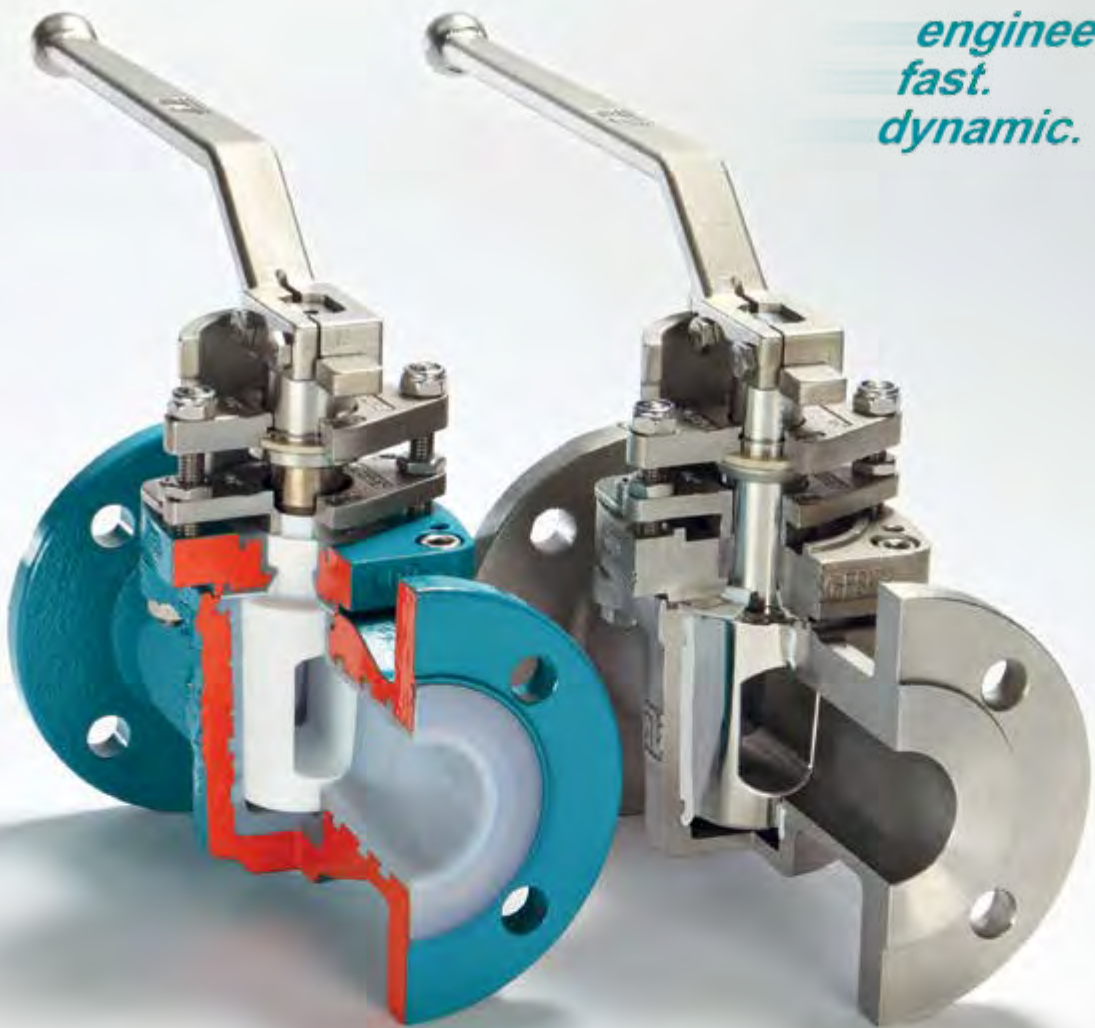


PTFE-Sleeved Plug Valves and Special Valves for Highest Demands

- free of cavities, self-lubricating, maintenance-free
- reliable and tight for years



*engineered.
fast.
dynamic.*

Company Introduction

Global presence

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



1 Headquarters Germany
Moenchweiler (Black Forest)

4 Plant South Africa
Boksburg (Johannesb.)

5 Plant USA
Houston, TX

6 Service Russia
St. Petersburg



Company foundation 1963
Schonach (Black Forest)



AZ is an internationally leading company with more than 55 years of experience in development and production of soft seated plug valves and special valves

