

## Plug Valves, Sampling Systems & Customized Solutions


- PTFE sleeved or PFA lined
- free of cavities and maintenance
- self-lubricating





# From the Black Forest into the world

600 employees in 7 plants and more than 20 service centres worldwide



**1** Headquarters Germany  
Mönchweiler (Black Forest) 

**2** Plant Brazil  
Itatiba (São Paulo) 

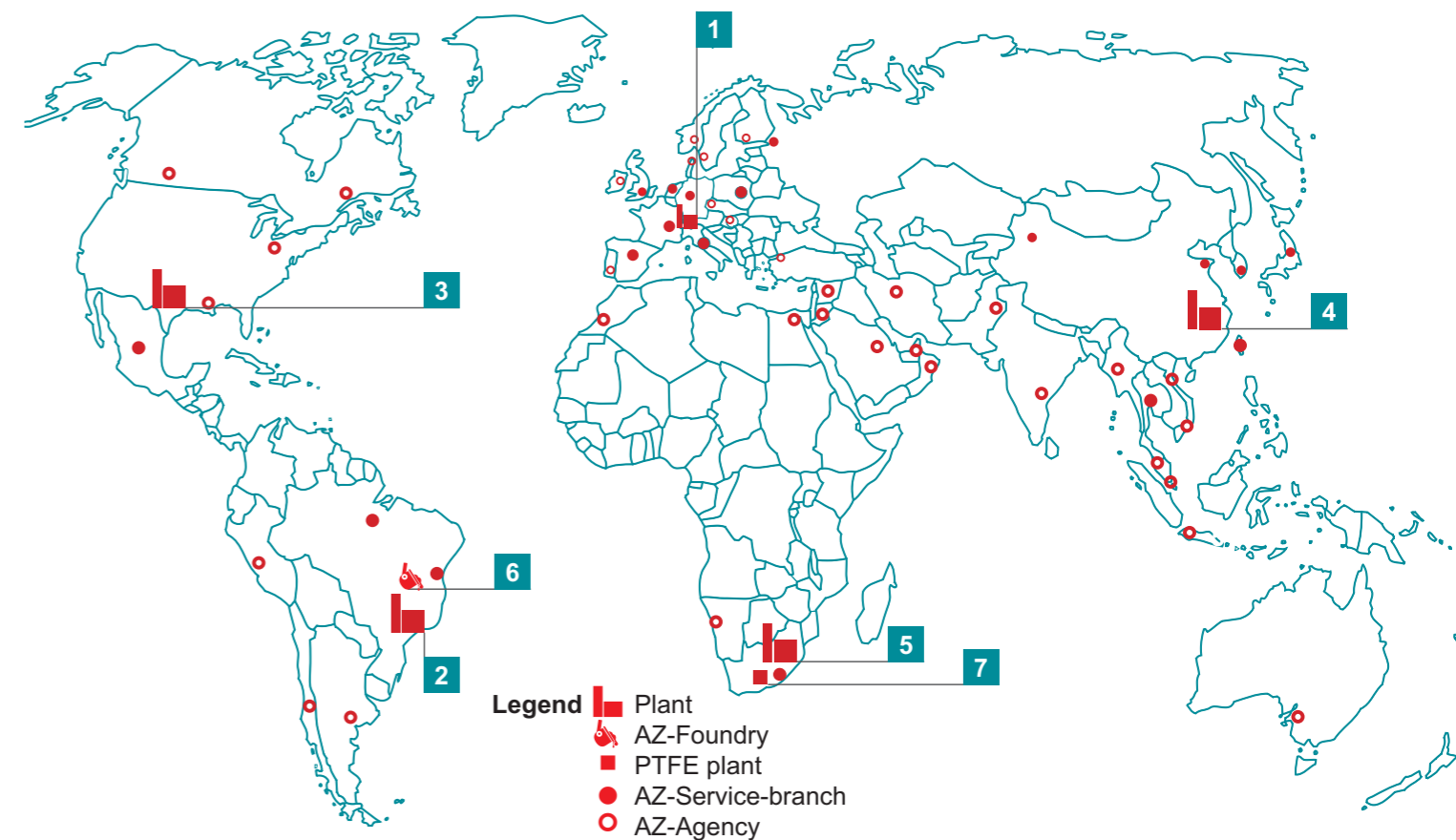
**3** Plant USA  
Houston, TX 

**AZ Armaturen is an internationally leading family owned company with more than 60 years of experience in developing and manufacturing soft seated plug valves, special valves and sampling systems.**

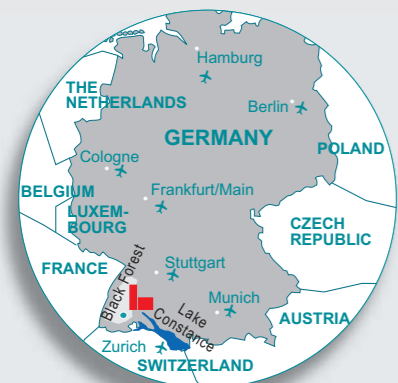
- AZ Armaturen provides
- global support
  - worldwide service
  - large warehouse for valves
  - valve engineering
  - special valves in shortest lead time
  - high vertical integration:
    - own foundry
    - PTFE production
    - valve manufacturing
  - best valve performance for fast return on investment (ROI)


The valves are designed free of cavities in order to meet various applications in the refining, petrochemical, power, fertilizer, pharma, food, as well as pulp & paper industry.

- nominal sizes DN 4 - DN 800, NPS 1/8 - NPS 32
- pressure rating PN 10 - PN 250, Class 150 - 1500
- standard and special materials available, such as: carbon and stainless steel, Hastelloy, Monel, Titanium, Tantalum etc.



