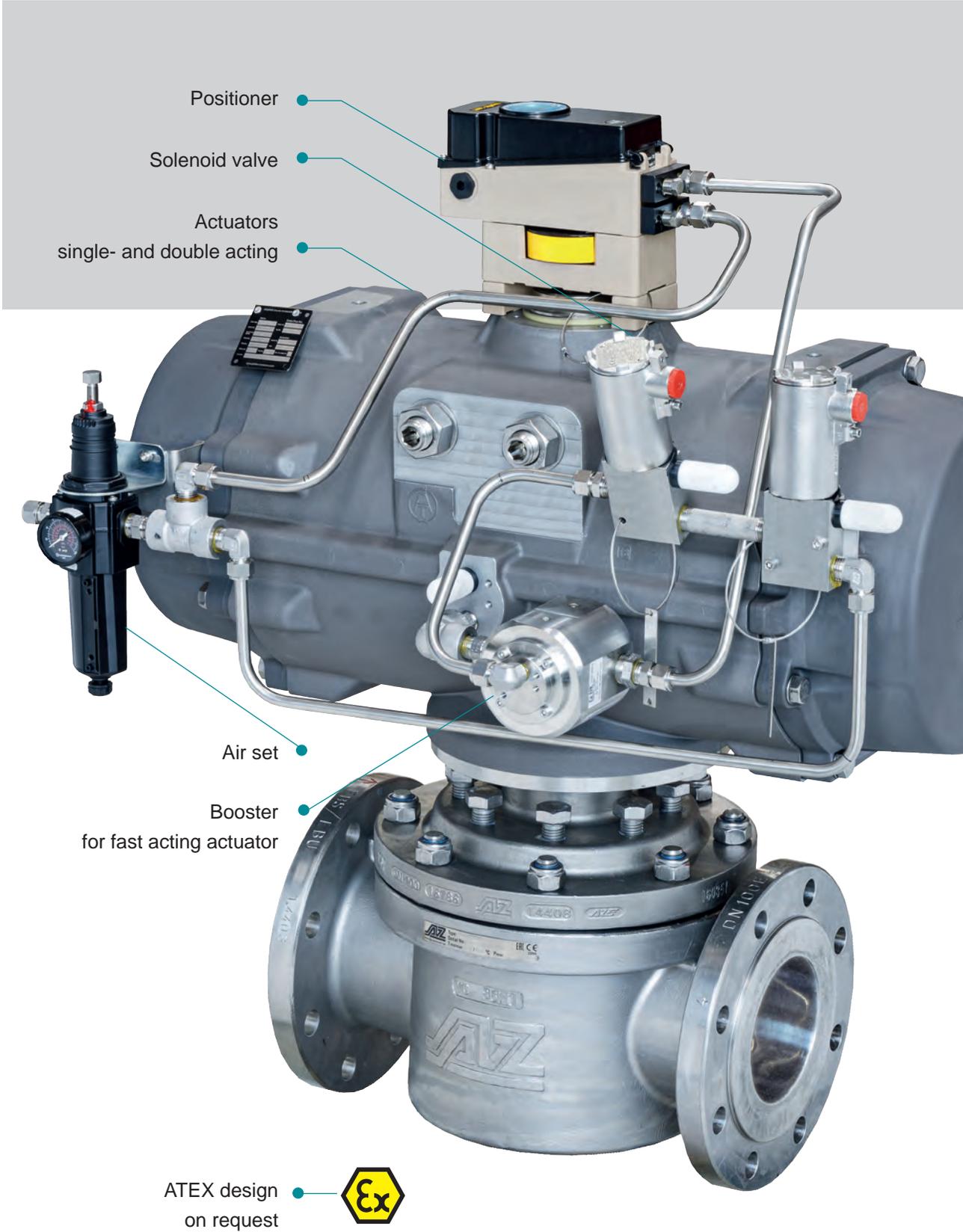


Actuation with verified and tested components for precise control