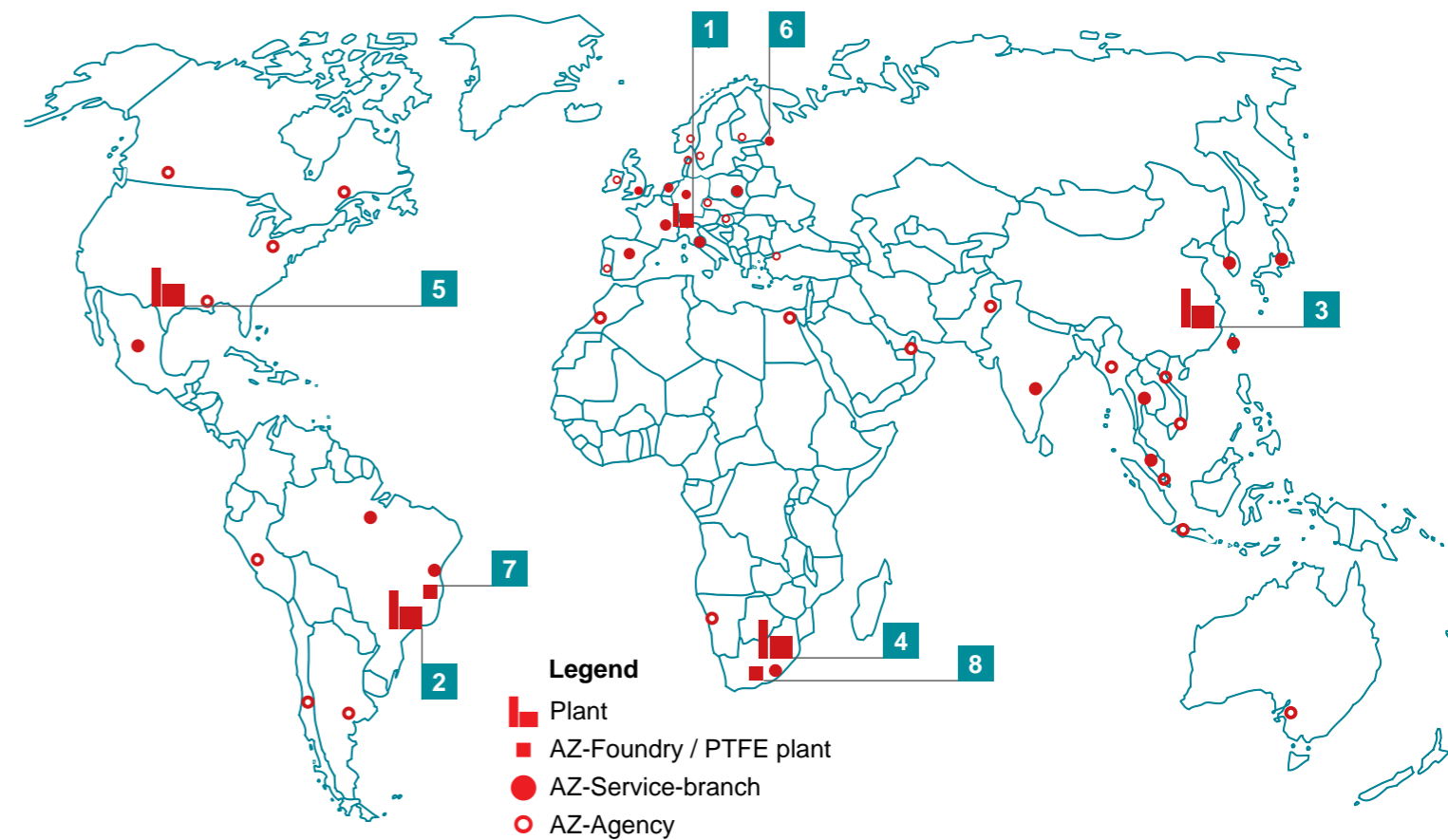
The valves are designed to satisfy various applications in the chemical, petrochemical, power plants, nuclear, pharmaceutical, pulp & paper, food and many other industries.

- nominal sizes DN 4 - DN 600, NPS 1/8 - NPS 24
- pressure rating PN 10 - PN 250, Class 150 to 1500
- standard and special materials available: carbon and stainless steel, Hastelloy, Monel, Titanium, Tantalum etc.