*engineered.  
fast.  
dynamic.*




Company foundation 1963  
Schonach (Black Forest) 



**4** Plant China  
Taicang (Shanghai) 



**5** Plant South Africa  
Boksburg (Johannesb.) 

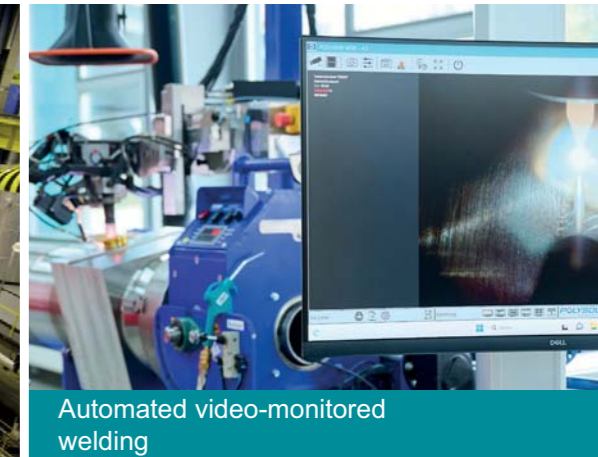




6 AZ Foundry, Brazil Itatiba (São Paulo)



7 Trident Plastics Boksburg (Johannesb.)



Automated video-monitored welding

Precision casting specialized in lost wax technique

- from 0,01 to 80 kg



**AZF Foundry**  
Brazil, Itatiba (São Paulo)

Benefits of precision casting

- precise and clean shapes
- fast and flexible
- large lot sizes possible
- cast steel and stainless steel
- non or low post-processing

Own foundry capacity guarantees high quality and short delivery times:

- **Engineered:** Many years of experience and know-how of valves and materials
- **Fast:** Own tool design and making
- **Dynamic:** Several production lines and melting furnaces of single or serial production

Specialized manufacturer of high-performance PTFE products for industrial applications



**Trident Plastics**  
South Africa, Boksburg (Johannesburg)

Products

- Valve Components
- Engineered Parts
- Bellows
- Gaskets
- Semi-Finished Products



AZ meets the highest standards as supplier for the nuclear industry.

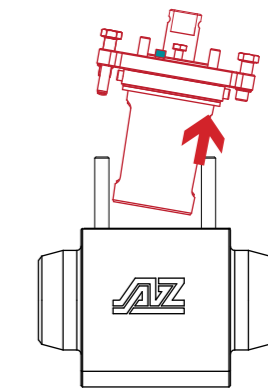


- ASME section 3 certified
- ASME NQA-1 quality system
- automated welding, video-monitored and documented
- in-house quality inspections:
  - digital X-ray
  - dye penetrant test
  - ultrasonic test
  - salt test
  - automated dimensional control
- in-house pickling & passivation
- comprehensive documentation

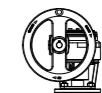


Type **CARTRIDGE-N**

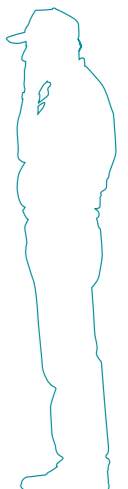
- fast and easy in-line replacement of the cartridge



Remote maintainable



concrete shield



Sustainable customer support with finished goods warehouse & on-site service **fast.**

High level of vertical manufacturing highest precision, quality and flexibility **dynamic.**

service centres worldwide



finished goods warehouse



CNC machining



**AZ SERVICE for revisions, repairs, maintenance or modifications with many advantages:**

- extended service life of the valves
- low operating costs
- Execution in time and within the budget
- pick-up service / delivery

**AZ finished goods warehouse**

- several thousand valves acc. to DIN and ASME
- immediate availability
- readiness for dispatch possible within 24 hours
- fastest delivery service directly from the manufacturer
- from Germany to the whole world

**Plug valves**

- F-2, ISO-STANDARD
- F-2, ISO-STANDARD-A (lined)

**Ball valves**

- NVN
- NEO-VAL

**Sampling plug valves**

- CONTIFLOW
- CONTIFLOW-A (lined)

**Details:**

[az-armaturen.de/en/vis/](http://az-armaturen.de/en/vis/)



**Sourcing**

- key suppliers within the AZ group
- core components such as casting and PTFE sealing parts are flexibly and reliably available due to in-house production

**Production**

- modern CNC machine park and experienced employees for highest precision and fast throughput times
- TÜV approved welders (MIC, MAG, TIG)

**Non-destructive examination (NDE) at AZ**

- positive material identification (PMI), spectral analysis
- dye penetrant
- x-ray
- tightness tests



own foundry



assembly and final functional test



tightness test



# AZ-plug valve: the design principle

## Key advantages

- free of cavities
- no contamination of process media
- adjustability of plug and sealings
- maintenance-free due to self-lubricating and chemical-resistant PTFE-sleeve
- low emission design
- constant torques ( $\Delta p$  independent!)
- vacuum-capable