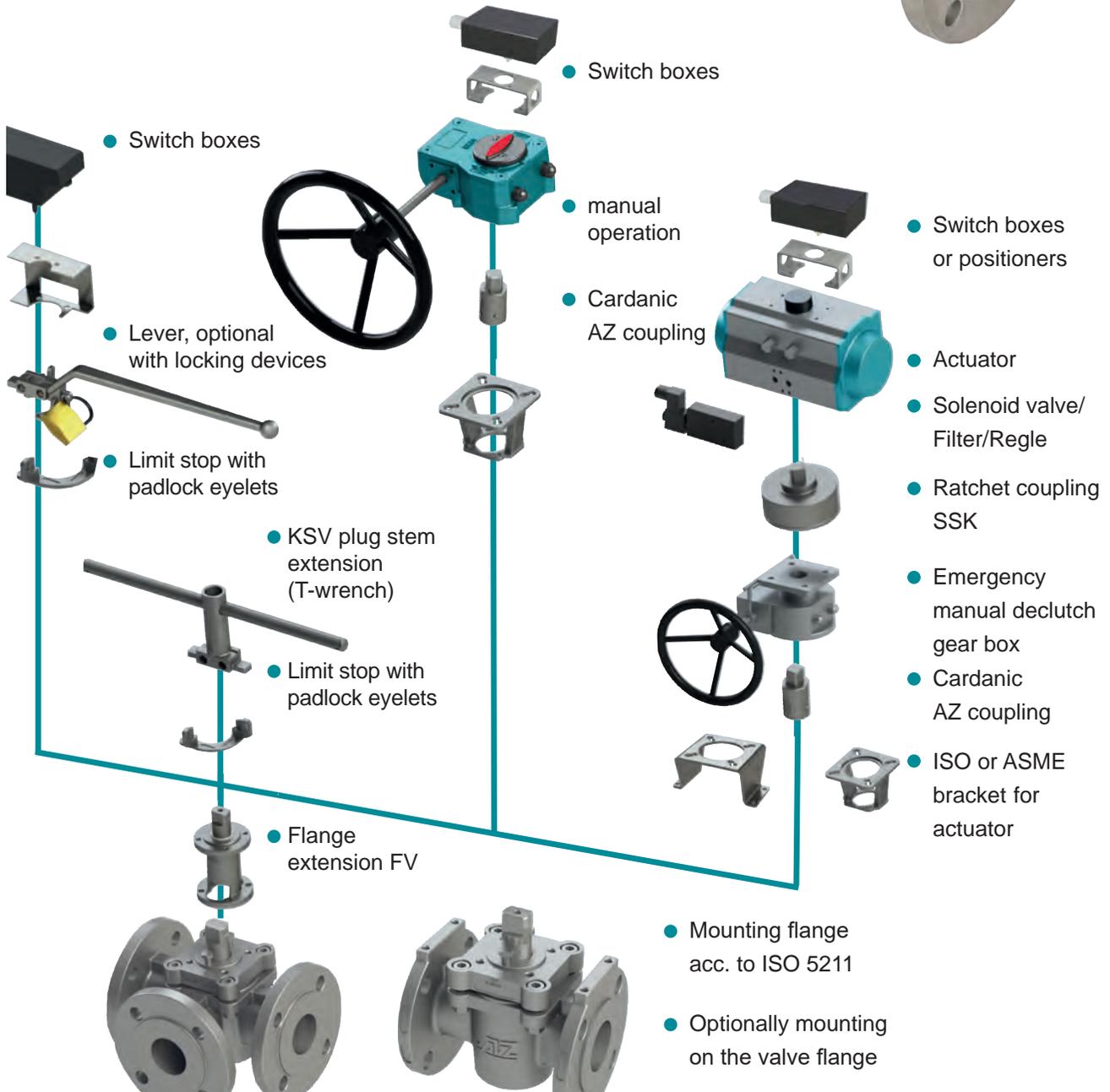
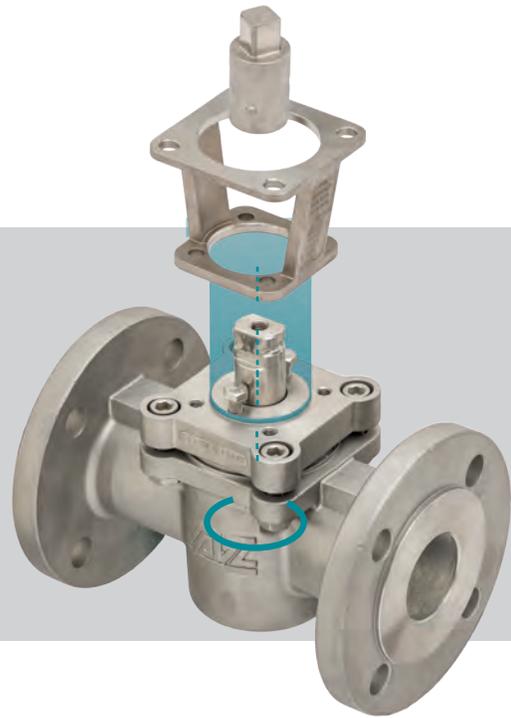
Flexible design

