

ISO EXTRA

Plug valve with full bore design

DIN-EN: DN 15 – 600 / PN 10 – 40

ASME: NPS ½" – 24" / class 150 – 300

PT range: $-30 < T < 230/280^{\circ}\text{C}$, vacuum 10-8 mbar



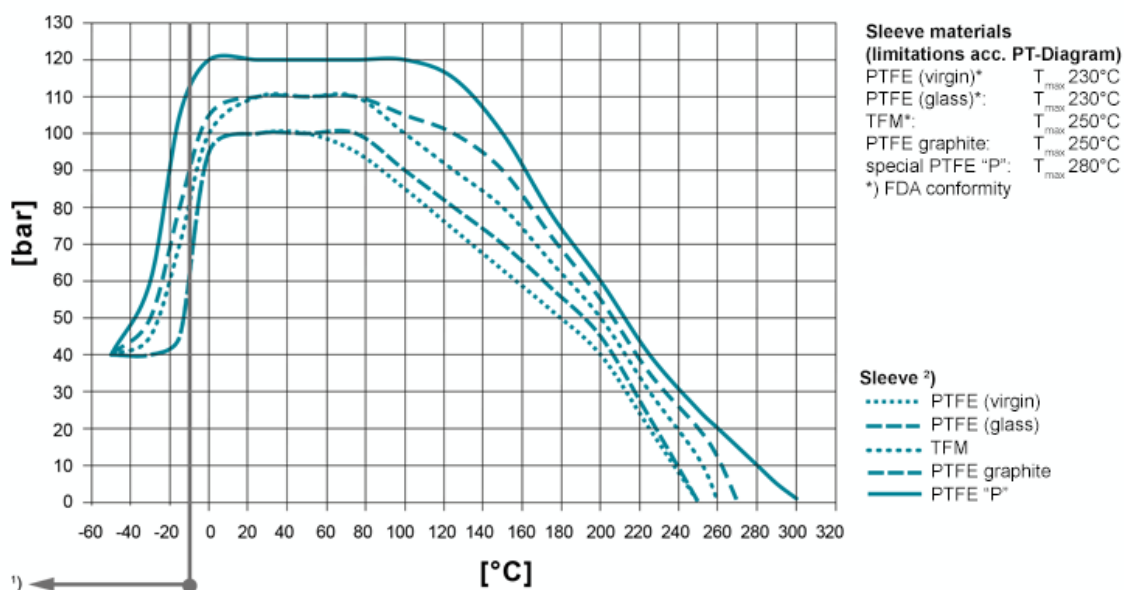
Design Features

Design Characteristics

- full bore
- free of cavities
- maintenance free – self lubricating
- easy accessible adjustment of the plug, even with mounted actuator
- pressure drop minimized
- piggable design available
- suitable for abrasive fluids
- vacuum tight
- fugitive emission resp. clean air act certified (TA – Luft 2002 approval)
- Directive 2014/68/EU
- fire safe design API 607 / ISO 10497
- FDA conformity

PT-Diagram

General Pressure-Temperature-Diagram



Operating temperatures $< -30^{\circ}\text{C}$ and $> 220^{\circ}\text{C}$ have to be checked and approved by AZ according to the operating conditions.

Besides the P/T value of the sleeve the limitations of the valve bodies also have to be considered. Please refer to the EN 12516-1 resp. ASME B16.34 in order to choose a proper pressure rating (PN/class). The shown values refer to austenitic stainless steel 1.4408 (A351 Gr. CF8M).

- 1) For operating temperatures below -10°C low temperature / austenitic steels are required.
- 2) Sleeve: There are different sleeve materials / compounds available.

Materials

Standard body materials

- Carbon Steel 1.0619, ASTM A216 WCB
- Stainless Steel 1.4408, ASTM A351 CF8M
- Stainless Steel 1.4308, ASTM A351 CF8
- Unalloyed stainless steel casting (low Temp.) 1.1138, LCC/LCB/A352

Standard plug materials

- Stainless Steel 1.4408, ASTM A351 CF8M
- Stainless Steel 1.4308, ASTM A351 CF8

Special materials

- Alloy

- Monel
- Nickel
- Zirconium
- Titan
- Tantal
- other materials on request

Sealing Systems

Standard sealing for all major applications;
Tmax 230°C

Type STD

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Firesafe sealing (API 607) with graphite
packing for additional
stem sealing; Tmax 230°C

Type FS

[read more \[...\]](#)

Chemical sealing to prevent fugitive emission
of aggressive and toxic media
with PTFE packing for additional stem sealing;
T_{max} 230°C

