

# 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<sup>-8</sup> 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°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

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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<sub>max</sub> 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

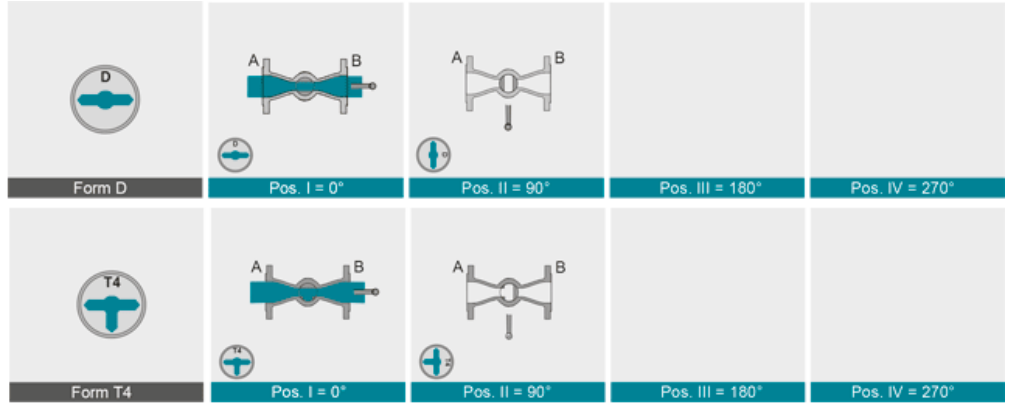
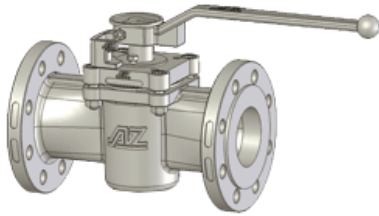
### Type CASN-SL

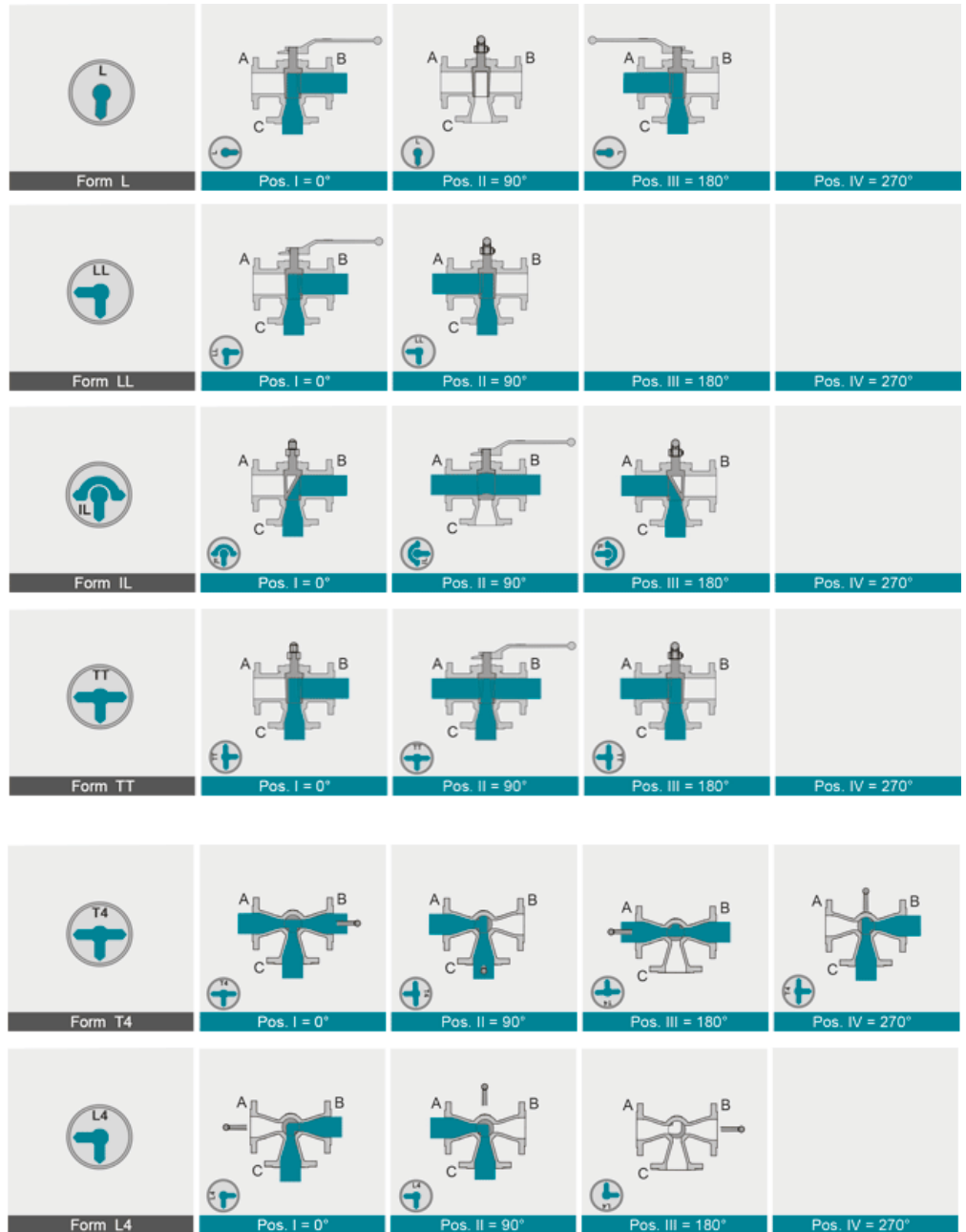
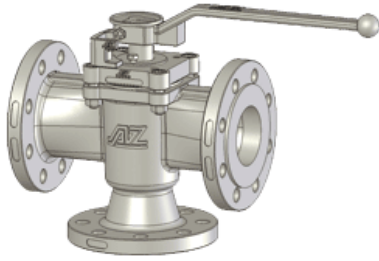
[read more \[...\]](#)

