

# **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°C, vacuum 10-8 mbar



# **Design Features**

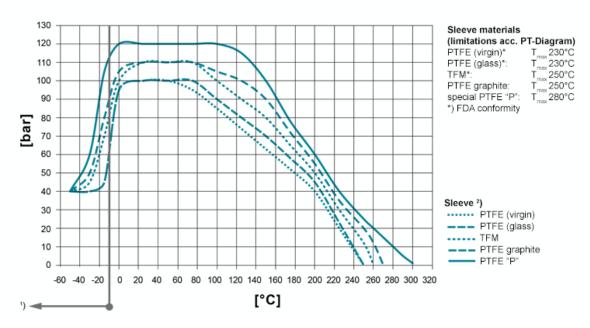
### **Design Characteristics**

- 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 emmission 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°C and > 220 °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 read more [...]

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

Type CA read more [...]

Firesafe safety sealing (API 607) for fluctuating temperatures with 3x graphite packing (adjustable) for additional

Type FSN read more [...]

stem sealing; Tmax 280°C

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 read more [...]

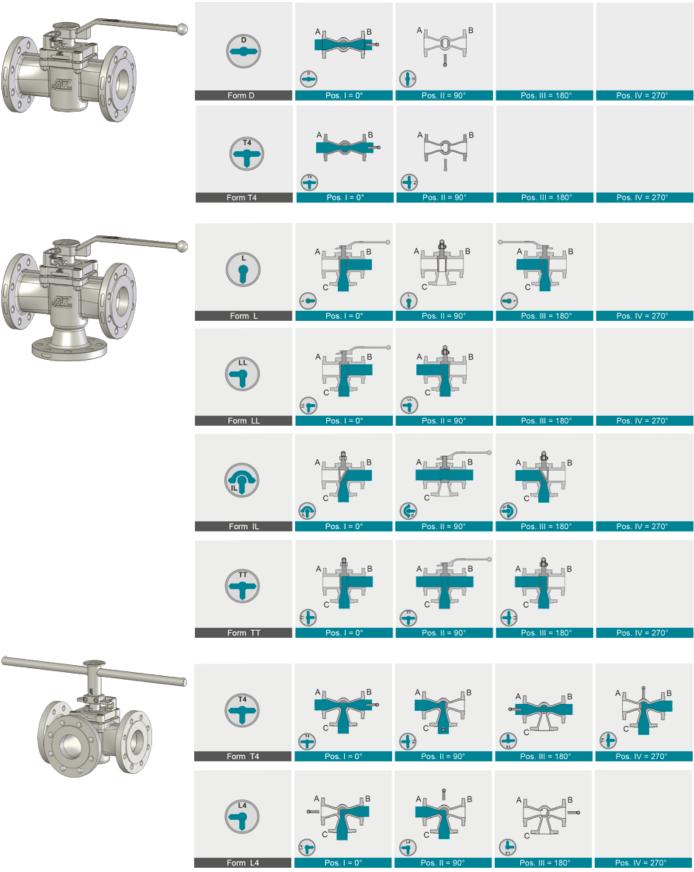
#### **Port Forms**



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.