### Conical plug

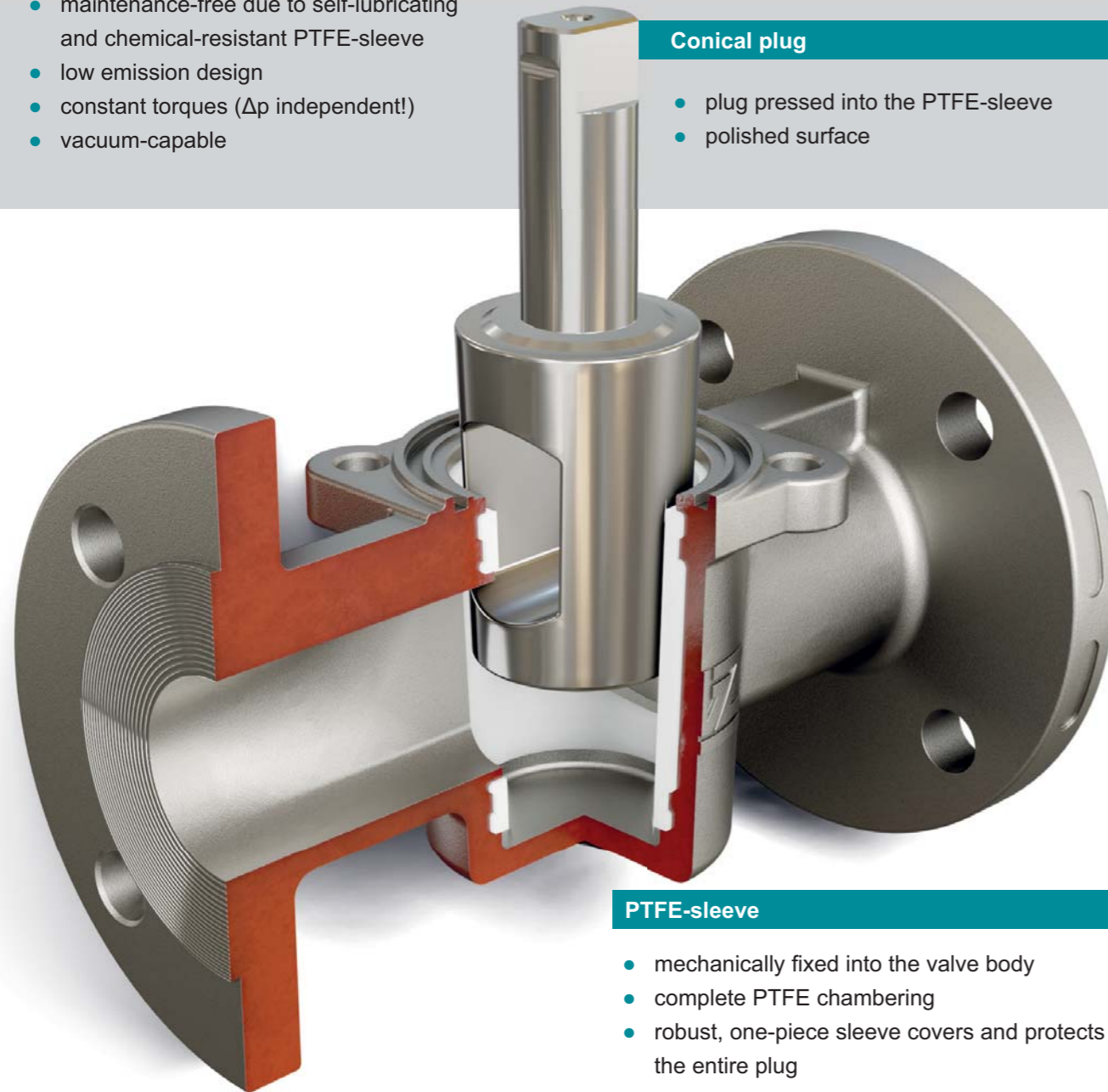
- plug pressed into the PTFE-sleeve
- polished surface

### PTFE-sleeve

- mechanically fixed into the valve body
- complete PTFE chambering
- robust, one-piece sleeve covers and protects the entire plug



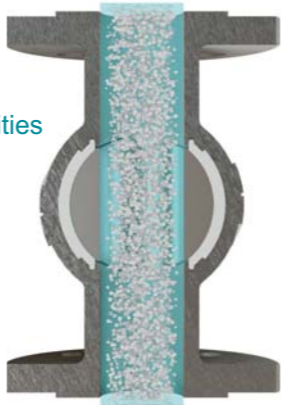
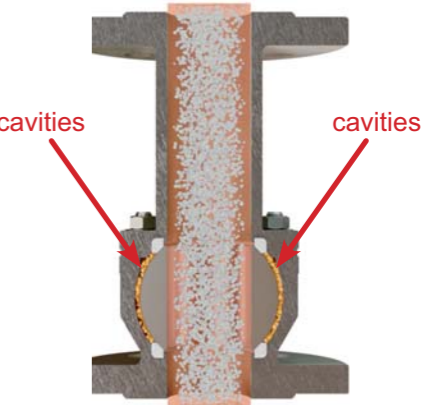
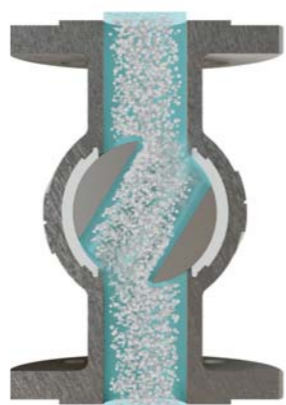
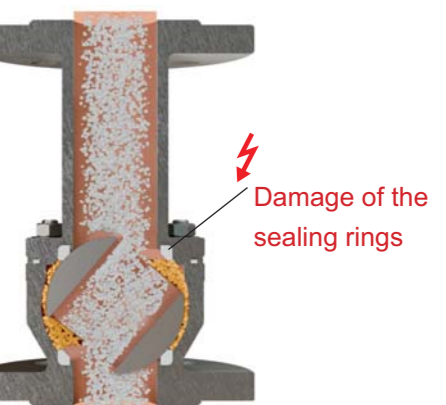
### Body

- conical body interior
- integrated supporting ribs avoid rotation and coldflow of the sleeve
- large sealing surface



# Cavity-free: suitable for all media

## Technical comparison

AZ-plug valve	Ball valve
<p><b>Soft seated plug valve with PTFE-sleeve</b></p>  <p><b>Main sealing components</b></p> <ul style="list-style-type: none"> <li>• metallic plug</li> <li>• sleeve (PTFE)</li> </ul>	<p><b>Soft seated ball valve with PTFE sealing rings, floating ball</b></p>  <p><b>Main sealing components</b></p> <ul style="list-style-type: none"> <li>• metallic ball</li> <li>• sealing rings (PTFE)</li> </ul>
OPEN position	
<ul style="list-style-type: none"> <li>• suitable for all media due to cavity-free design</li> <li>• sealing surfaces are completely protected</li> </ul>  <p>free of cavities</p>	<ul style="list-style-type: none"> <li>• critical for the following media due to design with cavities                             <ul style="list-style-type: none"> <li>○ corrosives: crevice corrosion</li> <li>○ polymerizing: clogging</li> <li>○ crystallizing: abrasion / clogging</li> </ul> </li> </ul>  <p>cavities</p>
During operation	
<ul style="list-style-type: none"> <li>• free of cavities, media cannot settle or be trapped</li> <li>• solids are pushed away</li> <li>• no contamination with old media</li> </ul> 	<ul style="list-style-type: none"> <li>• with cavities, media can settle or be trapped</li> <li>• solids cause abrasion of the sealing rings</li> <li>• contamination of process media</li> </ul>  <p>Damage of the sealing rings</p>