AZ Armaturen provides

- global presence
- worldwide service
- large warehouse of valves
- special valves in shortest lead time
- special valve engineering
- high vertical integration:
 - own foundry
 - PTFE production
 - valve manufacturing

**engineered.
fast.
dynamic.**



2 Plant Brazil
Itatiba (São Paulo)



3 Plant China
Taicang (Shanghai)



7 AZF Foundry, Brazil
Itatiba (São Paulo)



8 Trident Plastics
Boksburg (Johannesb.)



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

Service centres worldwide



Finished goods warehouse



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

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/



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 and E-hand)

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



PTFE sleeved plug valves, Basic design and advantages



AZ plug valves - free of cavities!
Chemistry sealing, type CA (optional standard sealing type STD or Fire safe design type FS)

- 1 Primary sealing: PTFE sleeve
- 2 Secondary sealing: V-diaphragm with Delta thrust collar
- 3 Tertiary sealing: stem packing (graphite optional)
- K Plug adjustment / re-tightening of primary seal

$T_{max} = 230^{\circ}\text{C}$

Free of cavities

- the self-lubricating and chemical-resistant PTFE sleeve covers and protects the entire plug. Sealing surfaces remain dry and are not in contact with the medium
- maintenance-free
- superior lifetime
- reliable and tight for years

Vacuum-tight

- all plug valves are vacuum-tight, also at minimal or no differential pressure, the plug valves are absolutely tight

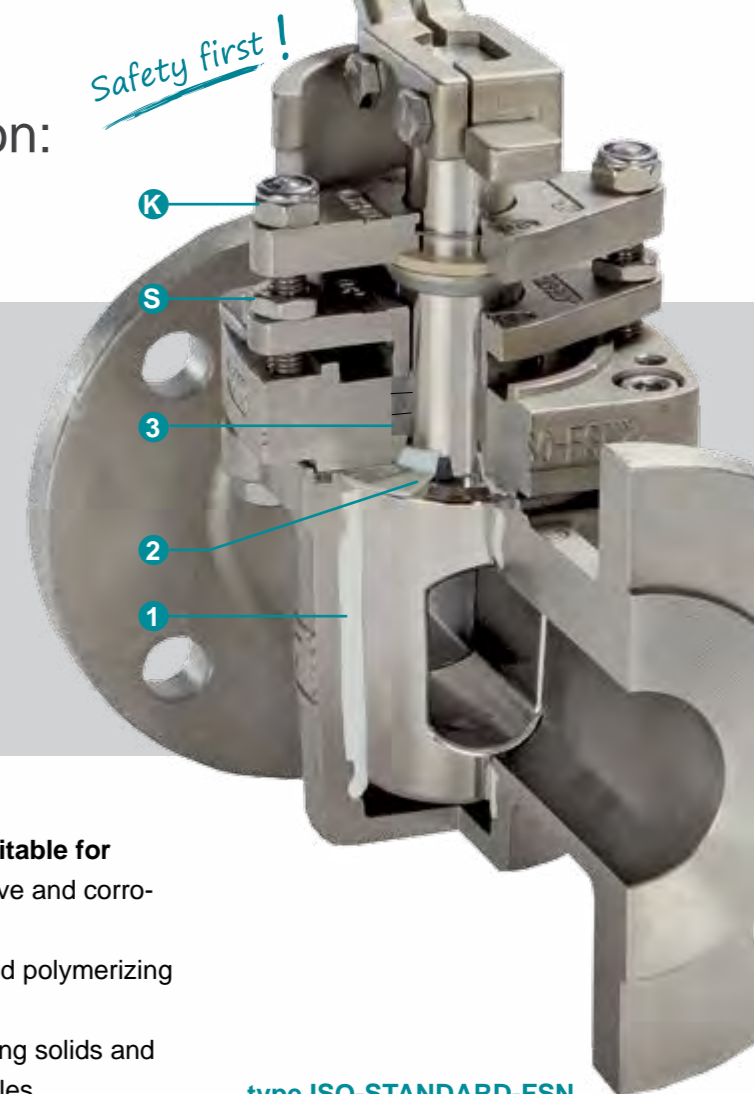
PTFE chambering

- due to perfect and complete chambering, twisting or cold-flow of the sleeve is eliminated



The high performance solution:

Safety first!



