





## Operation

AMMtech ball sector valve series 465 is specially designed for control applications of various medium like liquids, pulps and steam.

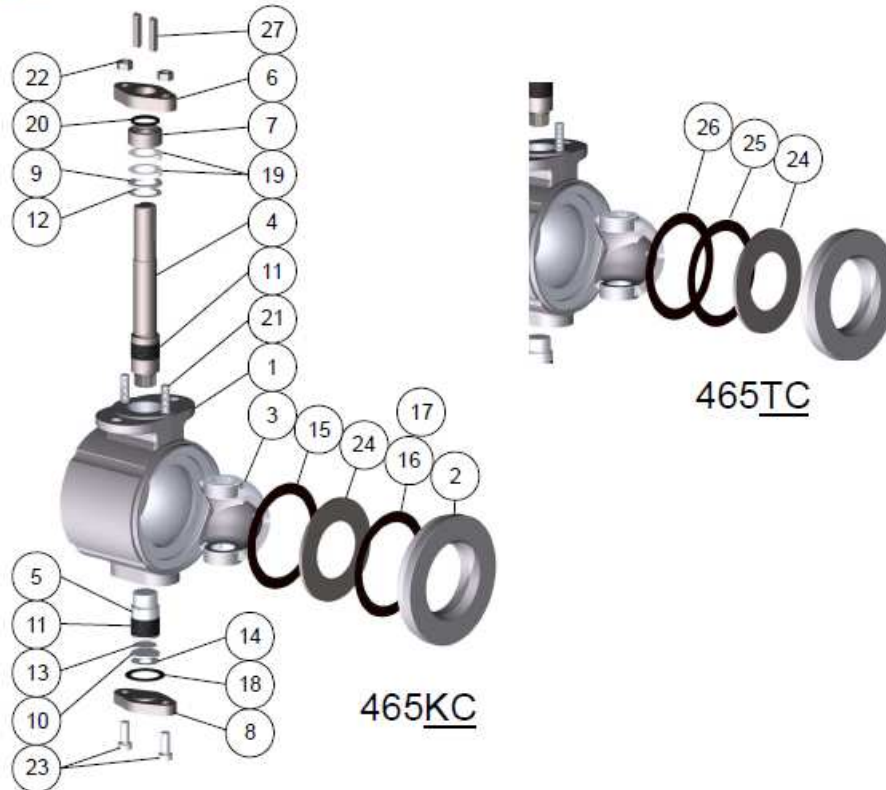
465KC is used for sticky and crystallizing mediums, because of cleaning function of metal seat for both control and on/off applications where std PTFE seated valves does not lasting. If the medium contains solid particles, the geometry of metal seat and segment will warranty better function as std. valves.

These valves are tight to one direction which is shown by an arrow according to EN 12266-1.

The wafer pattern ball sector valve is a reduced bore valve manufactured in stainless steel throughout with a hard chromed ball sector and Stellite or PTFE seat. The V-port gives an excellent control characteristic which is intermediate between linear and equal percentage. The shaft packing box has tightable graphite seals.

Nominal dimensions:	DN 25 – 200	
Nominal pressure	PN 40 DN 25 - 40, PN 25 DN 50 - 80, PN 16 DN 100 - 200	
Ball seal alternatives	Stellite (KC)	PTFE (TC)
Tightness class ISO 5208, EN 12266-1	RATE D	RATE A
Working temperature of liquid media (version for steam also available)	+260°C -40°C	+200°C -40°C
Connection	Connection between flanges EN1092-1, Facing Type B.	
Safety	<p>Conform to the requirements of the Council Directive 97/23/EC on Pressure Equipment, marking: Class: gas, group 1.</p> <p style="text-align: right;">   </p> <p>Explosion-proof design is available as per special order. Marking in accordance to ATEX Directive 94/9/EC: group II 2 GD, protection concept of non-electrical components: c T6.</p>	