# Safe and reliable tightness for years

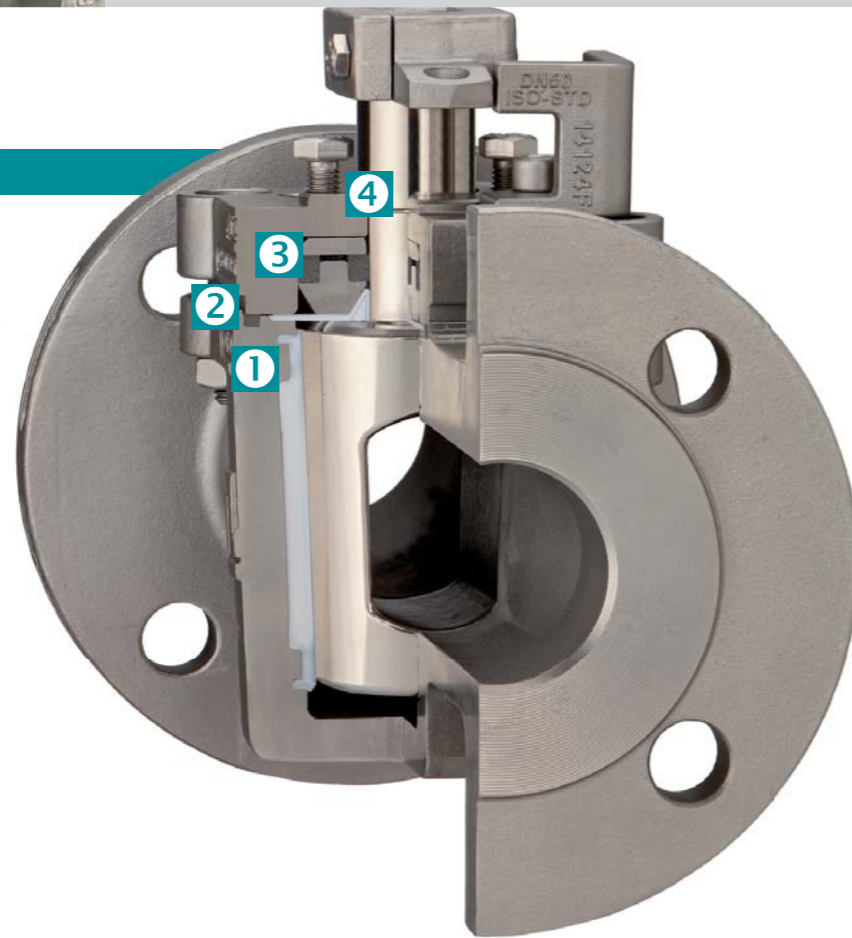
## Adjustable



- conical plug design allows retightening of the sealing on site - if needed
- adjusting bolt even accessible with mounted actuator / gearbox

## Several sealing steps to atmosphere

- 1 Primary: sleeve
  - 2 Secondary: diaphragm / cover seal
  - 3 Tertiary: stem packing (optional)
  - 4 Quarternary: stem o-rings (optional)
- Live loaded stem seal (optional)
  - Fire-Safe, API 607 (optional)
  - Low Emission certified acc. to TA-Luft / ISO 15848-1 and API 641

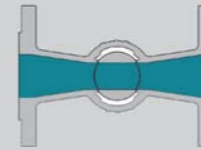


# Reduced and full bore design

## Execution

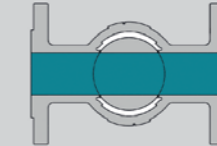
### Reduced bore Type STANDARD

- compact valve (FF / weight)
- optimal torques for economic automation



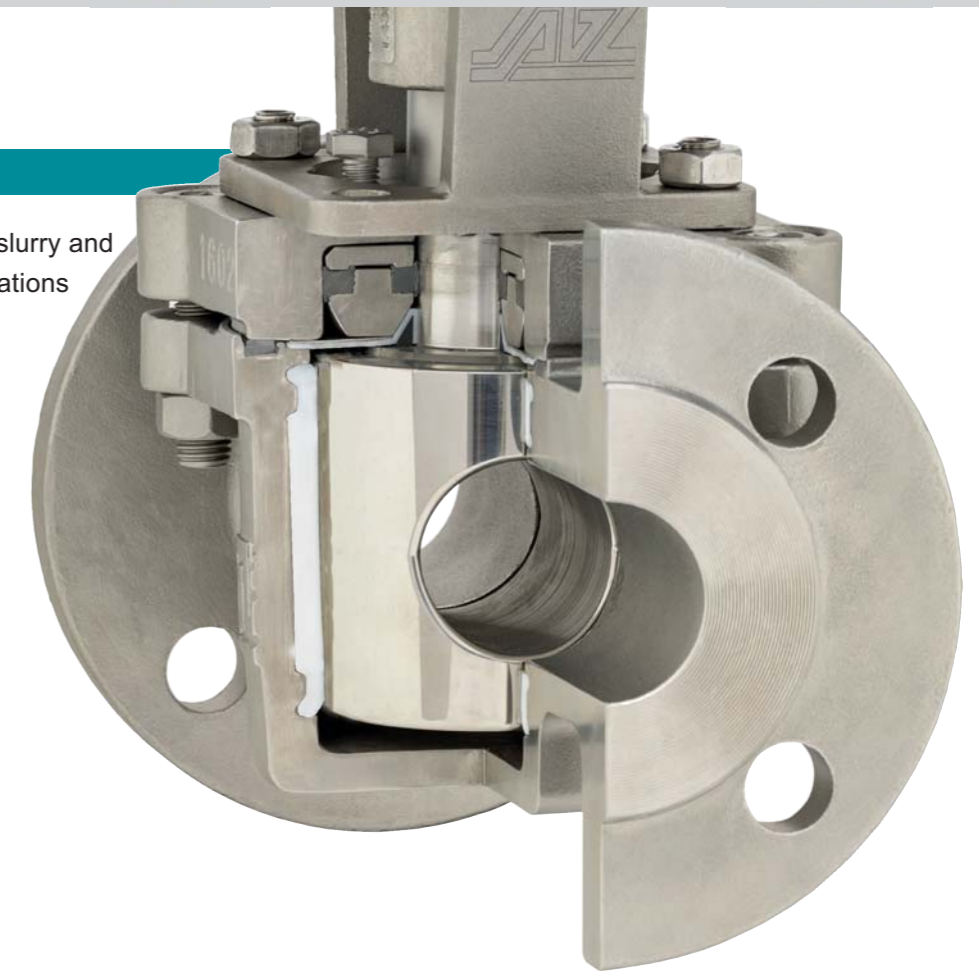
### Full round bore Type EXTRA

- maximum flow rate
- minimal pressure drop
- piggable (optional)