AZ plug valves with safety sealing system for severe applications

- 1 Primary sealing: PTFE sleeve (graphite optional)
- 2 Secondary sealing: V-diaphragm with delta thrust collar
- 3 Tertiary sealing: Triple safety stem packing (graphite)
- K Plug adjustment / re-tightening of primary seal
- S stuffing box adjustment

$T_{max} = 280^{\circ}\text{C}$ (graphite, P-sleeve)

Sealing systems

- High performance valves for fluctuating temperatures
- Type CASN/SAFE-LINED:
 $T_{max} 230^{\circ}\text{C}$ (PTFE)
- Type FSN, $T_{max} 280^{\circ}\text{C}$ (graphite)

Adjustable

- Constant accessibility guaranteed
- adjustable also with mounted actuator / gearbox
- adjustable even under extreme operating conditions

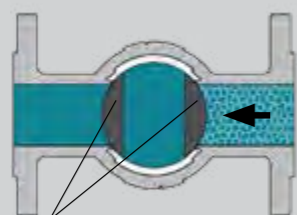
AZ valves are suitable for

- toxic, aggressive and corrosive chemicals
- crystallizing and polymerizing media
- media containing solids and abrasive particles

type ISO-STANDARD-FSN,
Fire-Safe

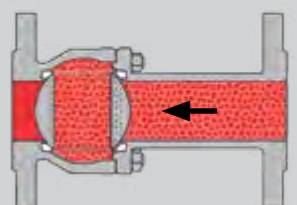
Technical comparison

PTFE-sleeved AZ plug valve
• free of cavities



Standard = double block

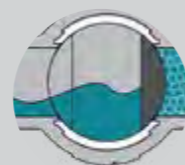
Ball valve with 2 PTFE sealing rings
• floating ball
• with cavities



clot

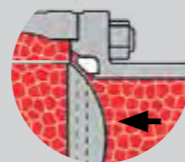
Crystallizing and polymerizing media

- no danger for the seal, smooth operation
- media cannot collect or remain in any cavity area



T4-plug runs empty (optional)

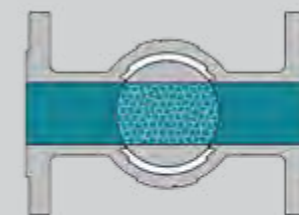
- forming of a clot in the cavities
- ball cannot be turned or can only be turned with difficulty
- damage to sealing ring/blockade
- increase of torque due to one-sided pressure when ball is floating



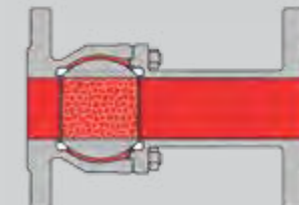
only one PTFE seat ring

Aggressive media

- polished sealing surface of the plug is completely covered by the PTFE sleeve and thus protected from aggressive media

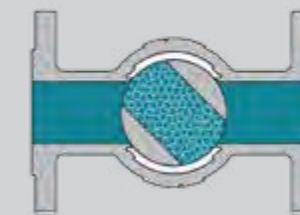


free of cavities



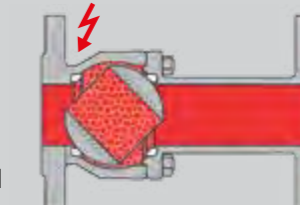
cavities

- ball sealing surfaces are completely and permanently exposed to aggressive media and can be damaged



Solid materials in the media

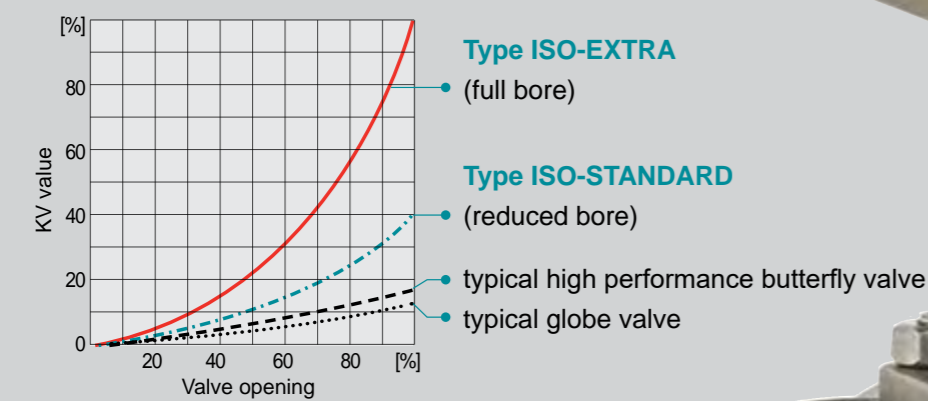
- sealing sleeve encloses and protects the whole plug
- no damage to sealing sleeve due to absence of contact surface



- sealing rings can easily be damaged!