Type CA

[read more \[...\]](#)

Firesafe safety sealing (API 607) for fluctuating
temperatures
with 3x graphite packing (adjustable) for additional
stem sealing; Tmax 280°C

Type FSN

[read more \[...\]](#)

Firesafe safety sealing (API 607) for fluctuating
temperatures
with 3x graphite packing (live loaded disc springs) for
additional
stem sealing; Tmax 280°C

Type FSN-SL

[read more \[...\]](#)

Chemical safety sealing for fluctuating temperatures
with 3x PTFE packing (adjustment) for additional stem
sealing;
Tmax 230°C

Type CASN

[read more \[...\]](#)

Chemical safety sealing for fluctuation temperatures
with 3x PTFE packing (live loaded disc springs) for additional
stem sealing; Tmax 230°C

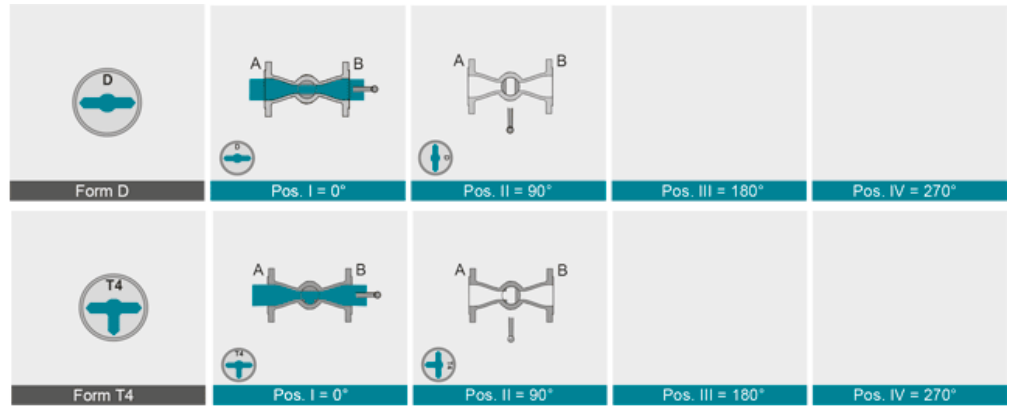
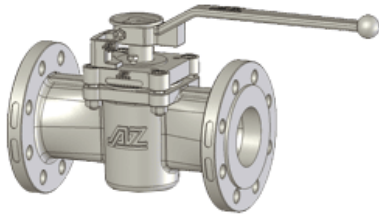
Type CASN-SL