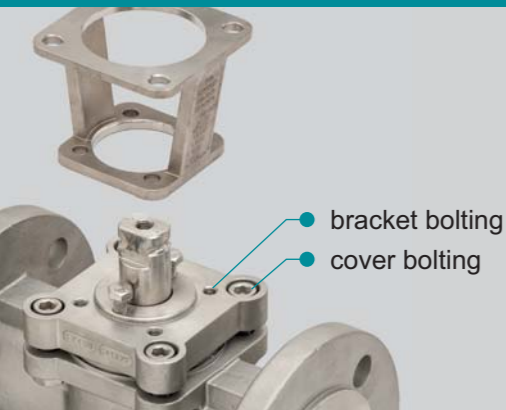


## Type ISO-EXTRA

- excellent for abrasive, slurry and solid-containing applications
- maximum flow rate compared to other valve types with the same nominal size

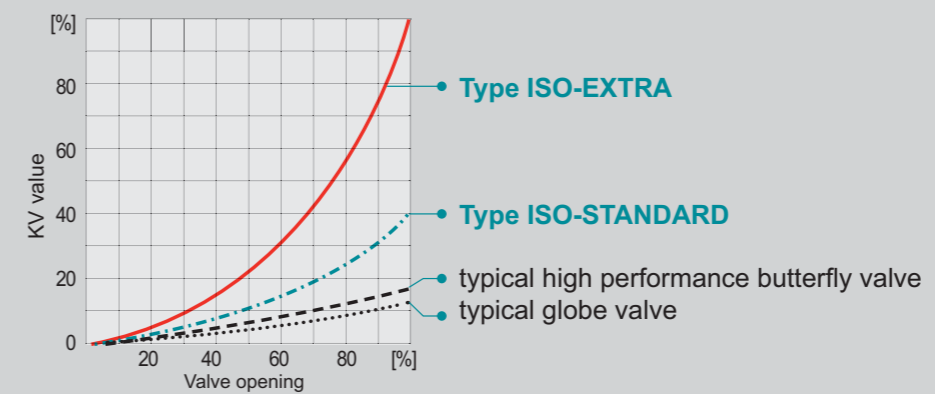


## ISO cover



- pressure containing cover bolts separated from bracket boltings
- cover and bracket acc. to ISO 5211 for efficient actuator / gearbox assembly

## Maximum flow rate

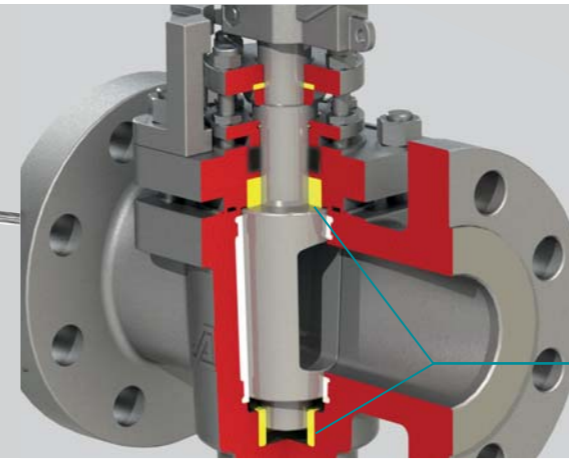
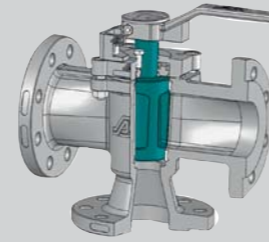
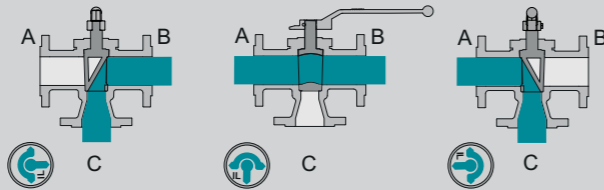


## BASIC PTFE-sleeved plug valves

free of cavities, self-lubricating, maintenance-free

### two-way or multi-way valves

- wide range of standard plug valves up to DN 600 / NPS 24
- two-way up to seven-way plug valves
- optional with heating jacket or flushing device



- for severe service
- safety sealing and low emission even at fluctuating process temperatures:
  - type ISO-STANDARD-FSN, graphite packing
  - type SAFE-LINED, PTFE packing
- Fire-Safe-Design (API 607)
- optional in high pressure design
- type HDS: high pressure plug valve with double bearing for plug, trunnion mounted design