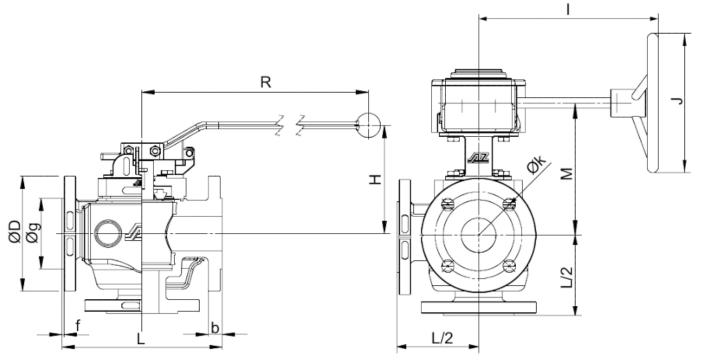






## **Dimensions**





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

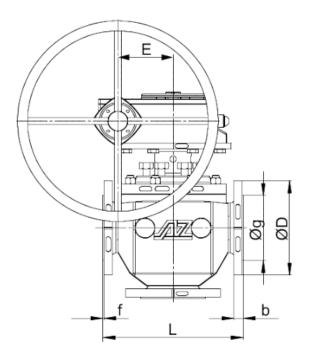
						flange hole						lever				gea	r		torque.*	K <sub>vs</sub> -value [m³/h] / C <sub>v</sub> -value [US.gal/min]					
	DN	PN	L	L/2	øD	øk	No.	ø	øg	b	f	R	н	Е	1	J	М	Тур	[Nm]	F-2 K <sub>v</sub>	F-2 C <sub>v</sub>	F-3-S K <sub>v</sub>	F-3-S C <sub>v</sub>	F-3-W K <sub>v</sub>	F-3-W C <sub>v</sub>
	15	10-40 63-100	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				
1 / 558-1	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
1092/1	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
DIN EN	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	165 180 195	125 135 145	4	18 22 26	102	20 26 28	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 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	310	155	200	160	8	18	138	24	3			68,75	365	400	248	Q 800-S	600	947	1095	222	257	233	269
		63		100	215	170		22	100	28	٦			00,75	500	400	_ 10	~ 000 0		011	1000	222	201	200	200
	NPS					170 flan						lev	/er	00,70	000	gea		4 500 0	torque.*	511				(US.gal/mir	
	NPS	Class	L	L/2	øD	flan øk		ole	øg	b	f	lev R	/er H	E	1			Тур		F-2 K <sub>v</sub>	K <sub>vs</sub> -va F-2 C <sub>v</sub>	alue [m³/h	] / C <sub>v</sub> -value		n)
	NPS					flan	ge h	ole				R		E		gea	r		torque.*		K <sub>vs</sub> -va	alue [m³/h	] / C <sub>v</sub> -value	e [US.gal/mir	n)
0		Class 150	L 108	<b>L/2</b> 54	ø <b>D</b> 90	flang øk 60,3	ge h No.	ole ø	øg	<b>b</b>	f	<b>R</b> 200	Н	Е		gea	r		torque.* [Nm]	<b>F-2 K</b> <sub>v</sub>	K <sub>vs</sub> -va F-2 C <sub>v</sub> 23	alue [m³/h	] / C <sub>v</sub> -value	e [US.gal/mir	n)
/16.10	1/2"	150 300 150	L 108 140 117	<b>L/2</b> 54 70 58,5	90 95 100	flans øk 60,3 66,7 69,9	ge h No.	ole ø 15,7	<b>øg</b> 34,9	10 14,7 10,9	<b>f</b> 2	<b>R</b> 200	<b>H</b> 102,5	Е		gea	r		torque.* [Nm]	F-2 K <sub>v</sub> 20 18 41	K <sub>vs</sub> -va F-2 C <sub>v</sub> 23 21 48	alue [m³/h	] / C <sub>v</sub> -value	e [US.gal/mir	n)