Modular

- actuation by hand lever, gearbox or actuator
- mounting with bracket according to ISO 5211
- alternatively with flange extension (FV) or other accessories

Safe

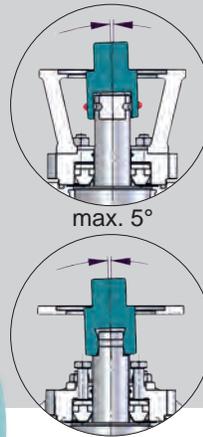
- safe due to independent mounting of cover and bracket to avoid accidental opening of pressurized housings during services



Actuator selection

pneumatic actuators up to 200,000 Nm / 1,900,00 lbf in

Rack-and-Pinion design



Patented cardanic AZ coupling for all AZ valves

- coupling to connect plug shaft and actuator
- no lateral forces on valve stem

Benefit: very long lifetime

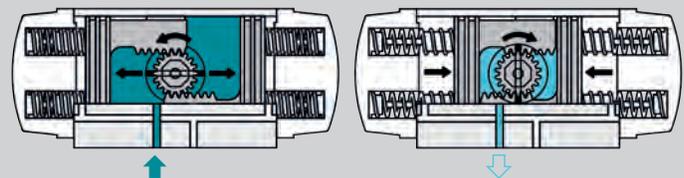
Design characteristics

- single and double acting
- actuator with rotation beyond 90° possible
- with damping and adjustable control time
- fail position open or close
- ATEX suitable
- Partial Valve Stroke test (PVST) possible
- SIL 3 suitable

Functionality

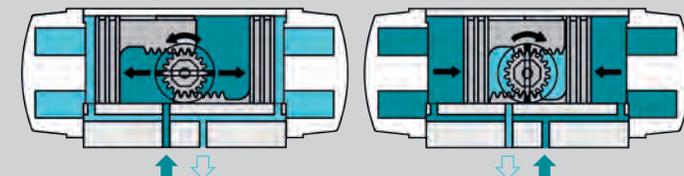
Single acting actuators

- pneumatic actuation (compressed air) to open or close a valve in one direction
- reset with integrated spring package
- fail safe position



Double acting actuators

- pneumatic actuation (compressed air) to open and close a valve
- no safety position in case of air failure



Scotch-Yoke design



Design characteristics

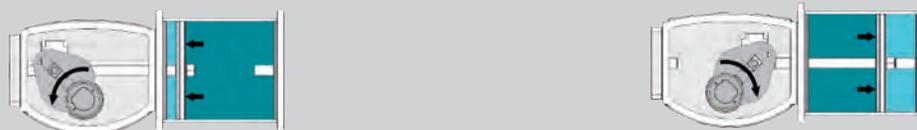
- for high torques
- single and double acting
- fail position open or close
- ATEX suitable
- Partial Valve Stroke test (PVST) possible
- SIL 3 suitable