type ISO-EXTRA

2-way plug valves **type F-2 ISO-STANDARD**

- DN 15 - 600 / PN 10 - 40 / NPS ½ - 24 / Class 150 - 300

Multiway plug valves **type F-3 / F-4 / F-5 ISO-STANDARD**

- DN 15 - 600 / PN 10 - 40 / NPS ½ - 24 / Class 150 - 300

Plug valves with full bore design **type F-2 / F-3 ISO-EXTRA**

- DN 15 - 600 / PN 10 - 40 / NPS ½ - 24 / Class 150 - 300

Plug valves with weld-ends **type SW / BW**

- DN 15 - 600 / PN 10 - 40 / NPS ½ - 24 / Class 150 - 300

Plug valves with threaded ends **type MG**

- NPS ½ - 3 / Class 150 - 300

Plug valves with heating jacket

- fully jacketed design **type HM** / partial heating design **type TM**

Instrumentation plug valves **type MBZ-24 / MG-24 / WA / FM-124**

- DN 10 - DN 25 / NPS ¼ - 1 / PN 10 - 160 / Class 150 - 900

Test valve for sensors / manometers **type PH**

- DN 25 - 80 / PN 10 - 100, NPS 1 - 3 / Class 150 - 600

Special flushing valve **type BMH**

- for safe flushing and depressurizing process



type HM



type FM124

## HIGH-PERFORMANCE valves

for processes with demanding requirements

Block valves made of bar stock **type ISO-BAR-STOCK**

- DN 15 - 100 / PN 16 - 40, NPS ½ - 4 / Class 150 - 300

High-Pressure plug valve **type HDS / HDS-GL**

- DN 15 - 600 / PN 100 - 160, NPS ½ - 24 / Class 600 - 900

Plug valve for HF alkylation (UOP) **type ISO-FS-HF / ISO-FSN-HF**

- UOP-Honeywell approved, NPS ½ - 24 / Class 300

Plug valve Double Block & Bleed/Inspection **type DBI**

- DN 15 - 600 / PN 10 - 40, NPS ½ - 24 / Class 150 - 300

Cross-over valve combination **type UK**

- all types of AZ valves compatible

Cross-over valve combination for safety (relief) valves **type SAVA**

- safe exchange of safety valves during plant operation

Plug valves for nuclear facilities **type CARTRIDGE**

- fast replacement of the cartridge during maintenance

Plug valves with forged body for nuclear facilities **type NUCLEAR**

- high-pressure design

Plug valves for seawater desalination **type RO**

- DN 50 - 600 / PN 10 - 100, NPS 2 - 24 / Class 150 - 600

Plug valves with flushing device **type SP / DSK**

- for media which tend to stick, solidify, crystallize or polymerize

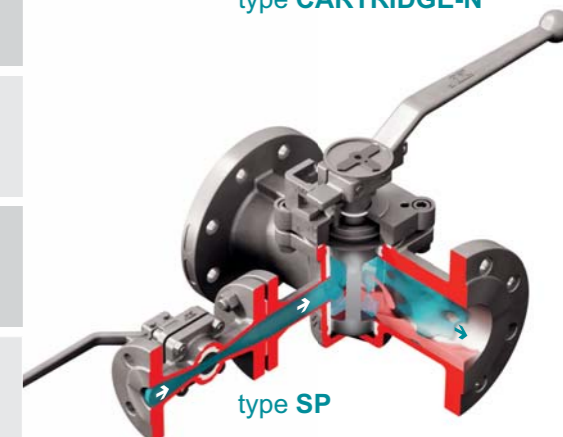
**NEW !**



type ISO-BAR-STOCK



type CARTRIDGE-N



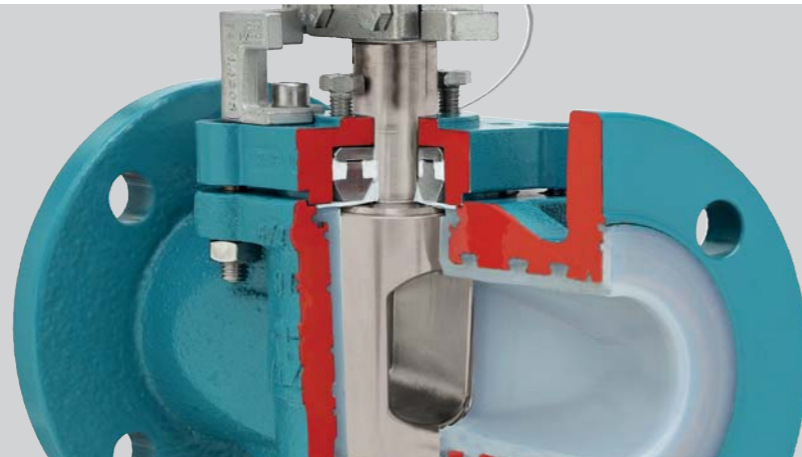
type SP

## LINED

### Plug valves and ball valves

#### safe lining

- chemically resistant
- minimum 3mm FEP/PFA lining
- anchorage of lining in body
- vacuum-capable
- weep holes for early leakage detection
- plug made of special materials (option)



#### Lined plug valve **type ISO-STANDARD-A / SAFE-LINED**

- DN 15 - 300 / PN 10 - 40, NPS ½ - 12 / Class 150 - 300

#### Lined plug valve with exchangeable PTFE sleeve **type AB-2000**

- DN 15 - 300 / PN 10 - 40, NPS ½ - 12 / Class 150 - 300

#### Lined ball valve, one-piece body **type MONOBLOC / EXTRA**

- DN 15 - 200 / PN 10 - 25, NPS ½ - 8 / Class 150

#### Lined ball valve, split body **type NVN-EXTRA / NVN-R**

- DN 15 - 250 / PN 10 - 40, NPS ½ - 10 / Class 150 - 300

#### Lined ball valve (short pattern) **type NEO-VAL**

- DN 15 - 200 / PN 10 - 25, NPS ½ - 8 / Class 150

#### Lined bottom outlet ball valve **type KA**

- DN 15 - 200 / PN 10 - 25, NPS ½ - 8 / Class 150

#### SEVERE SERVICE fully lined plug valve

##### Type **SAFE-LINED** with fully lined cover and triple PTFE safety stem packing

- for severe service
  - for fluctuating temperatures
  - PTFE triple safety stem packing (adjustable)
  - PFA/FEP lined cover
- NEW !**
- different lining materials: PTFE, PFA, PFA-conductive, FEP
  - virgin granulate used only, no recycled material
  - locked in lining, vacuum-proof
  - minimum thickness of lining  $\geq 3$  mm



## CONTROL PLUG VALVES

### precise equal percentage or linear control

#### flexible

- 11 standard control plugs per size in stock
- easy exchangeability of control plugs in case of process modifications
- free passage possible with open valve