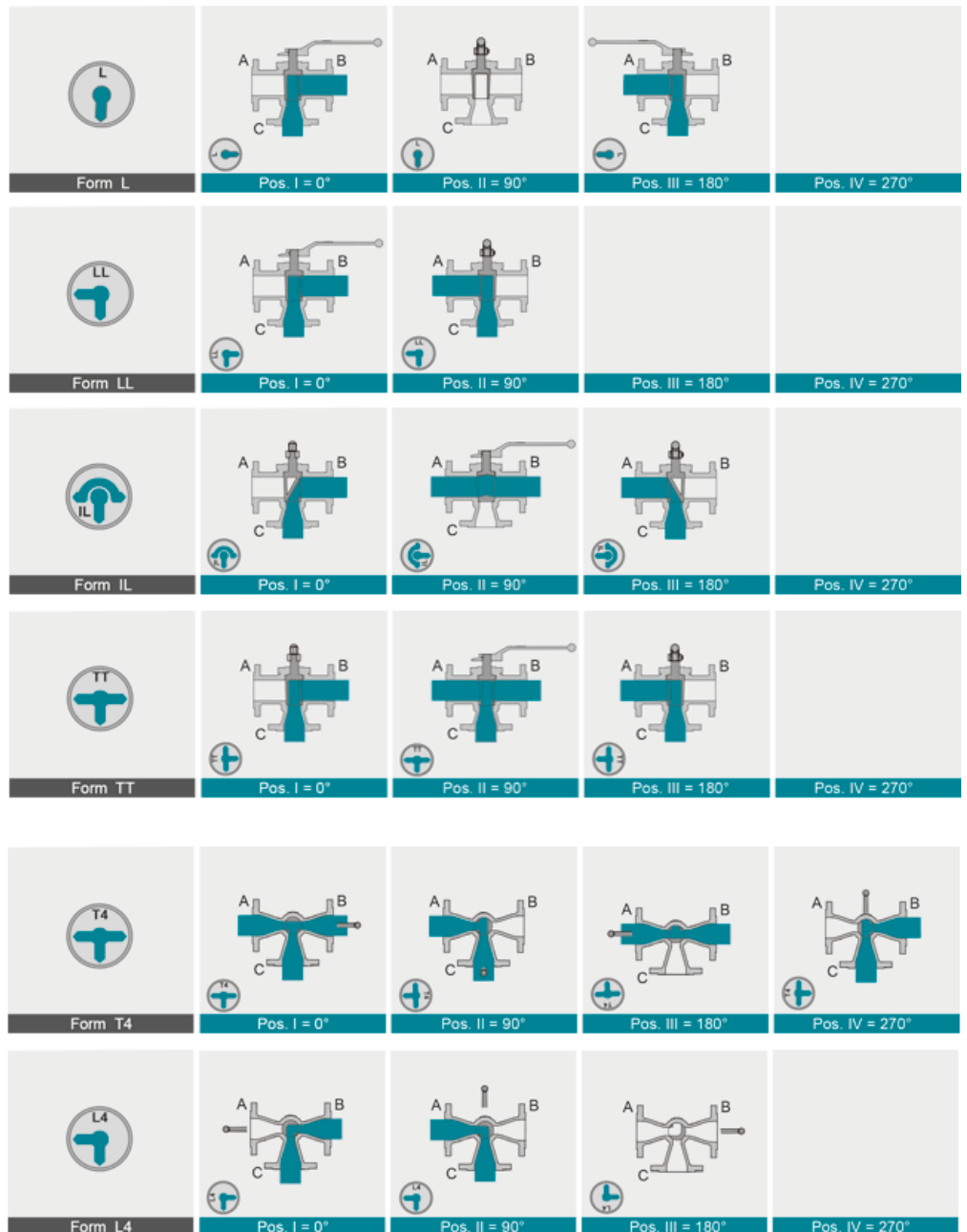
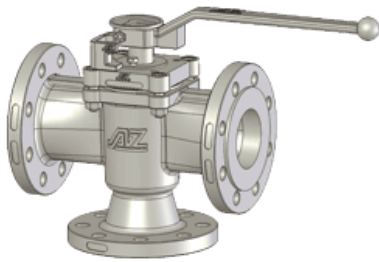
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Port Forms