Functionality

Single acting actuators

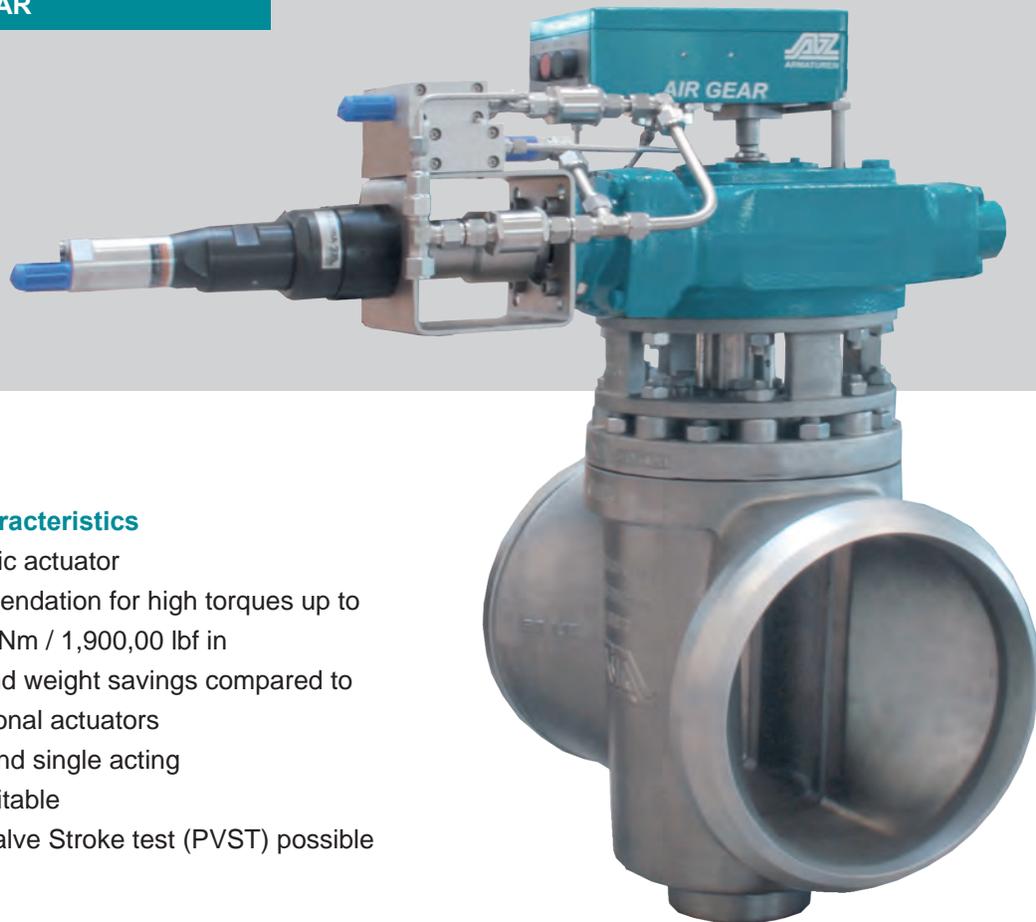


Double acting actuators



AIR-GEAR and hydraulic actuators

AZ-AIR-GEAR



Design characteristics

- pneumatic actuator
- Recommendation for high torques up to 200,000 Nm / 1,900,00 lbf in
- space and weight savings compared to conventional actuators
- double and single acting
- ATEX suitable
- Partial Valve Stroke test (PVST) possible

Hydraulic actuators

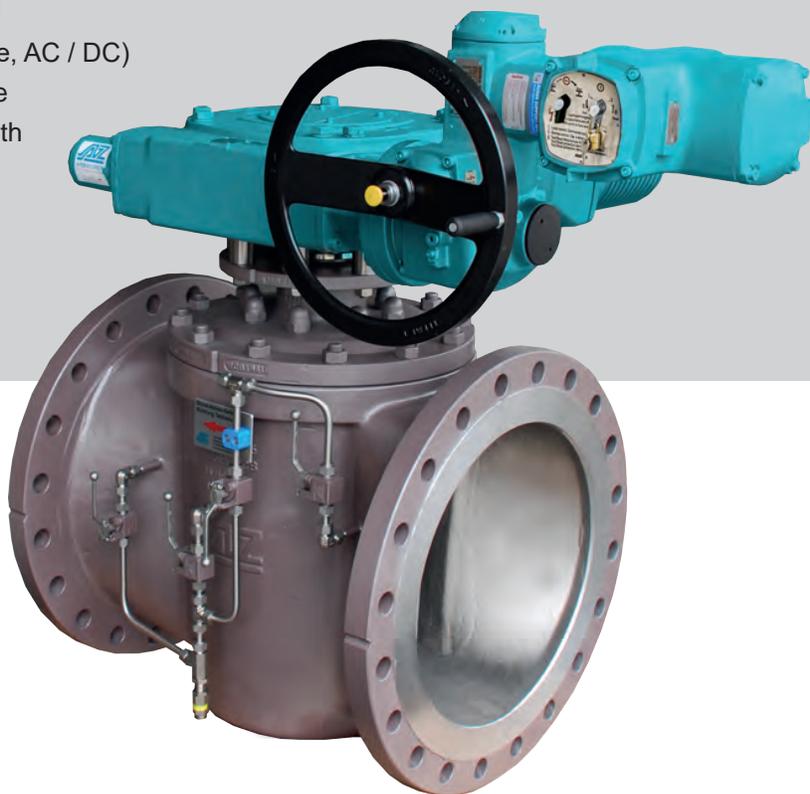
- high torques
- compact design
- double and single acting
- electro-hydraulic version with fail-safe function available
- use of existing hydraulic systems for valve actuation
- ATEX suitable
- SIL 3 compatible