#### Control plug valves with PTFE sleeve **type RH**

- DN 15 - 600 / PN 10 - 40, NPS ½ - 24 / Class 150 - 300

#### Control plug valves with lining **type RH-A / RH-SAFE-LINED**

- DN 15 - 300 / PN 10 - 40, NPS ½ - 12 / Class 150 - 300

#### Control plug valves with protection insert **type RH-S**

- DN 15 - 600 / PN 10 - 40, NPS ½ - 24 / Class 150 - 300



## ACCESSORIES for pipelines

### metallic or lined

#### Lined ball check valves **type DELTA / GLOBUS**

- DN 15 - 150 / PN 10 - 40, NPS ½ - 4 / Class 150

#### Lined sightglasses **type OCULAR-A / ZIRKULAR-A**

- DN 15 - 250 / PN 10 - 25, NPS 1 - 4 / Class 150

#### Lined strainers (Y type) **type DELTA-SF / BASKET**

- DN 15 - 250 / PN 10 - 40, NPS 1 - 4 / Class 150

#### Ball check valves with / without sightglass **type MRV**

- DN 15 - 250 / PN 10 - 40, NPS 1 - 10 / Class 300

#### Sightglasses **type OCULAR / ZIRKULAR**

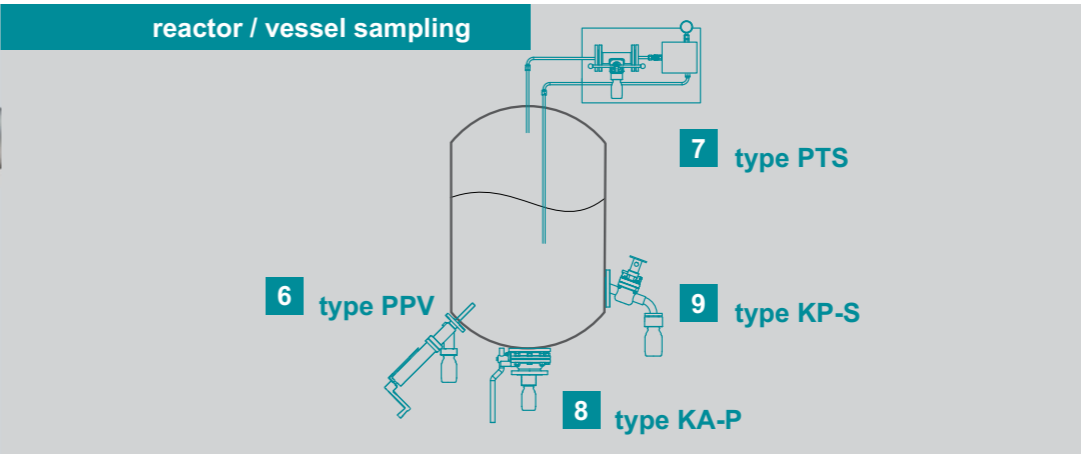
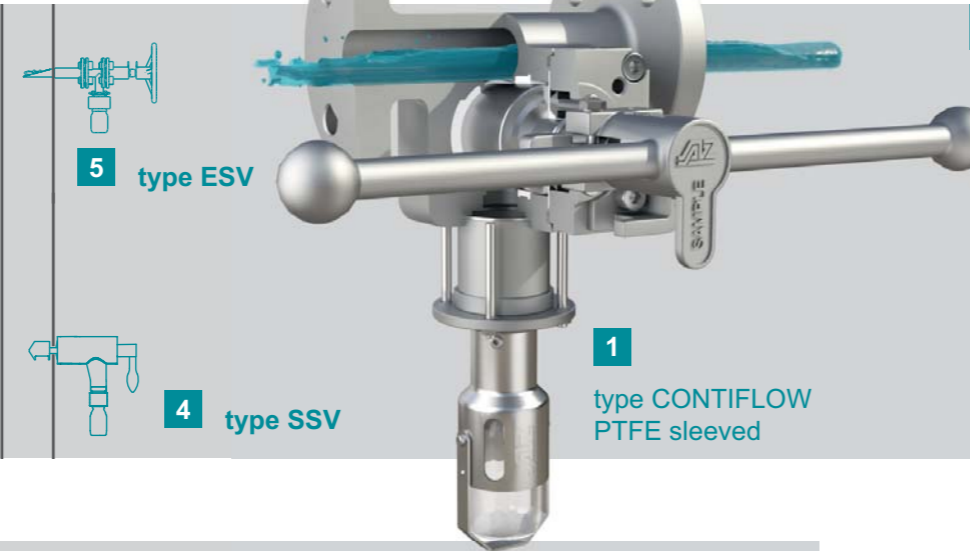
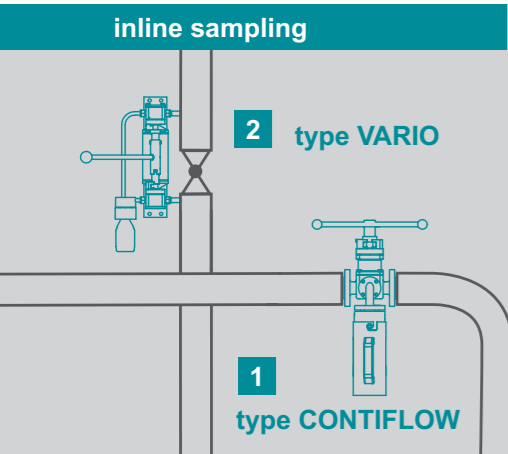
- DN 15 - 250 / PN 10 - 40 / 16, NPS 1 - 10 / Class 150



# SAMPLING plug valves and systems for liquids, gases and solids

*Safety first!*

Safe, representative, reliable



Protection box (option)



- 1** Sampling plug valve **type CONTIFLOW / CONTIFLOW-A**
  - for liquids and solids-containing media
- 2** Sampling plug valve **type VARIO**
  - for liquids
- 3** Sampling system **type GSP / LG-SP**
  - for gas and liquid gas media
- 4** Spoon sampling valve **type SSV**
  - for free falling granulates and powders, non-sticky paste
- 5** Extruder sampling valve **type ESV**
  - for free falling granulates and pastes

**NEW!**

**NEW!**

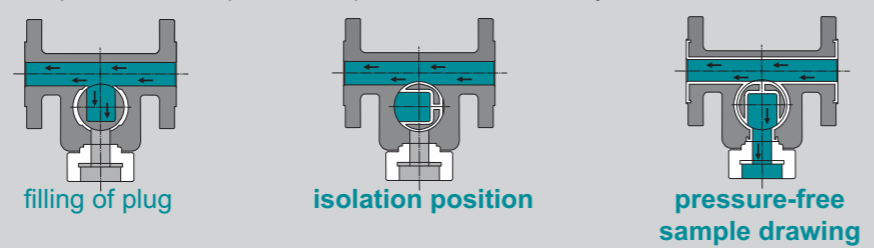
- 6** Piston purge valve for mounting at vessel **type PPV**
  - for liquids, polymerizing, crystallizing media
- 7** Top vessel sampling system **type PTS**
  - for liquids
- 8** Sampling ball valve for tank bottom mounting **type KA-P**
  - for liquids and solids-containing media
- 9** Sampling plug valve, for side mounting on vessel **type KP-S**
  - for liquids