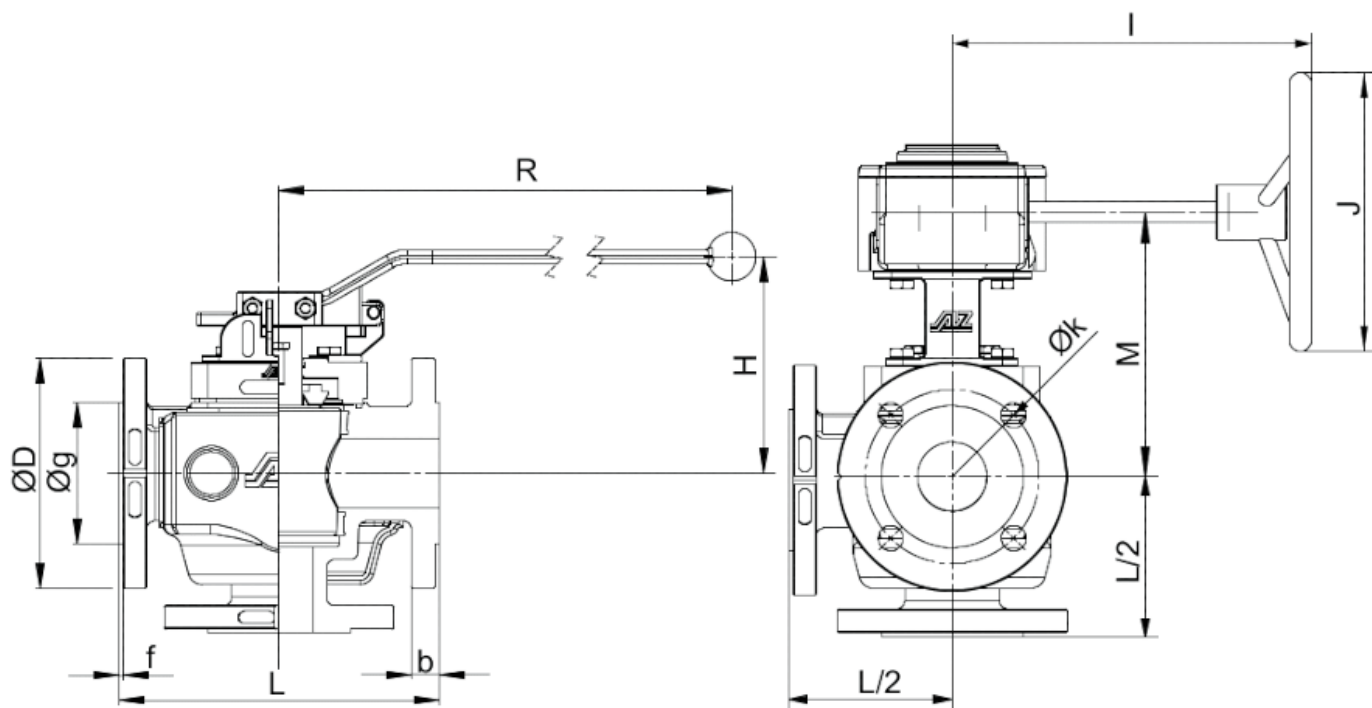


AZ plug valves are fitted with cast, rust proof position indicators.
The position indicator is securely welded to the lever to prevent it from working loose.





Dimensions



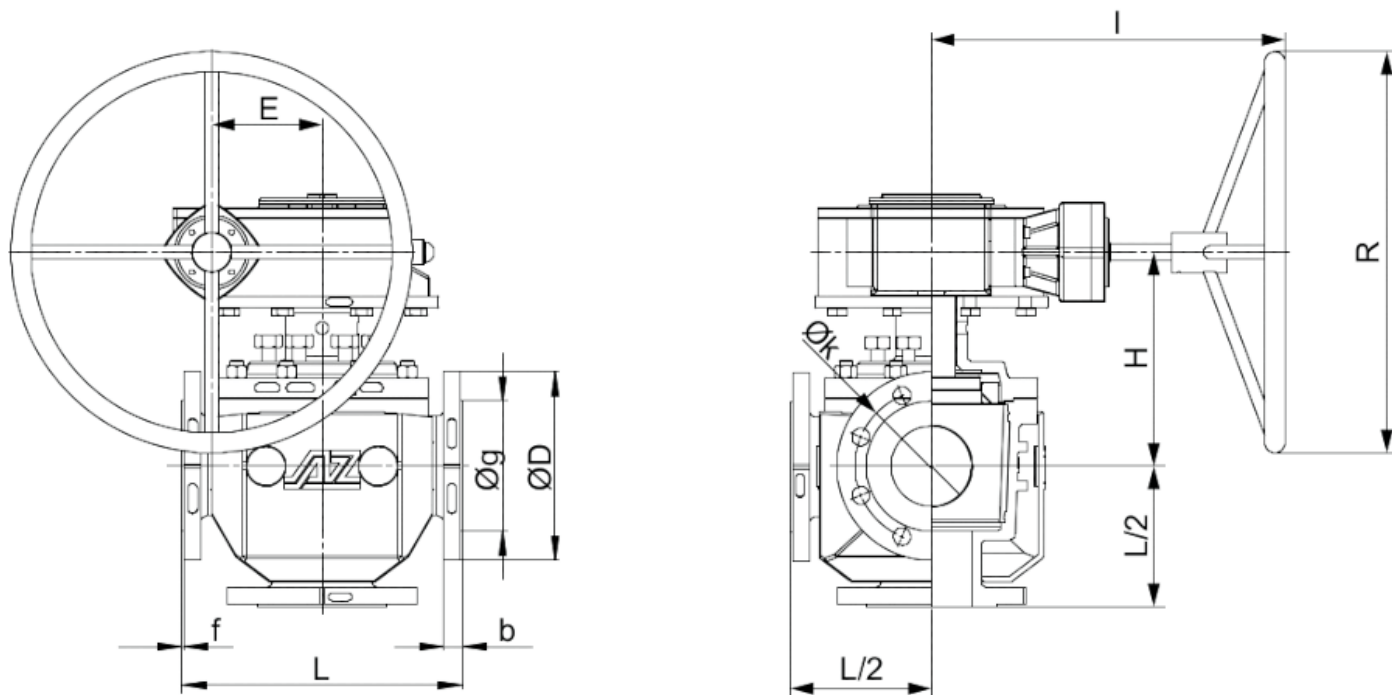
- multiport plug types please see leaflets 1.2 (3-way) and 1.3 (4- and 5-way)