Full bore design

Maximum flow rate



Flexible

- whole range of multi-way plugs for all configurations

Full bore design

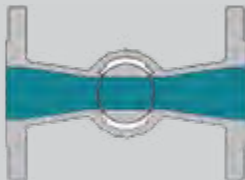
- excellent for slurry, abrasive and solid-containing applications
- maximum flow rate at minimum pressure drop

Heated plug valve with full bore design
type ISO-EXTRA-HM-OS18"/24"
with oversize flanges and heating jacket connection #1A

Port design options

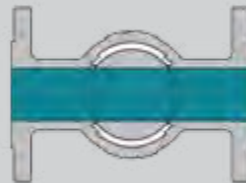
STANDARD design

- compact valve with reduced bore
- optimal torques for economic automation



EXTRA design

- full round bore
- maximum flow rate
- piggable



FDA / CIP / GMP (option)

- **FDA** = Food and Drug Administration certifications and compliant materials
- **CIP** = Clean-in-Place design: polished internal surfaces, surface finish <0.8 Ra μm (<32 Ra μin), as required by EHEDG and 3-A
- **GMP** = Good-Manufacturing-Practice



Customized solutions

Agile production

Customized valves in special alloys made of forged and bar materials

- shortest delivery time for special valves
- all materials available
 - Nickel, Hastelloy, Monel / Inconel, Duplex / Superduplex, Tantalum, Titanium, Zirconium
- unique plug valve technology
- highest valve quality for best plant safety



Modular plug valve concept for a wide range of products

Catalogue product range



All detailed information can be found in the main catalogue

type CARTRIDGE-N



SEVERE SERVICE



HF - ALKYLATION



Hastelloy C276

- Plug valve with cartridge
- fast repair / maintenance
 - high pressure Class 600

P = 78 bar
T = max. 95°C
M = hydrochloric acid
A = liquid



Tantalum (TaW2,5)

- High Performance plug valve type ISO-EXTRA DN 25
- high pressure PN 100
 - chevron stem packing
 - detection ports

P = max. 65 bar
T = max. 120°C
M = chlorine, 95%
A = liquid

Monel

- HF plug valve for alkylation with hydrofluoric acid type ISO-MB-HF (FSN / FS)
- 2-way up to 5-way
 - no pitting and crevice corrosion
 - Media: aqueous hydrofluoric acid



BASIC PLUG VALVES

- two-way and multi-port plug valves
- various valve ends (flanges, oversize flanges, welded ends, screwed and threaded ends etc.)
- Heating jacket plug valves



HIGH-PERFORMANCE RANGE

- for severe service
- special valves and systems for processes with demanding requirements
- pre-assembled valve systems for fast and easy installation
- systems with integrated functions



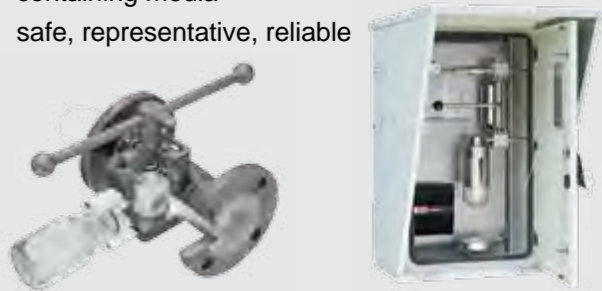
LINED VALVES

- lining combinations with PFA, FEP and PTFE materials
 - plug valves
 - control plug valves
 - sampling valves



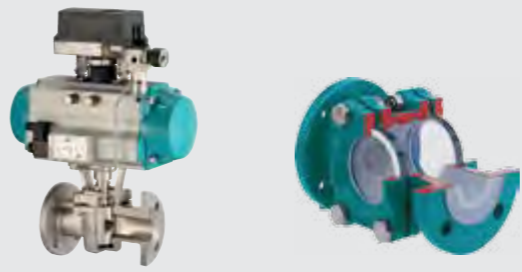
SAMPLING PLUG VALVES AND SYSTEMS

- safe sample drawing of liquids, gases and solids-containing media
- safe, representative, reliable