	1/2" 3/4"	150 300 150 300 150	L 108 140 117 152 160	54 70 58,5 76 80	90 95 100 115	flan øk 60,3 66,7 69,9 82,6 79,4	ge h No. 4	15,7 15,7 19,1 15,7	øg 34,9 42,9	10 14,7 10,9 16,3 11,6	f 2 2	R 200 200	<b>H</b> 102,5 102,5	Е		gea	r		torque.* [Nm]	F-2 K <sub>v</sub> 20 18 41 36 70	K <sub>vs</sub> -va F-2 C <sub>v</sub> 23 21 48 42 81	elue [m-/h F-3-S K <sub>v</sub>	] / C <sub>v</sub> -value F-3-S C <sub>v</sub>	F-3-W K <sub>v</sub>	F-3-W C <sub>v</sub>
B 16.5	1/2" 3/4" 1"	150 300 150 300 150 300 150 300	108 140 117 152 160 230 180	L/2 54 70 58,5 76 80 115 90	90 95 100 115 110 125 115	flan øk 60,3 66,7 69,9 82,6 79,4 88,9 88,9	ge h No. 4 4	15,7 15,7 19,1 15,7 19,1 15,7	øg 34,9 42,9 50,8	10 14,7 10,9 16,3 11,6 17,9 13,2	f 2 2	R 200 200 320	H 102,5 102,5 119	Е		gea	r M		torque.* (Nm) 30 30 80 140	F-2 K <sub>v</sub> 20 18 41 36 70 53	K <sub>vs</sub> -v: F-2 C <sub>v</sub> 23 21 48 42 81 62 130	20 20 34	7 / C <sub>v</sub> -value F-3-S C <sub>v</sub> 24 23 39	22 21 36	25 24 42
	1/2" 3/4" 1" 11/4"	Class  150 300 150 300 150 300 150 300 150 300 150	L 108 140 117 152 160 230 180 260 200	54 70 58,5 76 80 115 90 130	90 95 100 115 110 125 115 135	flangek 60,3 66,7 69,9 82,6 79,4 88,9 88,9 98,4	ge h No. 4 4 4	15,7 15,7 19,1 15,7 19,1 15,7 19,1 15,7	øg 34,9 42,9 50,8 63,5	10 14,7 10,9 16,3 11,6 17,9 13,2 19,5 14,7	f 2 2 2 2 2	R 200 200 320 420	H 102,5 102,5 119 137	E	1	gea J	r M	Тур	torque.* (Nm) 30 30 80 140	F-2 K <sub>v</sub> 20 18 41 36 70 53 113 95	K <sub>vs</sub> -vs F-2 C <sub>v</sub> 23 21 48 42 81 62 130 110 223	20 20 34 33 53	24 23 39 38 61	22 21 36 35	25 24 42 41 66
B 16.5	1/2" 3/4" 1" 11/4" 11/2"	Class 150 300 150 300 150 300 150 300 150 300 150 300 150	L 108 140 117 152 160 230 180 260 200 260 230	L/2 54 70 58,5 76 80 115 90 130 100 130 115	90 95 100 115 110 125 115 135 125 155	flang øk 60,3 66,7 69,9 82,6 79,4 88,9 98,4 114,3 120,7	ge h No. 4 4 4 4 4	15,7 15,7 19,1 15,7 19,1 15,7 19,1 15,7 22,3	34,9 42,9 50,8 63,5 73	b 10 14,7 10,9 16,3 11,6 17,9 13,2 19,5 14,7 21,1 16,3	f 2 2 2 2 2 2	R 200 200 320 420 420	H 102,5 102,5 119 137 145	<b>E</b> 52,5	1 215 240	gea J 200	r M 170 195	<b>Typ</b> Q 400-S	torque.* (Nm) 30 30 80 140 240	F-2 K <sub>v</sub> 20 18 41 36 70 53 113 95 193 170 323	K <sub>vs</sub> -vs F-2 C <sub>v</sub> 23 21 48 42 81 62 130 110 223 196 374	20 20 34 33 53 52 85	24 23 39 38 61 60	22 21 36 35 57 57	25 24 42 41 66 66 105

