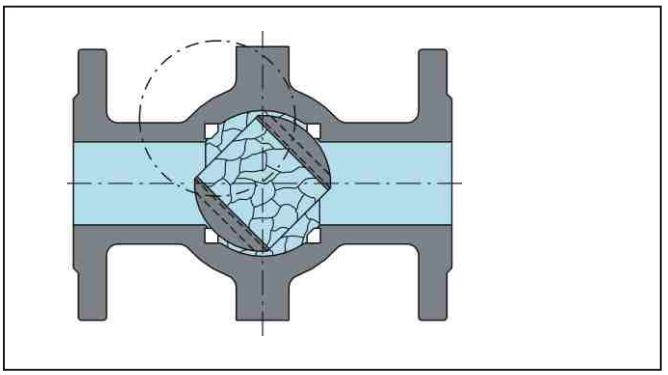
Stuffing box or other spindle packing is required because **full pressure appears in the dead spaces** behind the sealing rings.



Sealing surface of the ball in open position **fully exposed to aggressive products (because of dead spaces).**



Solid matters can **damage the sealing rings.**



By crystallizing and sedimentary products: Danger of coagulation because of dead spaces, therefore difficult operation of the ball. Danger of damaging the sealing rings. **Torque increase** through one-sided pressure.