## Port Forms

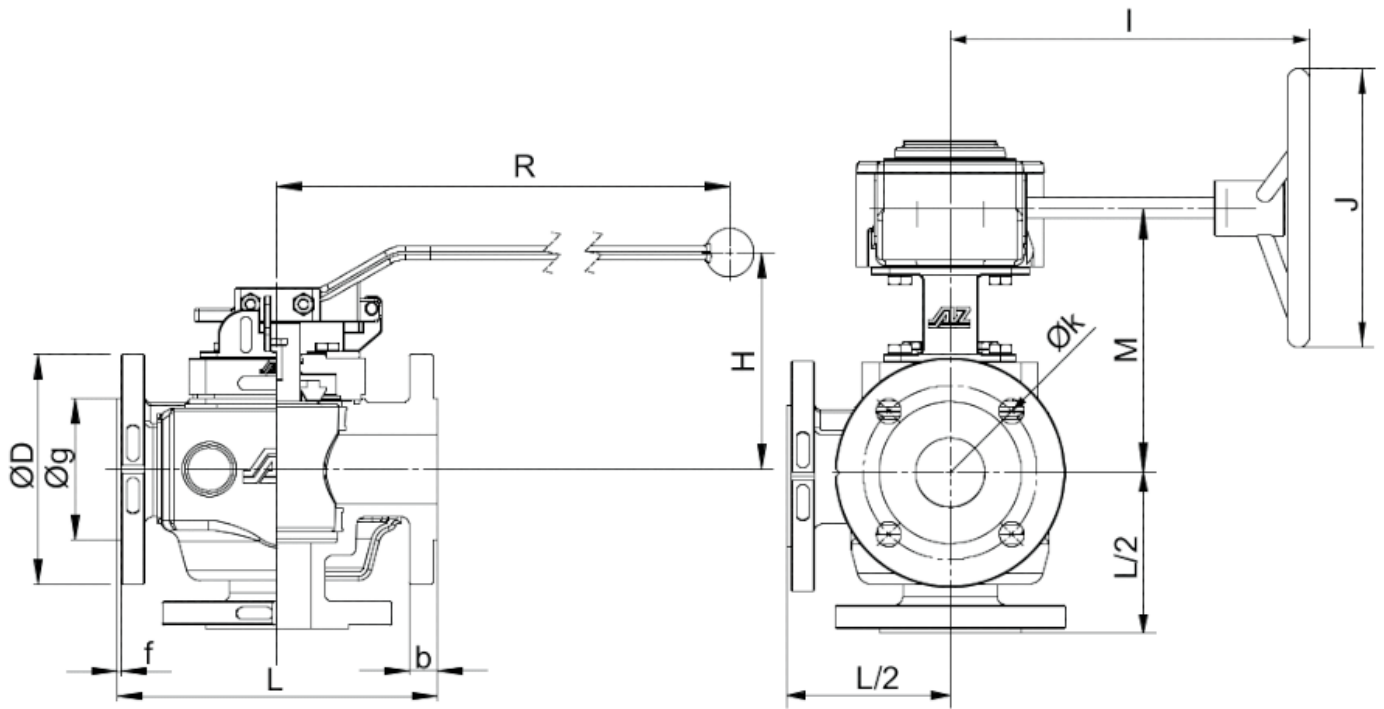


AZ plug valves are fitted with cast, rust proof position indicators.  
The position indicator is securely welded to the