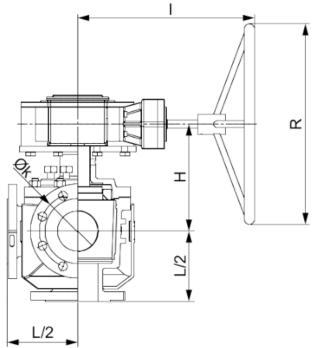
The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water 20°C, pressure loss ∆p = 1 bar).

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)

		_	PN			_		flang	ge hole						f	gear					torque."	K <sub>vs</sub> -value [m³/h] / C <sub>v</sub> -value [US.gal/min]					
	DN	PI	N	L	L/2	øD	øk		No.	lo. ø		øg		b		Е	R	Н	1	Тур	[Nm]	F-2 K <sub>v</sub>	F-2 C <sub>v</sub>	F-3-8 K,	F-3-S C <sub>v</sub>	F-34WK,	F-34V C <sub>v</sub>
	100	10 - 25/40		350 350 430	175 215	220 235 250		80 200	8	18 22 26		58 62	2 24	0 30	3	137,5	600	270	365	Q 6500-S	2000	1446 1446 1319	1672 1672 1525	338 338 335	391 391 388	361 361 357	417 417 413
/ 558-1	150	10 - 25/40		480 480 550	240 275	285 300 345	_	40 280	8	22 26 33		12 18	2 28	2 36	3	137,5	600	315	365	Q 6500-S	4000	3338 3338 3155	3859 3859 3647	775 775 768	895 895 888	816 816 818	943 943 945
1092/1	200	10 - 25	16 40	600	300	340 360 375		95 320	8 12 12	22 26 30		68 285	2 30	4 34	3	180	700	355	520	Q 12000-S	6500	6362	7356	1385	1601	1470	1698
DIN EN	250	10 25	16 40	730	365	395 405 425 450	350 370	355 385	12	22 26 30 33	_	20 345	32 32	6 38	3	180	700	385	520	Q 12000-S	8500	10346	11961	2166	2504	2285	2642
	300	10 25	16 40	850	425	445 460 485 515	400 430	410 450	12 16 16	22 26 30 33		378 410	26 34	28 42	4	252,5	700	460	600	Q 24000-S	19500	15316	17707	3141	3631	3312	3829
	350	10 25	16 40	980	490	505 520 555 580	460 490	470 510	16	22 26 33 36		438 465	26 38	30 46	4	252,5	700	495	600	Q 32000-S	25000	21195	24504	4294	4964	4540	5249
	NPS	Cla	ss	L	L/2	øD	Ĭ		ge hole		øg		ь		f			gear			torque.*						
							-	ık	No.	ø						E	R	Н	1	Тур	freni	F-2 K,	F-2 C <sub>v</sub>	F-3-8 K,	F-3-S C <sub>v</sub>	F-3-WK,	F-3-W C <sub>v</sub>
	4"	15 30		350 430	175 215	230 255		190,5 200		19,1 22,3			32		2	137,5	600	270	365	Q 6500-S	2000	1446 1317	1672 1522	338 335	391 387	360 358	416 414
16.5 / 16.10	6"	15 30		480 550	240 275	280 320		1,3 9,9	8 12	22,3 22,3		5,9 5,9	25 3	, .	2	137,5	600	315	365	Q 6500-S	4000	3338 3155	3859 3647	781 768	903 888	820 815	948 943
B 16.5 /	8"	150		600 650	300	345 380		8,5 0,2	8 12	22,4 25,4				29 41,7		180	700	355	520	Q 12000-S	6500	6362 6108	7356 7062	1385 1388	1601 1605	1470 1466	1699 1695
ASME	10"	15 30		730 775	365	405 445		62 7,4	12 16	25,4 28,4		3,8	30 48	),6 3,1	2	180	700	385	520	Q 12000-S	8500	10344 9933	11959 11483	1934 1941	2235 2244	2299 2327	2658 2690
	12"	15 30		850	425	485 520		1,8 0,8	12 16	25,4 31,7		B1 B1	32 51	,2	2	252,5	700	460	600	Q 24000-S	19500	15317	17708	3064	3543	3308	3825
	14"	15 30		980	490	535 585		6,3 4,4	12 20	28,4 31,7		2,8 2,8	35 54		2	252,5	700	495	600	Q 32000-S	25000	21194	24503	4285	4954	4545	5255

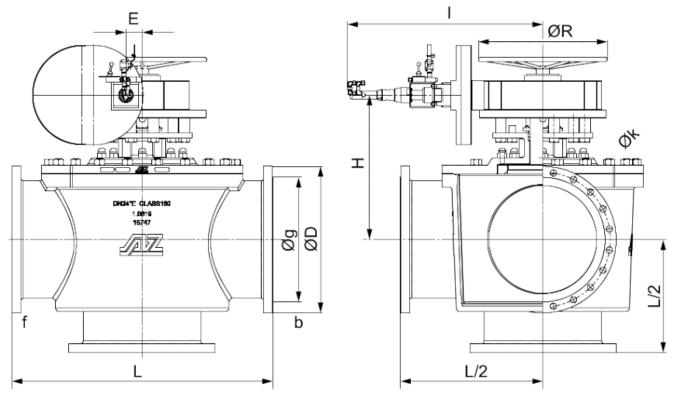
The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water  $20^{\circ}$ C, pressure loss  $\Delta p = 1$  bar).