DN	PN	L	L/2	øD	flange hole			øg	b	f	lever			gear				torque,* [Nm]	K _v -value [m³/h] / C _v -value [US.gal/min]							
					øk	No.	ø				R	H	E	I	J	M	Typ		F-2 K _v	F-2 C _v	F-3-S K _v	F-3-S C _v	F-3-W K _v	F-3-W C _v		
DIN EN 1092/1 / 558-1	15	10-40 63-100	130 210	65 105	95 105	65 75	4	14	45	16 20	2	200	102,2							30	19 15	22 18	7 7	8 8	8 7	9 8
	20	10-40 63-100	150 230	75 115	105 130	75 90	4	14 18	58	18 22	2	200	102,2							30	36 30	42 35				
	25	10-40 63-100	160 230	80 115	115 140	85 100	4	14 18	68	18 24	2	320	119							80	70 53	81 62	20 20	24 23	22 21	25 24
	32	10-40 63-100	180 260	90 130	140 155	100 110	4	18 22	78	18 24	2	420	137							140	113 95	130 110	34 33	39 38	36 35	42 41
	40	10-40 63-100	200 260	100 130	150 170	110 125	4	18 22	88	18 26	3	420	145	52,5	215	200	170	Q 400-S	240	193 173	223 200	53 52	61 60	57 57	66 66	
	50	10-40 63-100	230 300	115 150	165 180	125 135	4	18 22	102	20 26	3	585	150	52,5	240	300	195	Q 400-S	350	323 282	374 327	85 83	98 96	90 89	105 102	
	65	10/16/25/40 63	290	145	185 205	145 160	4 8	18 22	122	22 26	3			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	176	
	80	10-40 63	310	155	200 215	160 170	8	18 22	138	24 28	3			68,75	365	400	248	Q 800-S	600	947	1095	222	257	233	269	
ASME B 16.5 / 16.10	NPS	Class	L	L/2	øD	flange hole			øg	b	f	lever			gear				torque,* [Nm]	K _v -value [m³/h] / C _v -value [US.gal/min]						
						øk	No.	ø				R	H	E	I	J	M	Typ		F-2 K _v	F-2 C _v	F-3-S K _v	F-3-S C _v	F-3-W K _v	F-3-W C _v	
	½"	150 300	108 140	54 70	90 95	60,3 66,7	4	15,7	34,9	10 14,7	2	200	102,5							30	20 18	23 21				
	¾"	150 300	117 152	58,5 76	100 115	69,9 82,6	4	15,7 19,1	42,9	10,9 16,3	2	200	102,5							30	41 36	48 42				
	1"	150 300	160 230	80 115	110 125	79,4 88,9	4	15,7 19,1	50,8	11,6 17,9	2	320	119							80	70 53	81 62	20 20	24 23	22 21	25 24
	1¼"	150 300	180 260	90 130	115 135	88,9 98,4	4	15,7 19,1	63,5	13,2 19,5	2	420	137							140	113 95	130 110	34 33	39 38	36 35	42 41
	1½"	150 300	200 260	100 130	125 155	98,4 114,3	4	15,7 22,3	73	14,7 21,1	2	420	145	52,5	215	200	170	Q 400-S	240	193 170	223 196	53 52	61 60	57 57	66 66	
	2"	150 300	230 300	115 150	150 165	120,7 127	4 8	19,1 19,1	92,1	16,3 22,7	2	585	150	52,5	240	300	195	Q 400-S	350	323 282	374 327	85 83	98 96	90 89	105 102	
2½"	150 300	290	145	180 190	139,7 149,2	4 8	19,1 22,3	104,8	17,9 25,9	2			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	179		
3"	150 300	310	155	190 210	152,4 168,3	4 8	19,1 22,3	127	19,5 29	2			68,75	265	400	243	Q 800-S	600	947	1095	222	257	233	269		

The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water 20°C, pressure loss Δp = 1 bar).

Higher operating pressures on request

* 100% safety factor for actuators inclusive



- multiport plug types please see leaflets 1.2 (3-way) and 1.3 (4- and 5-way)