lever to prevent it from working loose.





## Dimensions



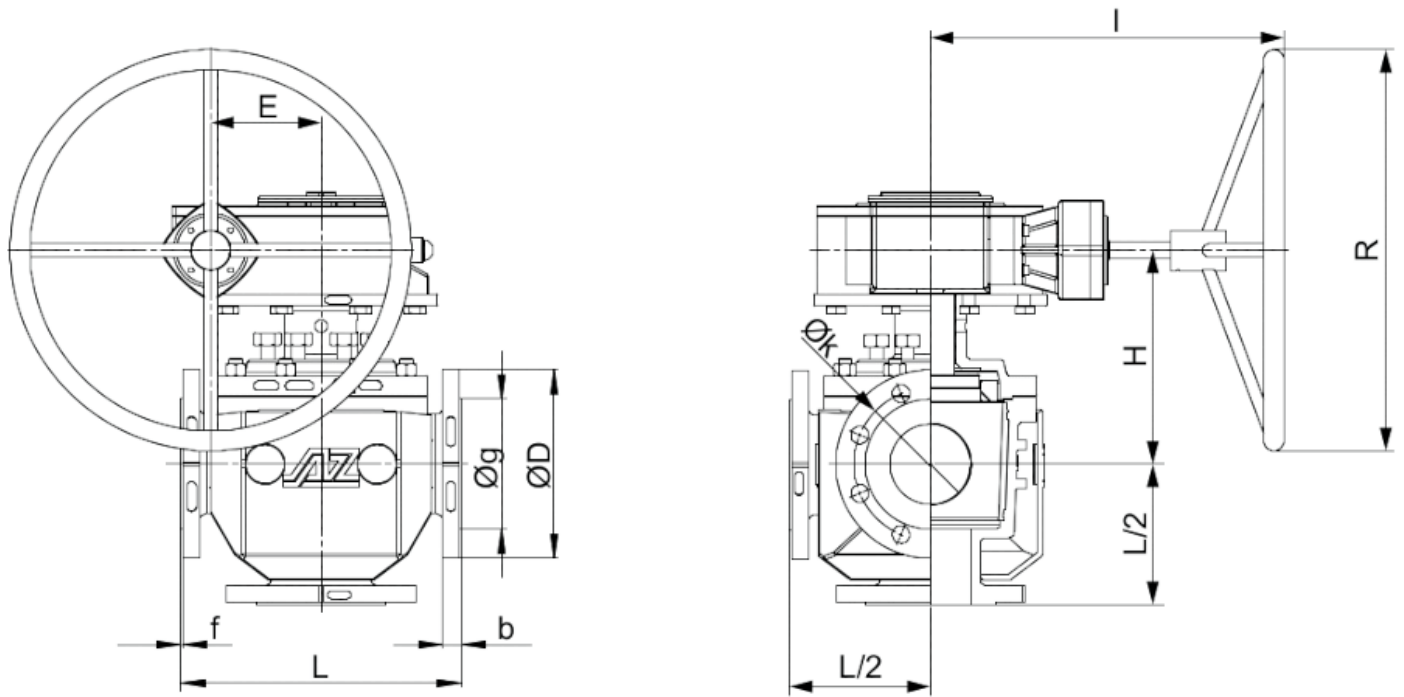
- multiport plug types please see leaflets 1.2 (3-way) and 1.3 (4- and 5-way)