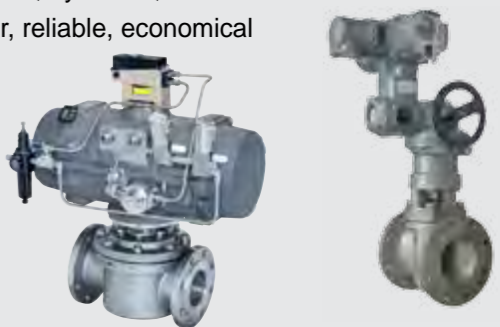
CONTROL PLUG VALVES and ACCESSORIES

- precise equal percentage or linear control
- metallic or lined piping accessories



ACTUATION

- pneumatic, hydraulic, electric
- modular, reliable, economical

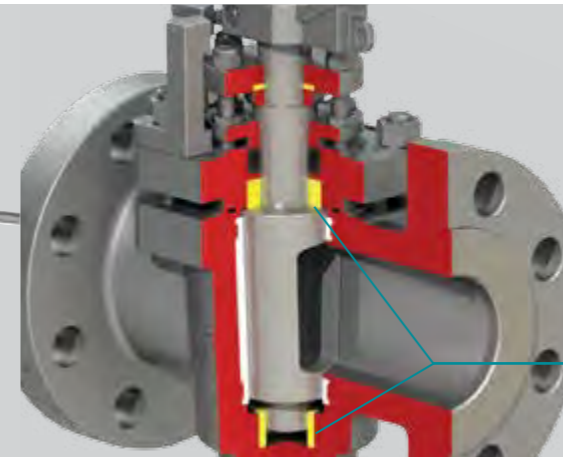
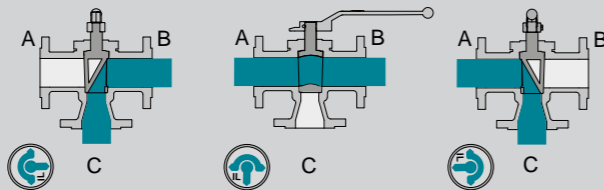


BASIC PTFE-sleeved plug valves

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, T_{max} 280°C/540°F) or
 - type SAFE-LINED, PTFE packing, T_{max} 210°C/410°F)
- 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



type HM



type FM100

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 / MG / WA / FM-100**

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

Fuel valve **type VINTAGE**

- G ¼

Water supply plug valve **type AQUA**

- DN 40 / PN 16 - PN 25

HIGH-PERFORMANCE valves

for processes with demanding requirements

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

Extra fast acting Actuator **type FASA**

- fast opening / fast closing < 1 sec

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**

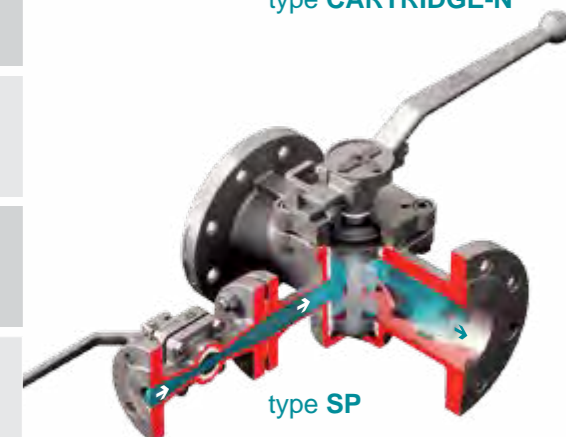
- for media which tend to stick, solidify, crystallize or polymerize



type SAVA



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
- different lining materials: PTFE, PFA, PFA-conductive, FEP
- virgin granulate used only, no recycled material
- locked in lining, vacuum-proof
- minimum thickness of lining ≥ 3 mm

NEW !