Higher operating pressures on request

\* 100% safety factor for actuators inclusive

<sup>\*\*</sup> on request





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

	DN	PN			L/2	øD		flange hole											ge	gear			K <sub>vs</sub> -value [m³/h] / C <sub>v</sub> -value [US.gal/min]					
	DN			L	L/Z			øk		No. ø			øg		ь		Е	R	Н	1	Тур	[Nm]	F-2K <sub>v</sub>	F-2C <sub>v</sub>	F-3-8 K,	F-3-S C <sub>v</sub>	F-3-WK <sub>v</sub>	F-34V C <sub>v</sub>
558-1	400	10	16	1100	550	565 580	515	525	16	26 3	0 48	2 490	26 32	4	252,5	700	535	600	Q 32000-S	29000	28438	32878	5608	6484	5989	6923		
_	400	25	40		330	620	660	550 58	585	10	36 3	9 50	5 535	40	50	202,0	700	333	000	Q 32000-3	25000	20430	32010	3000	0404	3303	0523	
1092/1	450	10	16	1200	600	615	640	565	55 585	20	26 3	0 53	2 550	28	36	4	252,5	700	620	600	Q 50000-S	31000	37079	42867	7057	8158	7667	8864
	400	25	40	1200	000	670	685	600	610	20	36 3	9 55	5 560	46 57	_	202,0		OLO	000	Q 50000-S	31000	31013	42007	7007	0130	1001	0004	
DIN EN	500	10	16	1250	625	670	715	620	650	20		3 58		28	28 38	4	291.5	700	640	740	Q 50000-S	33000	47672	55113	8890	10278	9442	10916
5		25	40	1200	OLO	730	755	660	670		36 4	2 61	615	48	57	_	201,0	700	010	740	Q 00000 C	00000	47072	00110	0000	102.70	5112	10010
	600	10	16	1450	725	780	840	725		20	30 3		685 725	30	47	5			**	**	**		71299	82429	12646	14620	13439	15537
		25	40			845	890	770	795		39 4	8 72	735	58	72	Ľ								02.20				
	NDS																											
	NPS	Cla	iss	L	L/2	ø	D	f	lange	e ho	le		øa	ı	,	f			ge	ar		torque *	к	<sub>vs</sub> -value [	m∜h] / 6	C <sub>v</sub> -value (	US.gal/mi	in]
	NPS	Cla	iss	L	L/2	Ø	D	f ø		ho No.			øg	t	b	f	E	R	ge H	ar I	Тур	torque * [Nm]	K F-2Kv	rs-value [	m∜h]/0 F-3-8 K,		US.gal/mi F-3-WK <sub>v</sub>	
9.10			ass 50			<b>ø</b>		ø				4 4	<b>øg</b> 69,9	3	7				Н	1		[Nm]	F-2K <sub>v</sub>	F-2C <sub>v</sub>				
/ 16.10	<b>NPS</b>		50	<b>L</b> 838			95	<b>9</b>	k	No.	ø	_		3			<b>E</b> 252,5	<b>R</b> 700		1	<b>Typ</b> Q 32000-S	[Nm]	F-2K <sub>v</sub>		F-3-8 K <sub>v</sub>	F-3-S C <sub>v</sub>	F-3-WK <sub>v</sub>	F-34V C <sub>2</sub>
_	16"	15 30 15	50 00 50	838	550	59 65 63	95 50 35	53: 57: 57:	k 9,8 1,5 7,9	No. 16 20 16	28,4 35	3 5	69,9 69,9 33,4	3 57 40	7 7,6 ),1	2	252,5	700	<b>H</b> 535	600	Q 32000-S	[Nm] 29000	F-2 K <sub>v</sub> 32823	F2Cv 37947	F-3-8 K <sub>v</sub>	F-3-S C <sub>v</sub>	F-3-WK <sub>v</sub>	F-34V C <sub>2</sub>
B 16.5/		15	50 00 50		550	59 65 63	95 50	53: 57: 57:	<b>k</b> 9,8 1,5	<b>No.</b> 16 20	28,4 35	3 5	69,9 69,9	3 57 40	7 7,6	2			Н	600		[Nm] 29000	F-2 K <sub>v</sub> 32823	F-2C <sub>v</sub>	<b>F-3-8 K.,</b> 5638	F-3-S C, 6518	<b>F3-WK</b> <sub>v</sub> 5991	F-3-W C <sub>v</sub>
B 16.5/	16" 18"	15 30 15 30	50 00 50 00	838 1200	550 600	59 65 63 71 70	95 50 35 10	53 57 57 62 63	9,8 1,5 7,9 8,6	No. 16 20 16	28,4 35 31,4 35 31,4	8 5 5 8 5	69,9 69,9 33,4 33,4 84,2	3 57 40 60 43	7 7,6 0,1 0,8	2	252,5 252,5	700	<b>H</b> 535	600 600	Q 32000-S Q 50000-S	29000 31000	F-2 K <sub>v</sub> 32823 37078	F-2 C <sub>v</sub> 37947 42866	<b>F-3-8 K.,</b> 5638	6518 8170	<b>F3-WK</b> <sub>v</sub> 5991	6927 8864
16.5/	16"	15 30 15 30	50 00 50 00	838	550 600	59 65 63 71 70 77	95 50 35 10 00	53: 57: 57: 62:	9,8 1,5 7,9 8,6	No. 16 20 16 24 20 24	28, 35 31, 35 31, 35	8 5 5 8 5	69,9 69,9 33,4 33,4	3 57 40 60	7 7,6 0,1 0,8	2	252,5	700	<b>H</b> 535	600 600	Q 32000-S	29000 31000	F-2 K <sub>v</sub> 32823 37078	F2Cv 37947	5638 7067	F-3-S C, 6518	5991 7667	F-3-W C <sub>v</sub>
B 16.5/	16" 18"	15 30 15 30	50 50 50 50 50 50 50	838 1200	550 600 625	59 65 63 71 70 77 81	95 50 35 10	53 57 57 62 63 68 74	9,8 1,5 7,9 8,6	No. 16 20 16 24 20	28,4 35 31,4 35 31,4	8 5 5 8 5 1 6	69,9 69,9 33,4 33,4 84,2	3 57 40 60 43 6	7 7,6 ),1 ),8 3,3	2	252,5 252,5	700	<b>H</b> 535	600 600	Q 32000-S Q 50000-S	29000 31000	F-2 K <sub>v</sub> 32823 37078	F-2 C <sub>v</sub> 37947 42866	5638 7067	6518 8170	5991 7667	6927 8864