DN	PN	L	L/2	øD	flange hole			øg	b	f	lever		gear				torque,* (Nm)	K <sub>v5</sub> -value [m <sup>3</sup> /h] / C <sub>v</sub> -value [US.gal/min]							
					øk	No.	ø				R	H	E	I	J	M		Typ	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>	
DIN EN 1092/1 / 558-1	15	10-40	130	65	95	65	4	14	45	16	2	200	102,2					30	19	22	7	8	8	9	
		63-100	210	105	105	75	4	14	45	20	2	200	102,2					30	15	18	7	8	7	8	
	20	10-40	150	75	105	75	4	14	58	18	2	200	102,2					30	36	42					
		63-100	230	115	130	90	4	18	58	22	2	200	102,2					30	30	35					
	25	10-40	160	80	115	85	4	14	68	18	2	320	119					80	70	81	20	24	22	25	
		63-100	230	115	140	100	4	18	68	24	2	320	119					80	53	62	20	23	21	24	
	32	10-40	180	90	140	100	4	18	78	18	2	420	137					140	113	130	34	39	36	42	
		63-100	260	130	155	110	4	22	78	24	2	420	137					140	95	110	33	38	35	41	
	40	10-40	200	100	150	110	4	18	88	18	3	420	145	52,5	215	200	170	Q 400-S	240	193	223	53	61	57	66
		63-100	260	130	170	125	4	22	88	26	3	420	145	52,5	215	200	170	Q 400-S	240	173	200	52	60	57	66
	50	10-40	230	115	165	125	4	18	102	20	3	585	150	52,5	240	300	195	Q 400-S	350	323	374	85	98	90	105
		63-100	300	150	180/195	135/145	4	22/26	102	26/28	3	585	150	52,5	240	300	195	Q 400-S	350	282	327	83	96	89	102
65	10/16/25/40	290	145	185	145	4	18	122	18	3			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	176	
	63			205	160	8	22																		26
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			215	170	8	22																		28
ASME B 16.5 / 16.10	½"	150	108	54	90	60,3	4	15,7	34,9	10	2	200	102,5					30	20	23					
		300	140	70	95	66,7	4	15,7	34,9	14,7	2	200	102,5					30	18	21					
	¾"	150	117	58,5	100	69,9	4	15,7	42,9	10,9	2	200	102,5						30	41	48				
		300	152	76	115	82,6	4	19,1	42,9	16,3	2	200	102,5						30	36	42				
	1"	150	160	80	110	79,4	4	15,7	50,8	11,6	2	320	119						80	70	81	20	24	22	25
		300	230	115	125	88,9	4	19,1	50,8	17,9	2	320	119						80	53	62	20	23	21	24
	1¼"	150	180	90	115	88,9	4	15,7	63,5	13,2	2	420	137						140	113	130	34	39	36	42
		300	260	130	135	98,4	4	19,1	63,5	19,5	2	420	137						140	95	110	33	38	35	41
	1½"	150	200	100	125	98,4	4	15,7	73	14,7	2	420	145	52,5	215	200	170	Q 400-S	240	193	223	53	61	57	66
		300	260	130	155	114,3	4	22,3	73	21,1	2	420	145	52,5	215	200	170	Q 400-S	240	170	196	52	60	57	66
	2"	150	230	115	150	120,7	4	19,1	92,1	16,3	2	585	150	52,5	240	300	195	Q 400-S	350	323	374	85	98	90	105
		300	300	150	165	127	8	19,1	92,1	22,7	2	585	150	52,5	240	300	195	Q 400-S	350	282	327	83	96	89	102
2½"	150	180	145	180	139,7	4	19,1	104,8	17,9	2			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	179	
	300	290	145	190	149,2	8	22,3	104,8	25,9	2			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	179	
3"	150	180	145	180	139,7	4	19,1	104,8	17,9	2			68,75	265	400	243	Q 800-S	500	569	658	143	166	154	179	
	300	310	155	210	168,3	8	22,3	127	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)