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**

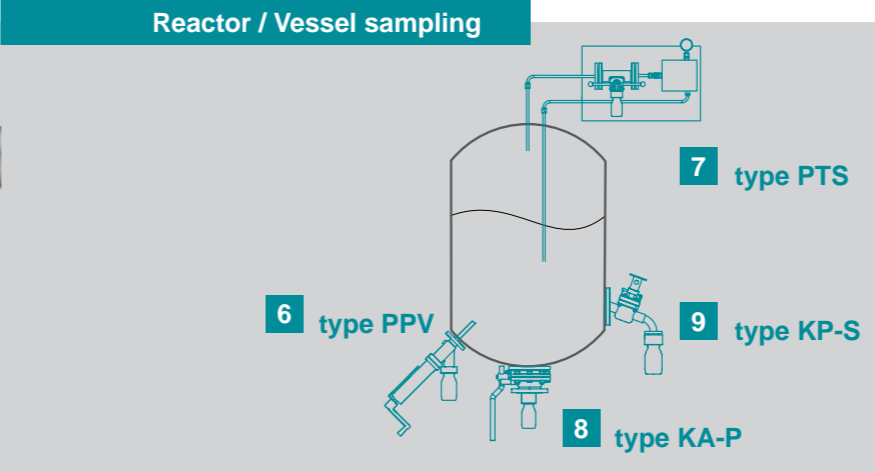
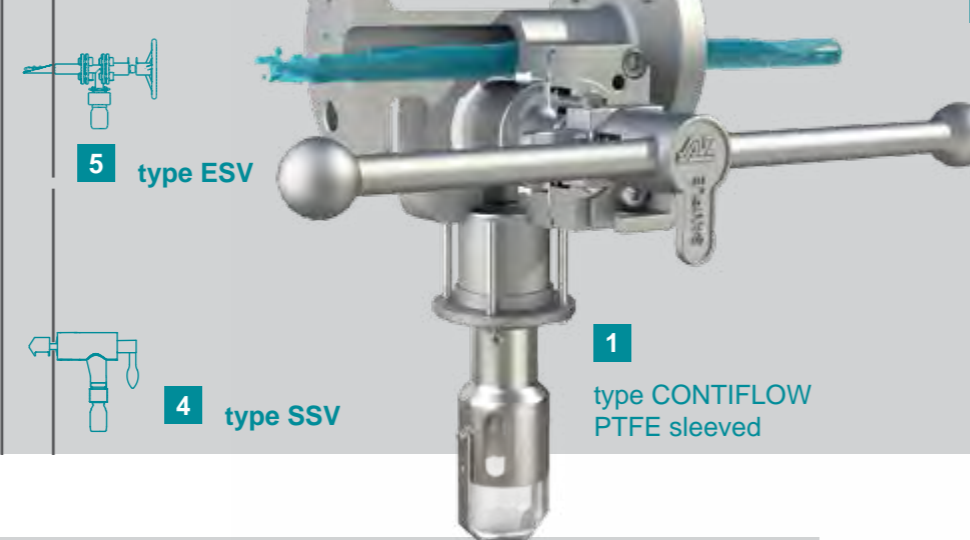
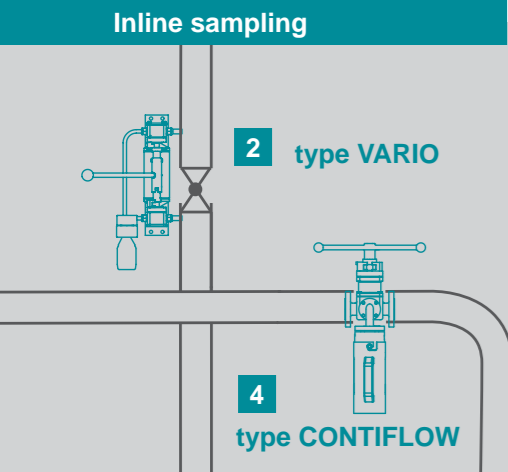
- DN 15 - 250 / PN 10 - 40 / 16, NPS 1 - 10 / Class 150



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

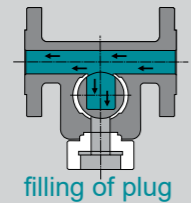
NEW!