**NEW!**



## functionality type CONTIFLOW

- defined representative sample volume (liquids)
- closed system (contamination free)
- pressureless sampling for incompressible media (positive overlap)
- simple and safe operation, optional with needle system



## bottle systems

### PTFE-adapters

- for lab bottles with ISO thread GL32/45 and others



### Clamping bottle holder

- for hot media



### Needle system with septum

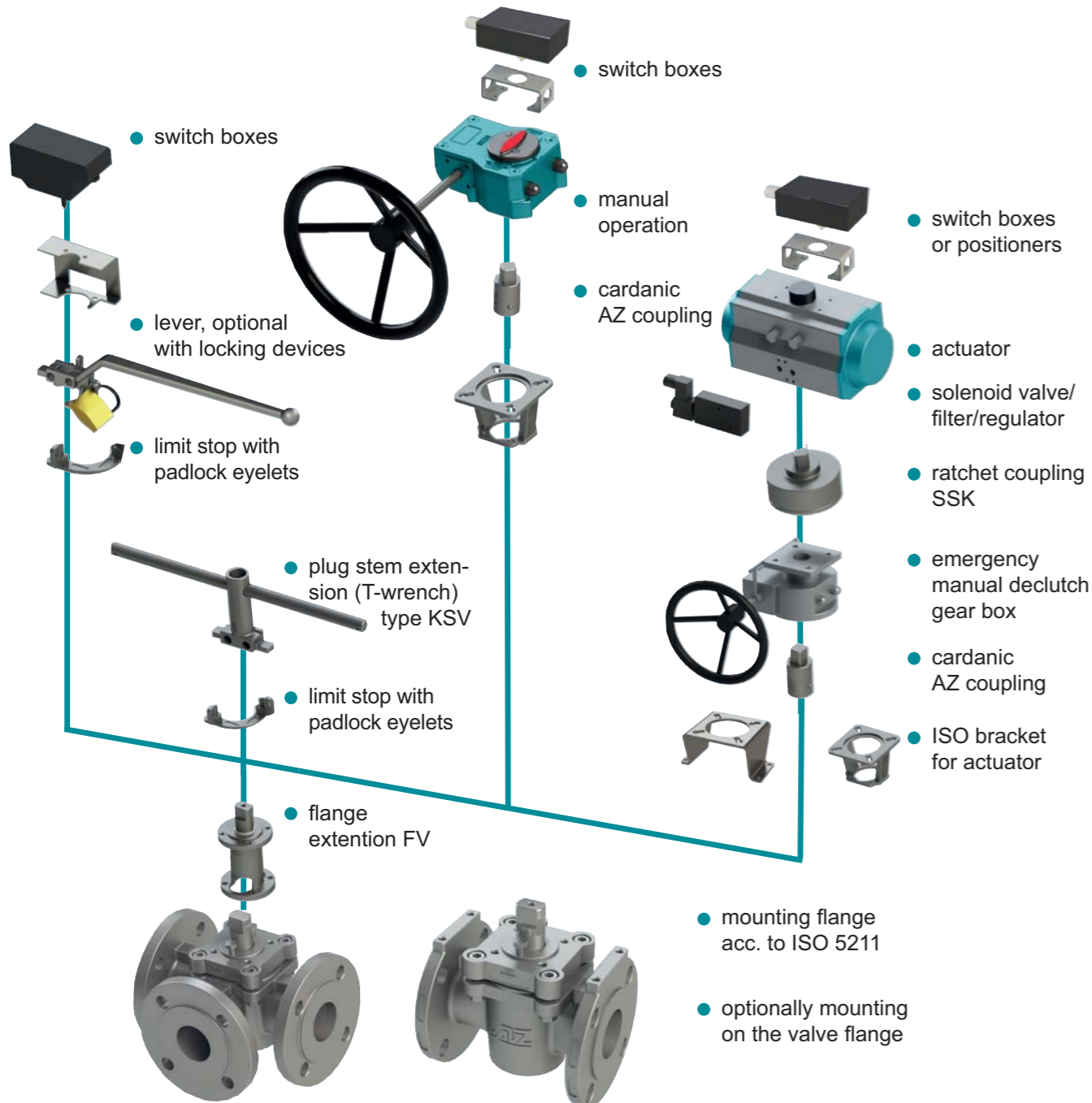
- for highly aggressive and toxic media
- for emission- and spillage-free sampling



# ACTUATION pneumatic, hydraulic, electric modular, reliable, economical

## Example type AZ AIR GEAR

- pneumatic actuator
- recommendation for high torques up to 200,000 Nm
- space and weight saving compared to conventional actuators
- double and single acting
- ATEX suitable
- Partial Valve Stroke Test (PVST) possible



## Company certificates

- ISO 9001 - Quality management
- ISO 14001 - Environmental management
- ISO 18001 - Health & Safety management
- EcoVadis - Business Sustainability Rating
- API Monogram / 6D - Quality management

## Product certificates

- TA-Luft / ISO 15858-1 / API 641 - Low Fugitive Emission
- API 607 / ISO 10497 - Fire-Safe Approval
- PED 2014/68/EU - Pressure Equipment Directive
- UOP Honeywell - HF Alkylation Equipment
- TÜ-AGG - Type Examination
- EM 14432 - Transport of dangerous goods
- API 591 - Process Valve Qualification
- SIL 3 IEC 61508 - Safety Integrity Level
- BV NR 320 / IGC / IBC - Marine & Offshore Approval
- DVGW - Gas supply / gas transmission
- ATEX 2016/34/EU - Explosive atmosphere
- FDA - Food and Drug Administration

## Country-specific certificates

- Canada - TSSA / CRN
- China - Manufacture License of Special Equipment
- Poland - TDT - Transportation Equipment
- South Africa - SAGA - Valves for gas transmission

Contact your  
**AZ sales representative**  
for more literature.



**1. Catalogue**

**2. Fugitive Emission Brochure**

**3. Industry Leaflets**

**B1 Energy**

- B 1.1 Geothermal
- B 1.2 Nuclear
- B 1.3 Biomass

**B2 Seawater Desalination**

**B3 Pulp and Paper**

**B4 Fertilizer**

**B5 Recycling**

- B 5.1 PET Recycling
- B 5.2 Battery Recycling

**B6 Shipbuilding**

**...and many more!**