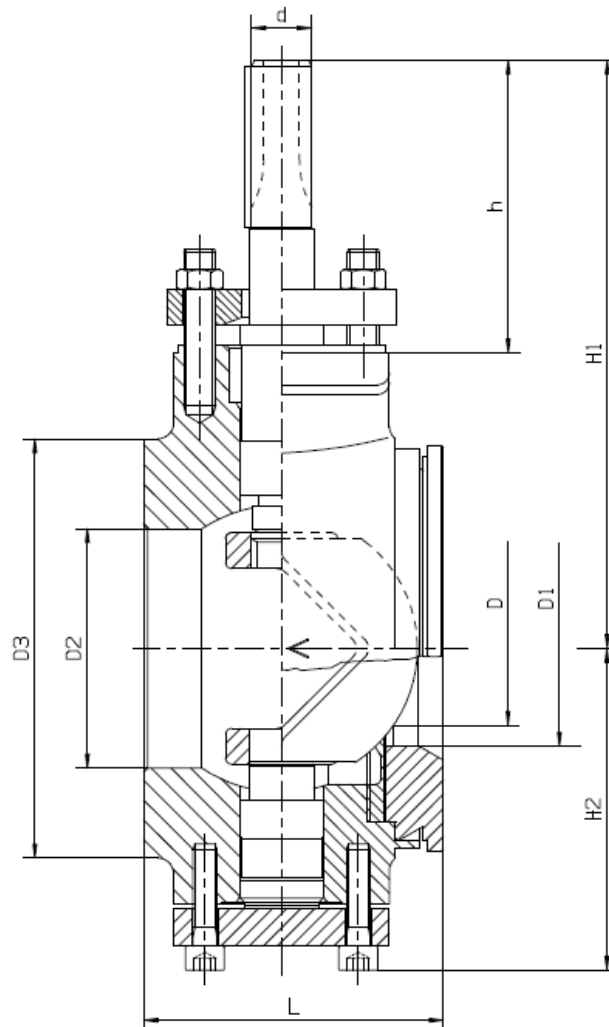
**Exploded view**



**Parts list and standard materials**

Part	Material	
1	Body	Stainless steel ASTM A351 CF8M
2	End piece	Stainless steel ASTM A351 CF8M
3	V-ball	Stainless steel ASTM A351 CF8M
4	Stem	Stainless steel 1.4404
5	Subshaft	Stainless steel 1.4404
6	Gland	Stainless steel 1.4404
7	Spacer ring	Stainless steel 1.4404
8	Subshaft cover	Stainless steel 1.4404
9	Thrust bearing ring	Stainless steel 1.4404
10	Thrust bearing plate	Stainless steel 1.4404
11	Shaft bearing	PTFE on stainless steel net ("Pampus")
12	Upper thrust bearing	PTFE on stainless steel net ("Pampus")
13	Lower thrust bearing	PTFE on stainless steel net ("Pampus")
14	Cup spring	Stainless steel 1.4404
15, 16, 17	Shim	Carbon Fibre SFS5811/ Graphite
18	Subshaft cover packing	Carbon Fibre SFS5811/ Graphite
19	Packing	Graphite
20	O-ring	EPDM
21, 22	Bolt or stud and nut	Stainless steel ISO 3506 A4-80
23	Hexagonal socket screw	Stainless steel ISO 3506 A4-80
24	T-seat	PTFE
24	K-seat	Stellite
25	Support ring	Stainless steel 1.4404
26	Shim	Carbon Fibre SFS5811/ Graphite
27	Key	Carbon steel

**Dimensions.**



DN	L	D	D1	D2	D3	d	h	H1	H2	Weight kg
25	50	20	25	30	65	11	85	143	58	1.6
32	55	27	32	36	75	11	85	143	65	1.9
40	60	35	40	48	90	15	95	165	79	3.2
50	75	45	49	60	105	15	95	169	83	4.5
65	100	53	65	73	123	20	110	195	87	7.5
80	100	72	77	87	140	20	110	213	97	8.4
100	115	89	96	112	160	25	115	233	126	12.6
150	160	112	118	162	216	25	115	263	135	28.0
200	200	167	170	213	273	30	150	342	194	41.0



## BALL SECTOR VALVE

# AMM290

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### Actuating

According to customer's needs the valve is delivered with:

- bare shaft,
- hand lever,
- manual gear,
- electric actuator,
- pneumatic or hydraulic actuator.