The data was determined by flow simulation and based on the VDI/VDE 2173 (medium = water  $20^{\circ}$ C, pressure loss  $\Delta p = 1$  bar).

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

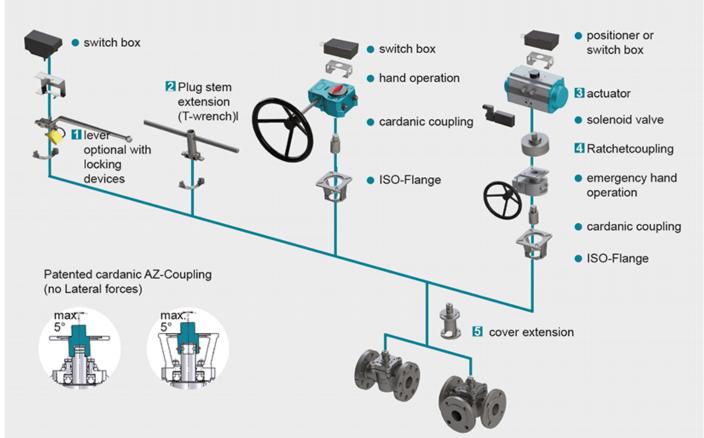
### **Actuation**

Higher operating pressures on request

<sup>\* 100%</sup> safety factor for actuators inclusive

<sup>\*\*</sup> on request





### 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

read more [...] NEW: Pneumatic actuator AIR GEAR for plug valves with high torque ≥150.000 Nm

#### read more [...] 4 Ratched coupling

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

#### read more [...] 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

read more [...]