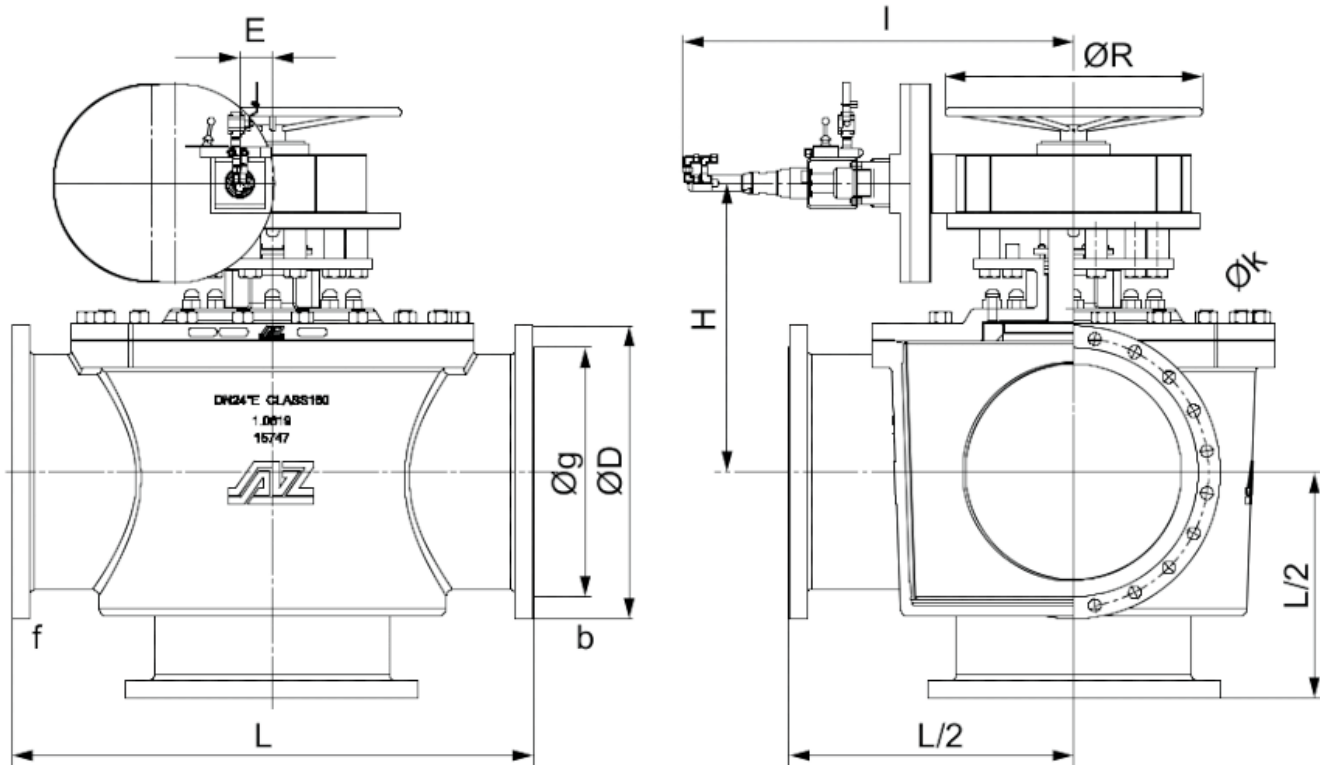
DN	PN	L	L/2	øD	flange hole				øg	b	f	gear					torque,* [Nm]	K _{vs} -value [m³/h] / C _v -value [US.gal/min]							
					øk	No.	ø	E				R	H	I	Typ	F2K _v		F2C _v	F3S K _v	F3-S C _v	F3-WK _v	F3-W C _v			
DIN EN 1092/1 / 558-1	100	10 - 16 25/40 63	350 430	175 215	220 235	180 250	180 190	8 200	18 22	158 162	20 24	3	137,5	600	270	365	Q 6500-S	2000	1446 1446	1672 1319	338 338	391 335	361 391	417 388	
	150	10 - 16 25/40 63	480 550	240 275	285 300	240 345	240 250	8 280	22 26	212 218	22 28	3	137,5	600	315	365	Q 6500-S	4000	3338 3338	3859 3155	775 3859	895 768	816 888	943 816	
	200	10 - 16 25 40	600	300	340 360	295 375	310 310	8 12 320	22 26	268 278	24 30	3	180	700	355	520	Q 12000-S	6500	6362	7356	1385	1601	1470	1698	
	250	10 16 25 40	730	365	395 425	405 450	350 370	12 385	22 26 335	320 345	26 32	3	180	700	385	520	Q 12000-S	8500	10346	11961	2166	2504	2285	2642	
	300	10 16 25 40	850	425	445 485	460 515	400 430	12 16 450	22 26 30 33	370 395	378 410	26 28 34 42	4	252,5	700	460	600	Q 24000-S	19500	15316	17707	3141	3631	3312	3829
	350	10 16 25 40	980	490	505 555	520 580	460 490	16 510	22 26 33 36	430 450	438 465	26 30 38 46	4	252,5	700	495	600	Q 32000-S	25000	21195	24504	4294	4964	4540	5249
ASME B 16.5 / 16.10	NPS	Class	L	L/2	øD	flange hole		øg	b	f	gear				torque,* [Nm]	K _{vs} -value [m³/h] / C _v -value [US.gal/min]									
	øk	No.	ø	E	R	H	I	Typ	F2K _v	F2C _v	F3S K _v	F3-S C _v	F3-WK _v	F3-W C _v											
	4"	150 300	350 430	175 215	230 255	190,5 200	8 200	19,1 22,3	157,2 157,2	24,3 32,2	2	137,5	600	270	365	Q 6500-S	2000	1446 1317	1672 1522	338 335	391 387	360 358	416 414		
	6"	150 300	480 550	240 275	280 320	241,3 269,9	8 12	22,3 22,3	215,9 215,9	25,9 37	2	137,5	600	315	365	Q 6500-S	4000	3338 3155	3859 3647	781 768	903 888	820 815	948 943		
	8"	150 300	600 650	300	345 380	298,5 330,2	8 12	22,4 25,4	269,6 269,6	29 41,7	2	180	700	355	520	Q 12000-S	6500	6362 6108	7356 7062	1385 1388	1601 1605	1470 1466	1699 1695		
	10"	150 300	730 775	365	405 445	362 387,4	12 16	25,4 28,4	323,8 323,8	30,6 48,1	2	180	700	385	520	Q 12000-S	8500	10344 9933	11959 11483	1934 1941	2235 2244	2299 2327	2658 2690		
	12"	150 300	850	425	485 520	431,8 450,8	12 16	25,4 31,7	381 381	32,2 51,3	2	252,5	700	460	600	Q 24000-S	19500	15317	17708	3064	3543	3308	3825		
	14"	150 300	980	490	535 585	476,3 514,4	12 20	28,4 31,7	412,8 412,8	35,4 54,4	2	252,5	700	495	600	Q 32000-S	25000	21194	24503	4285	4954	4545	5255		