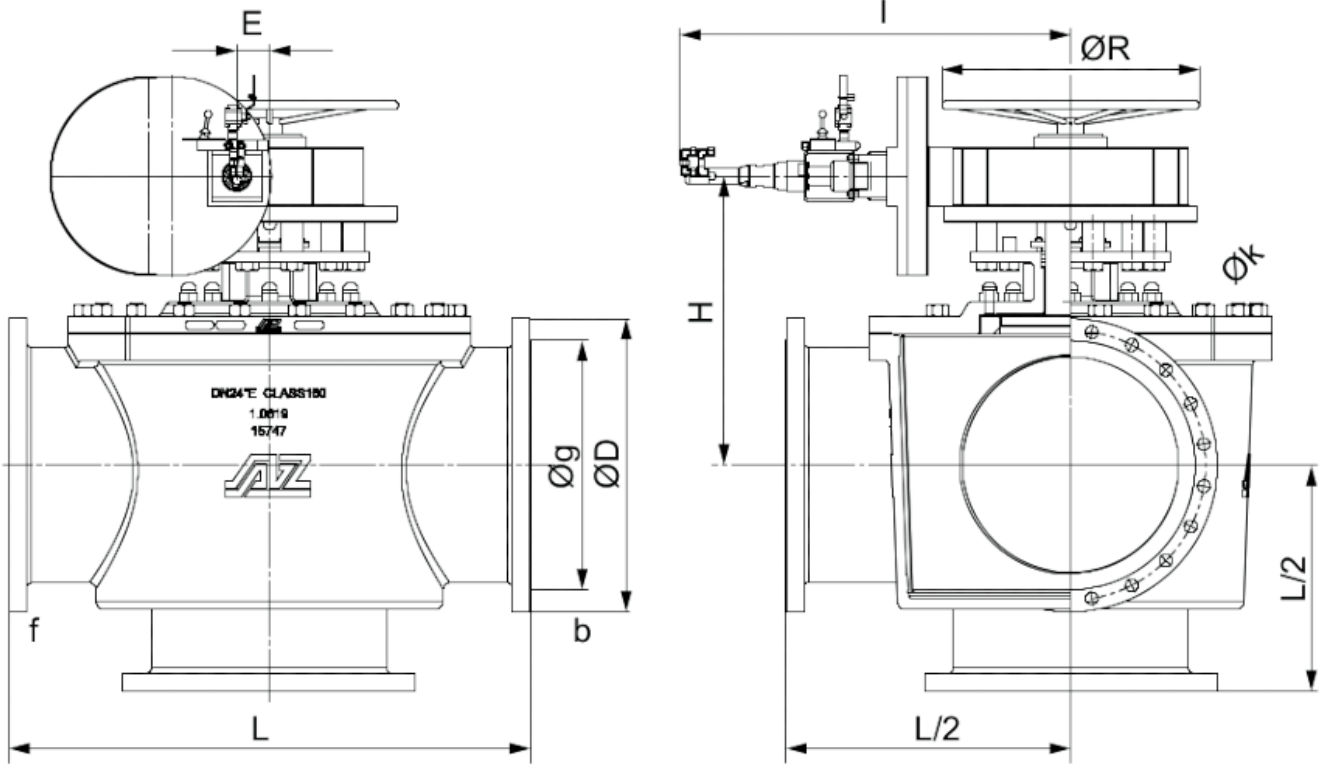
DN	PN	L	L/2	øD	flange hole				øg	b	f	gear				torque,* [Nm]	Kvs-value [m³/h] / Cv-value [US.gal/min]						
					øk	No.	e					E	R	H	I		Typ	F2Kv	F2Cv	F3S Kv	F3-SCv	F3-WKv	F3WCv
DIN EN 1092/1 / 558-1	10 - 16	350	175	220	180	8	18	158	20	3	137,5	600	270	365	Q 6500-S	2000	1446	1672	338	391	361	417	
	25/40 63	350/430	215	235/250	190/200	8	22/26	162	24/30	3	137,5	600	270	365	Q 6500-S	2000	1446/1319	1672/1525	338/335	391/388	361/357	417/413	
	10 - 16	480	240	285	240	8	22	212	22	3	137,5	600	315	365	Q 6500-S	4000	3338	3859	775	895	816	943	
	25/40 63	480/550	275	300/345	250/280	8	26/33	218	28/36	3	137,5	600	315	365	Q 6500-S	4000	3338/3155	3859/3647	775/768	895/888	816/818	943/945	
	10 - 16	600	300	340	295	8 12	22	268	24	3	180	700	355	520	Q 12000-S	6500	6362	7356	1385	1601	1470	1698	
	25 40	600	300	360/375	310/320	12	26/30	278/285	30/34	3	180	700	355	520	Q 12000-S	6500	6362	7356	1385	1601	1470	1698	
DIN EN 1092/1 / 558-1	10 16	730	365	395 405	350 355	12	22 26	320	26	3	180	700	385	520	Q 12000-S	8500	10346	11961	2166	2504	2285	2642	
	25 40	730	365	425 450	370 385	12	30 33	335 345	32 38	3	180	700	385	520	Q 12000-S	8500	10346	11961	2166	2504	2285	2642	
	10 16	850	425	445 460	400 410	12 16	22 26	370 378	26 28	4	252,5	700	460	600	Q 24000-S	19500	15316	17707	3141	3631	3312	3829	
	25 40	850	425	485 515	430 450	16	30 33	395 410	34 42	4	252,5	700	460	600	Q 24000-S	19500	15316	17707	3141	3631	3312	3829	