### Operation torque

DN	25	32	40	50	65	80	100	150	200
Torque*, Nm (KC and TC)	20	20	28	39	52	70	100	150	340

\*) the operation torque for steam is the same as for liquid but one size bigger.



## Operation



AMMtech ball sector valve series 455 is specially designed for control applications of various media like liquids, pulps and steam.

455KC is used for sticky and crystallizing mediums, because of cleaning function of metal seat for both control and on/off applications where std PTFE seated valves does not last. If the medium contains solid particles, the geometry of metal seat and segment will warranty better function as std. valves.

The ball valve series 459 is a tank outlet valve and is a variation of the valve 455 series which incorporates a short body section thereby reducing dead area above the seat. The single seat design eliminates the possibility of media becoming trapped in the valve body.

These valves are tight to one direction which is shown by an arrow according to EN 12266-1.

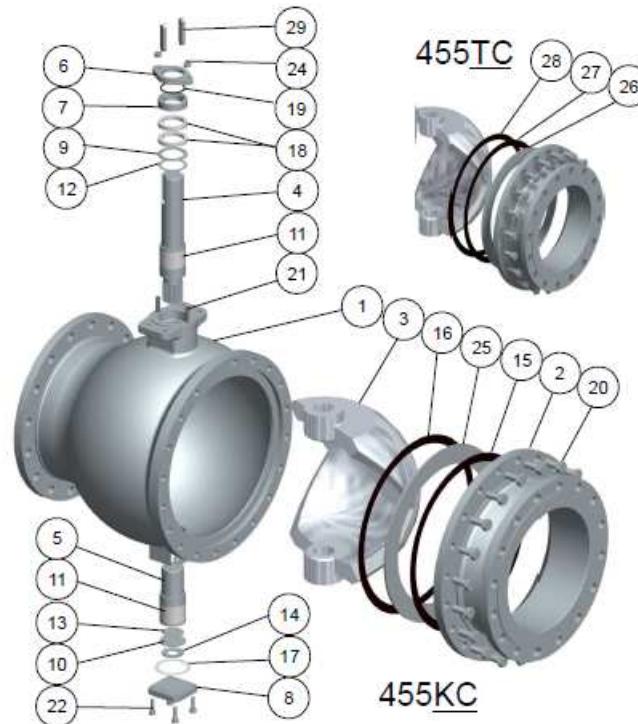
The sector ball valve with flanges has a full bore design. The two piece body, v-port ball and stems are of stainless steel. The shaft packing box has tightable graphite seals.

Nominal dimensions:	(455 valve) - DN 25 – 300, (459 valve) - DN25 – 200	
* Nominal pressure	PN16bar	
Ball seal alternatives	Stellite (KC)	PTFE (TC)
Tightness class ISO 5208, EN 12266-1	RATE D	RATE A
Working temperature of liquid media (version for steam also available)	+260°C -40°C	+200°C -40°C
* Connection	Between flanges: EN1092-1, Facing Type B. PN16, PN10, ANSI CLASS 150.	
Safety	Conform to the requirements of the Council Directive 97/23/EC on Pressure Equipment, marking: Class: gas, group 1.   Explosion-proof design is available as per special order. Marking in accordance to ATEX Directive 94/9/EC: group II 2 GD, protection concept of non-electrical components: c T6.	

\*) Flange drilling for others standards and pressures are also available as per special order.

Consult factory for details.