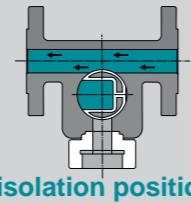
Functionality type CONTIFLOW



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



filling of plug



isolation position



pressure-free sample drawing

Bottle systems

PTFE-adapters

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



Clamping bottle holder

- for hot media



Needle system with septum

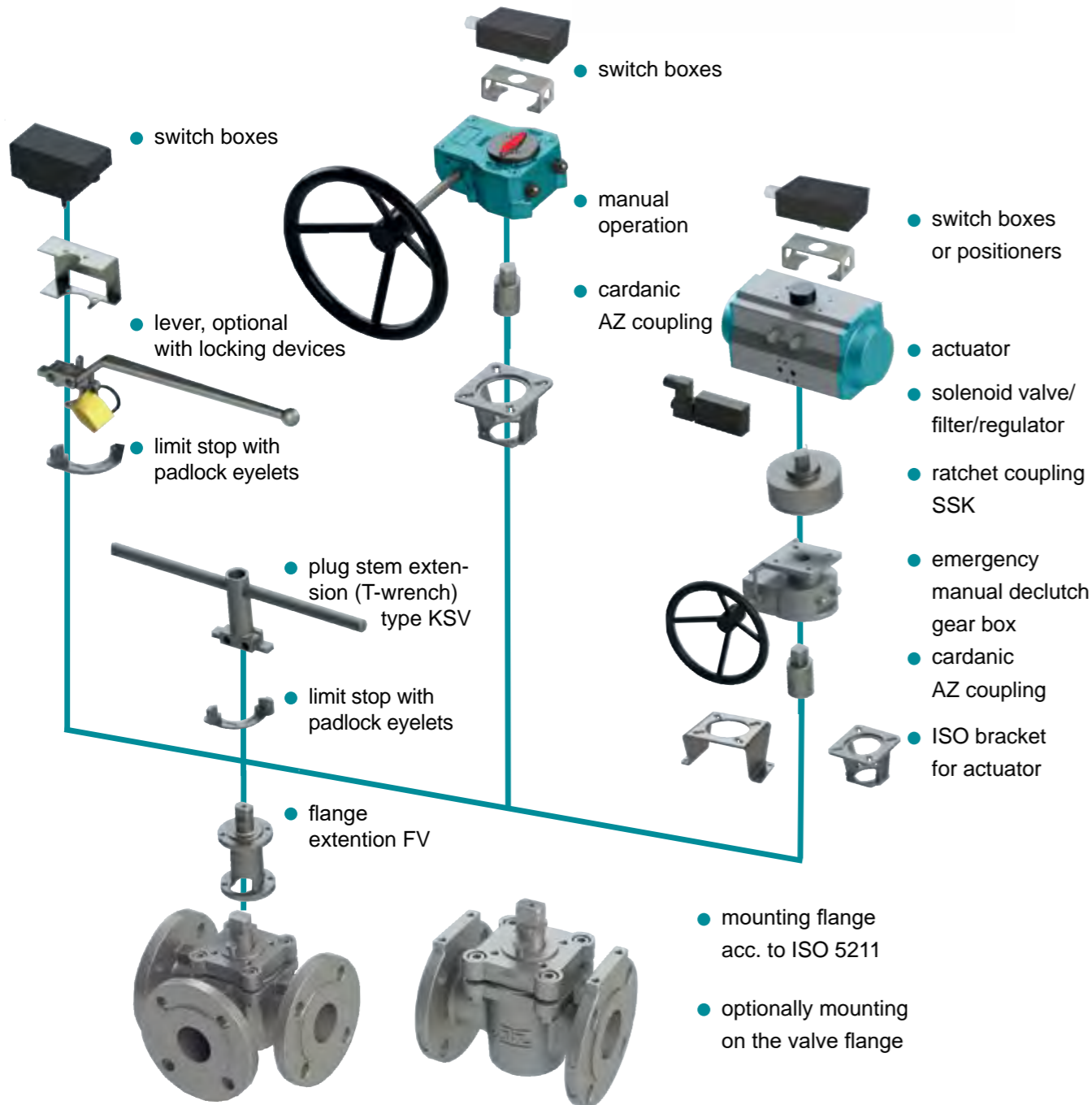
- for highly aggressive and toxic media
- for emission- and spillage-free sampling



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

Product certificates

- **TA-Luft / ISO 15858-1 / EPA-21** - 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
- **Russia** - T- R-TS
- **South Africa** - SAGA - Valves for gas transmission



AZ plants

■ Headquarters Germany

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D-78087 Moenchweiler
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Phone: +1 / 832 / 827 2163
sales@azvalves.com
www.azvalves.com

AZ services

Europe

- Germany (Moenchweiler & Rhineland)
- Great Britain (Manchester)
- Italy (Milan/Caltignaga)
- Poland (Warsaw/Opoczno)
- The Netherlands (Amsterdam)
- Russia (St. Petersburg)

America

- USA (Houston/TX)
- Brazil (São Paulo, Itatiba & Belem)
- Chile (Santiago de Chile)
- Mexico (Mexico-City)
- Peru (Lima)

Asia

- China (Taicang)
- South Korea
- Thailand (Nonthaburi)
- Vietnam (Hanoi)

Africa

- South Africa (Johannesburg)



Detailed addresses
on our website

www.az-armaturen.com