The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water 20°C, pressure loss Δp = 1 bar).

Higher operating pressures on request

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** on request



- multiport plug types please see leaflets 1.2 (3-way) and 1.3 (4- and 5-way)

	DN	PN	L	L/2	øD	flange hole			øg	b	f	gear					torque * [Nm]	Kvs-value [m³/h] / Cv-value [US.gal/min]					
						øk	No.	ø				E	R	H	I	Typ		F-2 Kv	F-2 Cv	F-3 S Kv	F-3 S Cv	F-3 W Kv	F-3 W Cv
DIN EN 1092/1 / 558-1	400	10 16	1100	550	565 580	515 525	16	26 30	482 490	26 32	4	252,5	700	535	600	Q 32000-S	29000	28438	32878	5608	6484	5989	6923
		25 40			620 660	550 585		36 39	505 535	40 50													
	450	10 16	1200	600	615 640	565 585	20	26 30	532 550	28 36	4	252,5	700	620	600	Q 50000-S	31000	37079	42867	7057	8158	7667	8864
		25 40			670 685	600 610		36 39	555 560	46 57													
	500	10 16	1250	625	670 715	620 650	20	26 33	585 610	28 38	4	291,5	700	640	740	Q 50000-S	33000	47672	55113	8890	10278	9442	10916
		25 40			730 755	660 670		36 42	615 615	48 57													
	600	10 16	1450	725	780 840	725 770	20	30 36	685 725	30 47	5	**	**	**	**	**	**	71299	82429	12646	14620	13439	15537
		25 40			845 890	770 795		39 48	720 735	58 72													
ASME B 16.5 / 16.10	16"	150	838	550	595	539,8	16	28,4	469,9	37	2	252,5	700	535	600	Q 32000-S	29000	32823	37947	5638	6518	5991	6927
		300			650	571,5	20	35	469,9	57,6													
	18"	150	1200	600	635	577,9	16	31,8	533,4	40,1	2	252,5	700	620	600	Q 50000-S	31000	37078	42866	7067	8170	7667	8864
		300			710	628,6	24	35	533,4	60,8													
	20"	150	991	625	700	635	20	31,8	584,2	43,3	2	291,5	700	640	740	Q 50000-S	33000	54544	63058	8996	10400	9495	10977
		300			775	685,8	24	35	584,2	64													
	24"	150	1450	725	815	749,3	20	35,1	692,2	48,1	2	**	**	**	**	**	**	71301	82431	12489	14439	13439	15537
		300			915	812,8	24	41,1	692,2	70,3													

The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water 20°C, pressure loss Δp = 1 bar).