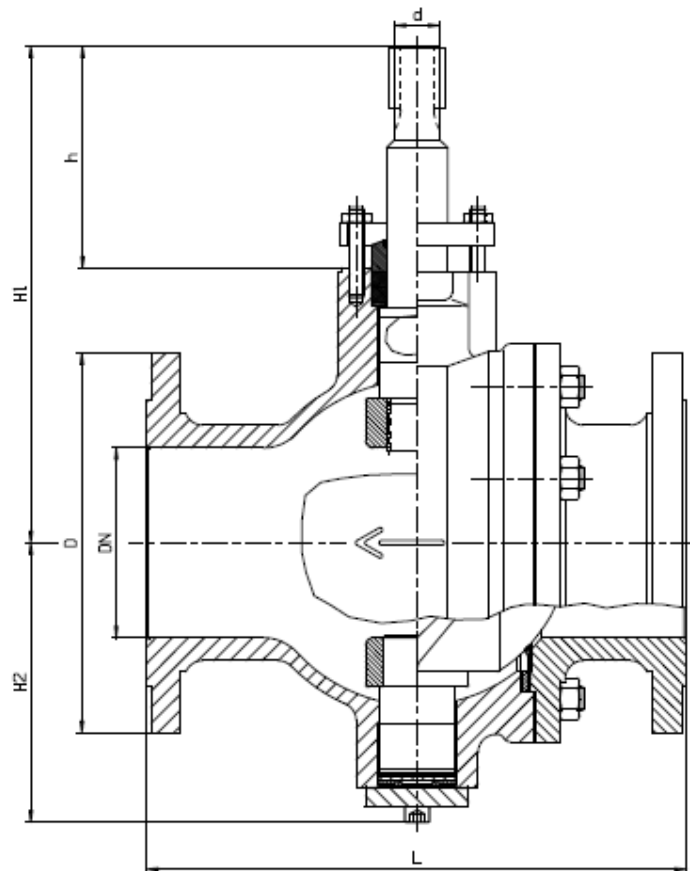
**Exploded view**



**Parts list and standard materials**

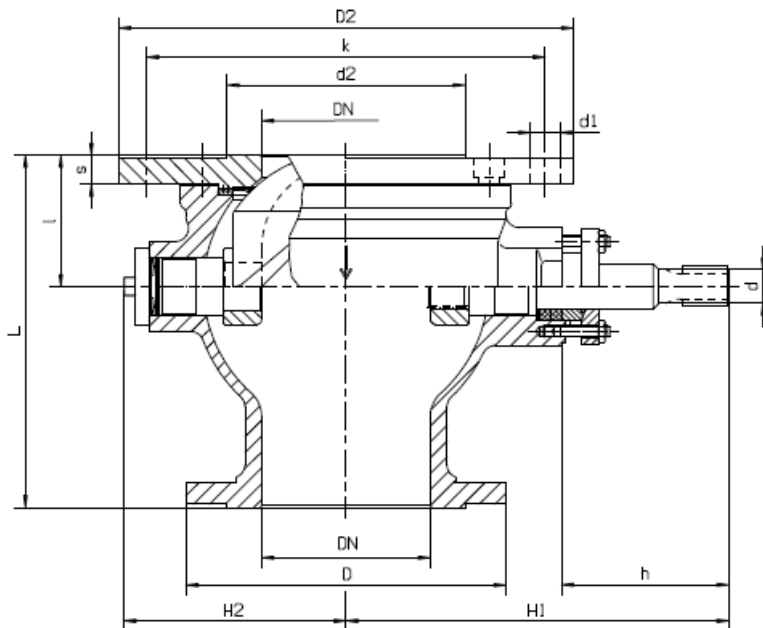
Part	Material	
1	Body	Stainless steel ASTM A351 CF8M
2	Body flange	Stainless steel ASTM A351 CF8M
3	V-ball	Stainless steel ASTM A351 CF8M
4	Stem	Stainless steel 1.4404
5	Subshaft	Stainless steel 1.4404
6	Gland	Stainless steel 1.4404
7	Spacer ring	Stainless steel 1.4404
8	Subshaft cover	Stainless steel 1.4404
9	Thrust bearing ring	Stainless steel 1.4404
10	Thrust bearing plate	Stainless steel 1.4404
11	Shaft bearing	PTFE on stainless steel net ("Pampus")
12	Upper thrust bearing	PTFE on stainless steel net ("Pampus")
13	Lower thrust bearing	PTFE on stainless steel net ("Pampus")
14	Cup spring	Stainless steel 1.4404
15, 16	Shim	Carbon Fibre SFS5811/ Graphite
17	Subshaft cover packing	Carbon Fibre SFS5811/ Graphite
18	Packing	Graphite
19	O-ring	EPDM
20	Bolt or stud and nut	Stainless steel ISO 3506 A4-80
21	Stud	Stainless steel ISO 3506 A4-80
22	Hexagonal socket screw	Stainless steel ISO 3506 A4-80
24	Nut	Stainless steel ISO 3506 A4-80
25	Seat	Stellite
26	Seat	PTFE
27	Support ring	Stainless steel 1.4404
28	Shim	Carbon Fibre SFS5811/ Graphite
29	Key	Carbon steel