Electric actuators

Electric actuators

- different voltages (1-phase, 3-phase, AC / DC)
- with integrated control unit available
- very high torques in combination with gearbox
- ATEX optional
- SIL 3 compatible



Design characteristics

- ON / OFF control or regulation
- multi position actuator
- integration of additional modules (torque switch, stroke limitation, limit switch etc.)
- declutchable gear box
- locking devices
- flange extention
- protection class e.g. ATEX Ex d
- other materials
- on-site operation

Range of application:

$-10 < T < 150^{\circ}\text{C}$

$14 < T < 300^{\circ}\text{F}$

others on request



Actuator accessories



Limit switch

- control of end positions
- mechanical or inductive
- in combination with Doppler module if positioner is used



Positioner

- Installation
 - directly on actuator
 - external
- various bus systems / protocols (HART etc.)
- integral accessories
 - position feedback
 - Solenoid valve etc.



Filter / Air set

- provides clean compressed air
- no moisture
- constant outlet pressure for precise control



Solenoid valve

- Interface between electrical control panel and pneumatic actuator
- controls actuator movement
- for emergency shut-off function in combination with positioner



Interface adapter

- double mechanical interface on one actuator
- for combination of positioner with switch box
- synchron und parallel
- all limit position signals can be monitored with sensors / reports



Booster

- for fast opening / fast closing
- in combination with positioner possible

Additional and optional equipment



On-site operation switch

- user-friendly
- safe handling
- simple commissioning



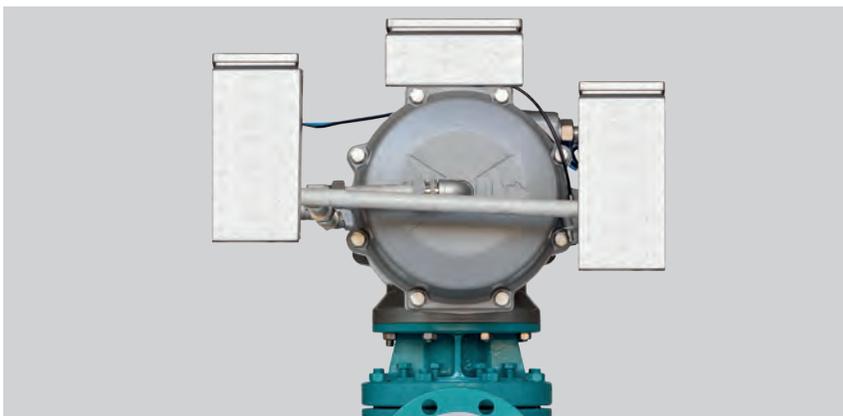
Manual Fail-Safe

- in case of toxic media
- spring return lever, different springs available
- spring effect clockwise or counter-clockwise



Declutchable gear box

- decoupling of actuator
- manual operation in case of automation failure



Type FASA

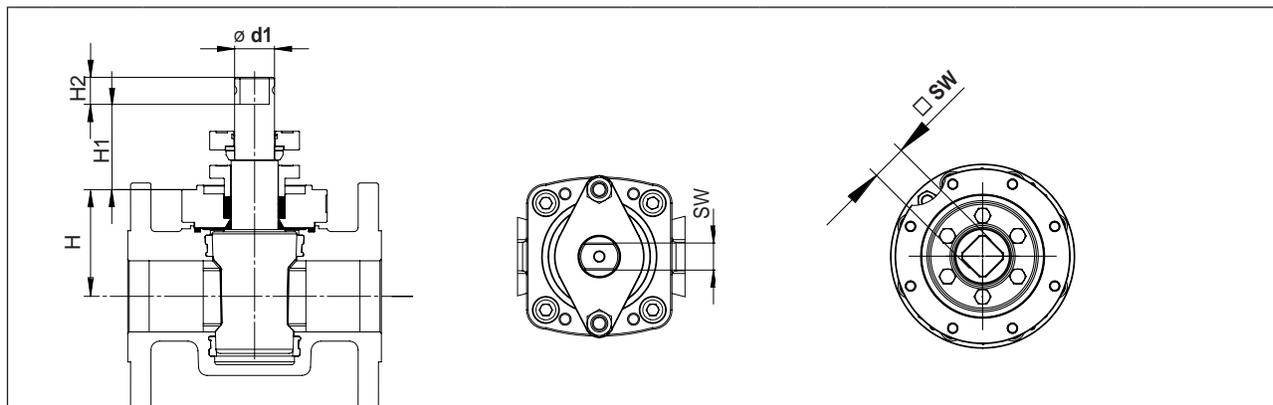
- extra fast acting actuator
- time of closing / opening < 1 sec.
- sealing surfaces are exposed to the abrasive medium for a shortest period only
- endposition damping
- extra long durability