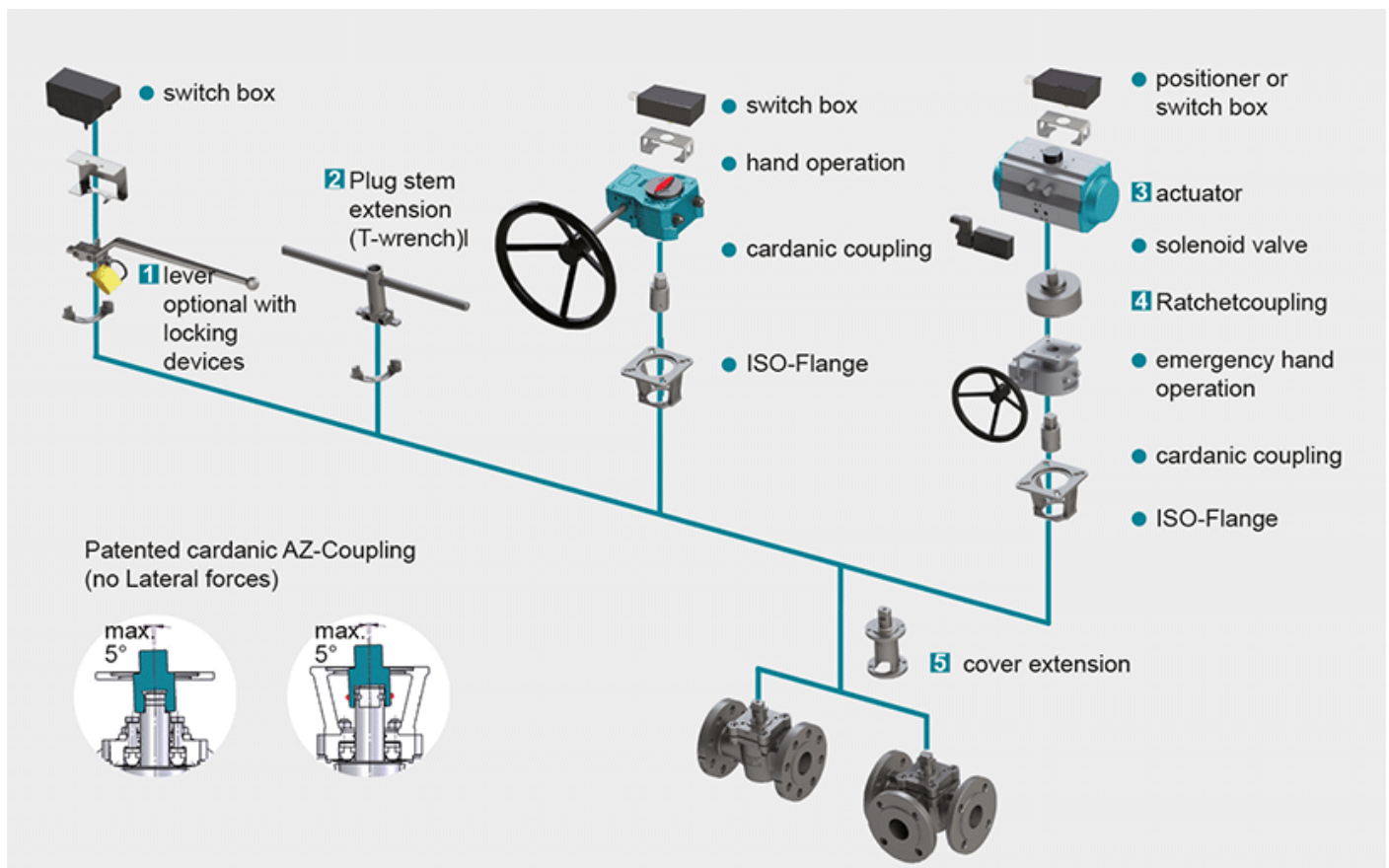
Higher operating pressures on request

* 100% safety factor for actuators inclusive

** on request

For geometric reasons, threads are used in the flange bores in a few cases

Actuation



1 Locking Devices

Pilot valve combinations, pad lock eyelets, linear key conception, indexing plunger arrestor.
[read more \[...\]](#)

2 Plug stem extension

Solid construction in stainless steel with T-wrench, Standard extension 100 mm or 150 mm, non standard lengths are available on request
[read more \[...\]](#)

3 Actuators

Actuators for mounting-flange acc. to DIN ISO 5211
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NEW: Pneumatic actuator AIR GEAR for plug valves with high torque ≥ 150.000 Nm
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4 Ratched coupling

To usw on multiport valves with standard 90° actuator for bigger switchpositions than 90°
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5 Cover extension

Solid construction in stainless steel, Standard extension 100 mm or 150 mm high, non standard lengths are available on request . Hexagonal bolts on adjustment ring freely accessible. Note: Don't use with sealing

FSN/FSN-SL and CASN/CASN-SL
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