	10 16	980	490	505 520	460 470	16	22 26	430 438	26 30	4	252,5	700	495	600	Q 32000-S	25000	21195	24504	4294	4964	4540	5249	
	25 40	980	490	555 580	490 510	16	33 36	450 465	38 46	4	252,5	700	495	600	Q 32000-S	25000	21195	24504	4294	4964	4540	5249	
ASME B 16.5 / 16.10	4"	150	350	175	230	190,5	8	19,1	157,2	24,3	2	137,5	600	270	365	Q 6500-S	2000	1446	1672	338	391	360	416
	300	430	215	255	200	8	22,3	157,2	32,2	2	137,5	600	270	365	Q 6500-S	2000	1317	1522	335	387	358	414	
	150	480	240	280	241,3	8	22,3	215,9	25,9	2	137,5	600	315	365	Q 6500-S	4000	3338	3859	781	903	820	948	
	300	550	275	320	269,9	12	22,3	215,9	37	2	137,5	600	315	365	Q 6500-S	4000	3155	3647	768	888	815	943	
	150	600	300	345	298,5	8	22,4	269,6	29	2	180	700	355	520	Q 12000-S	6500	6362	7356	1385	1601	1470	1699	
	300	650	300	380	330,2	12	25,4	269,6	41,7	2	180	700	355	520	Q 12000-S	6500	6108	7062	1388	1605	1466	1695	
	150	730	365	405	362	12	25,4	323,8	30,6	2	180	700	385	520	Q 12000-S	8500	10344	11959	1934	2235	2299	2658	
	300	775	365	445	387,4	16	28,4	323,8	48,1	2	180	700	385	520	Q 12000-S	8500	9933	11483	1941	2244	2327	2690	
	150	850	425	485	431,8	12	25,4	381	32,2	2	252,5	700	460	600	Q 24000-S	19500	15317	17708	3064	3543	3308	3825	
	300	850	425	520	450,8	16	31,7	381	51,3	2	252,5	700	460	600	Q 24000-S	19500	15317	17708	3064	3543	3308	3825	
	150	980	490	535	476,3	12	28,4	412,8	35,4	2	252,5	700	495	600	Q 32000-S	25000	21194	24503	4285	4954	4545	5255	
	300	980	490	585	514,4	20	31,7	412,8	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