ATEX design

- for accessories and actuator
- positioner optionally in intrinsically safe or flame-proof encapsulation
- special designs

Shaft dimensions



NPS	ø d1 [mm] [Inch]	SW [mm] [Inch]	□ SW [mm] [Inch]	for sealing system STD / CA / FS			for sealing system CASN / FSN		
				H [mm] [Inch]	H [mm] [Inch]	H2 [mm] [Inch]	H [mm] [Inch]	H1 [mm] [Inch]	H2 [mm] [Inch]
½	16	11	-	40,5	18,5	13	40	44	13
	0.630	0.433	-	1.59	0.73	0.51	1.58	1.73	0.51
¾	16	11	-	40,5	18,5	13	40	44	13
	0.630	0.433	-	1.59	0.73	0.75	1.58	1.73	0.51
1	16/20*	11/14*	-	47/59*	18,5/21*	13/19*	46/62*	44/60*	13/16*
	0.630/0.787*	0.433/0.551*	-	1.85/2.32*	0.73/0.83	0.51/0.75	1.81/2.44*	1.73/2.36	0.51/
1½	20	14	-	59	21	19	62	60	16
	0.787	0.551	-	2.32	0.83	0.75	2.44	2.36	0.63
2	28	19	-	71,5	27	19	75	60	19
	1.102	0.748	-	2.82	1.06	0.75	2.95	2.36	0.75
3	32	22	-	88	27	25	87	74	25
	1.260	0.866	-	3.47	1.06	0.98	3.43	2.91	0.98
4	32	22	-	88	27	25	87	74	25
	1.260	0.866	-	3.47	1.06	0.98	3.43	2.91	0.98
4S	32	22	-	102	28	25	102	74	25
	1.260	0.866	-	4.02	1.10	0.98	4.02	2.91	0.98
5	50	-	36	150	28	34	150	79	34
	1.969	-	1.417	5.91	1.10	1.34	5.91	3.11	1.34
6	50	-	36	150	28	34	150	79	34
	1.969	-	1.417	5.91	1.10	1.34	5.91	3.11	1.34
8	55	-	36	178	31	40	176	82	40
	2.165	-	1.417	7.01	1.22	1.58	6.93	3.23	1.58
10	72	-	55	207	36	45	210	100	45
	2.835	-	2.165	8.15	1.42	1.77	8.27	3.94	1.77
12	72	-	55	230	36	45	230	100	45
	2.835	-	2.165	9.06	1.42	1.77	9.06	3.94	1.77

*) Dimensions for lined plug valves with higher pressure ratings

Bracket acc. to ISO 5211

Bracket acc. to ISO 5211

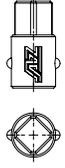
Flange dimensions acc. to technical informations of the valve and actuator / gear

Bracket (valve flanges) acc. to ASME on request

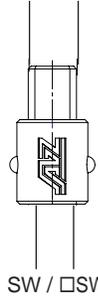
AZ coupling
„parallel“
US standard



AZ coupling
„diagonal“
EU standard



SW1



SW / □SW

Bracket acc. to ISO 5211	Bracket overload[Nm _{max}]		SW 1[mm]
	[Nm] [ft lb]		[mm] [Inch]
F05	125 1,100		14 0.551
F07	250 2,200		17 0.669
F10	500 4,400		22 0.866
F12	1000 8,800		27 1.063
F14	2000 17,700		36 1.417
F16	4000 35,400		46 1.811
F25	8000 70,800		55 2.165
F30	16000 14,200		75 2.953