\* 100% safety factor for actuators inclusive

\*\* 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-2Kv	F-2Cv		F-3SKv	F-3SCv	F-3WKv	F-3WCv						
DIN EN 1092/1 / 558-1	400	10	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	20	36	39	505	535	40													
	450	10	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	20	36	39	555	560	46													
500	10	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	20	36	42	615	615	48														57
600	10	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	20	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

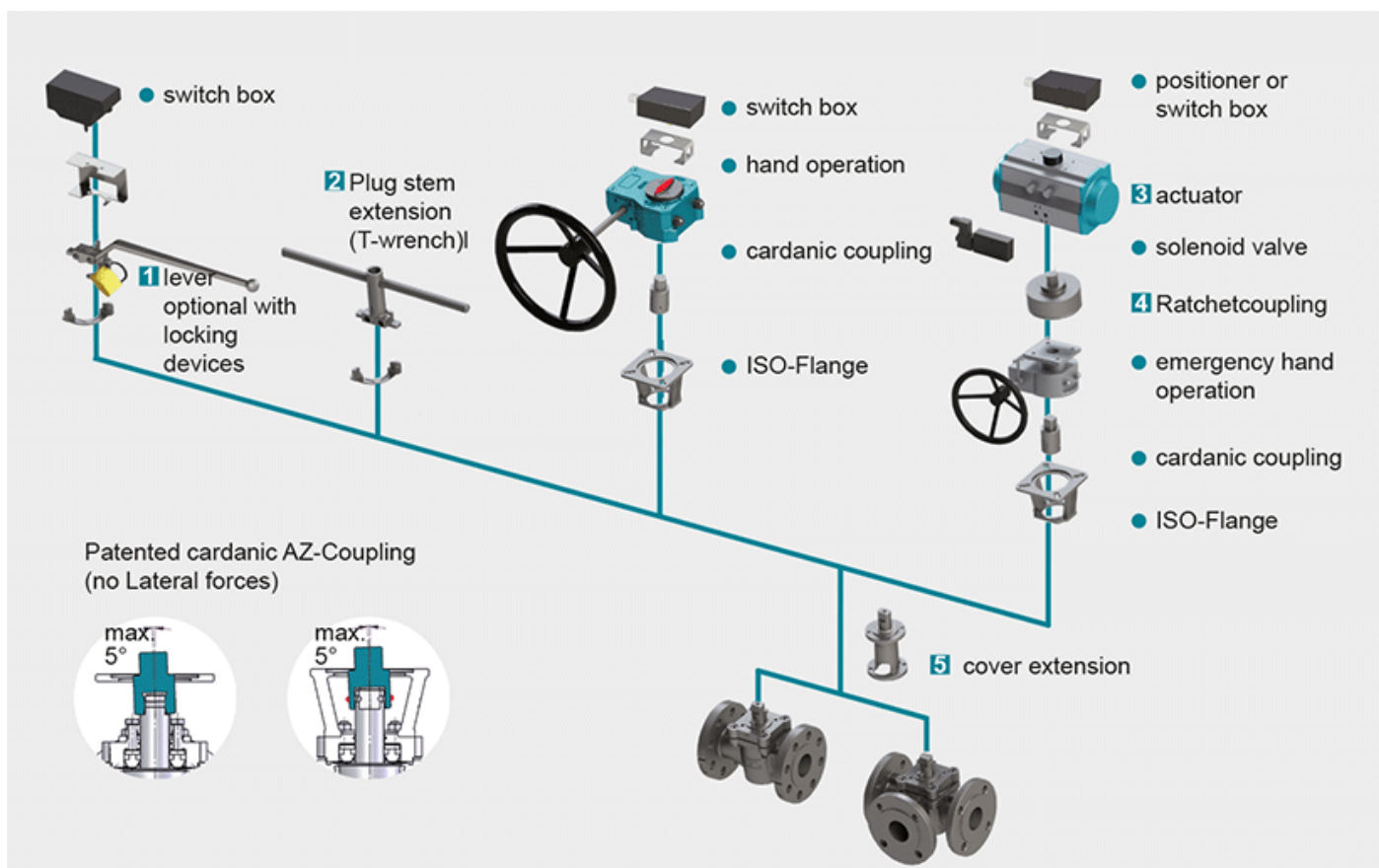
\* 100% safety factor for actuators inclusive

\*\* 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  
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### 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°  
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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  
read more [...]