**Dimensions. 455 series valve**



DN	L	H1	H2	h	d	D	Connection PN16			Weight kg
							Dr	hole Ø	pcs	
25	127	143	68	85	11	115	85	14	4	5.0
32	140	166	79	95	15	140	100	18	4	7.7
40	165	170	83	95	15	150	110	18	4	9.5
50	178	196	91	110	20	165	125	18	4	12
65	190	204	99	110	20	185	145	18	4	17
80	203	235	126	115	25	200	160	18	8	23
100	229	245	136	115	25	220	180	18	8	27
125	356	329	185	150	30	250	210	18	8	55
150	394	343	199	150	30	285	240	22	8	67
200	457	404	248	170	45	340	295	22	12	122
250	533	439	283	170	45	405	355	26	12	230
300	610	510	337	185	60	460	410	26	12	280

## Dimensions. 459 series valve



DN	L	I	H1	H2	h	Ød	ØD	Bottom flange						Weight kg
								ØD2	s	Ød2	Drilling PN16			
											Øk	Ødl	pcs	
25	89	39	143	68	85	11	115	165	18	60	125	18	4	4.7
40	124	49	170	83	95	15	150	200	20	88	160	18	8	9.6
50	132	54	196	91	110	20	165	220	20	98	180	18	8	10.7
65	142	63	204	99	110	20	185	250	22	116	210	18	8	14.4
100	180	83	245	136	115	25	220	285	22	158	240	22	8	24
125	281	103	329	185	150	30	250	340	26	188	295	22	12	50
150	314	117	343	199	150	30	285	405	26	212	355	26	12	59
200	382	155	404	248	170	45	340	520	30	268	470	26	16	140

## Actuating

According to customer's needs the valve is delivered with:

- bare shaft,
- manual gear,
- electric actuator,
- pneumatic or hydraulic actuator.

## Operation torque

DN	25	32	40	50	65	80	100	125	150	200	250	300
Torque*, Nm (KC and TC)	20	28	39	52	70	100	150	240	340	520	600	1'000

\*) the operation torque for steam is the same as for liquid but one size bigger.

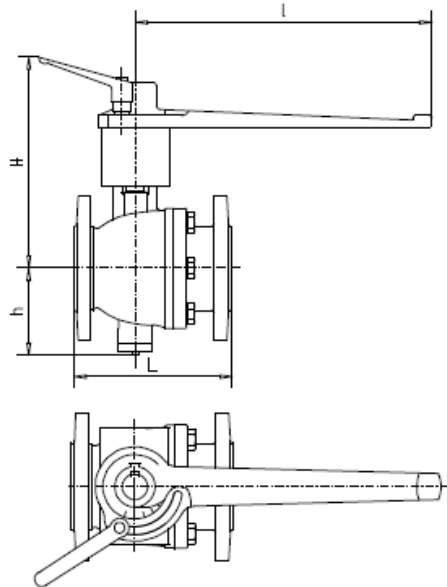
## Handlever

The smaller sizes, DN 25-150 can be operated with handlever.

The opening and closing of valves is stepless.

The valve is open when the handlever is parallel to the pipe.

DN	L	I	H	h
25	127	185	180	68
32	140	300	200	79
40	165	300	205	83
50	178	300	225	91
65	190	300	235	99
80	203	420	270	126
100	229	420	280	136
125	356	420	362	185
150	394	420	375	199

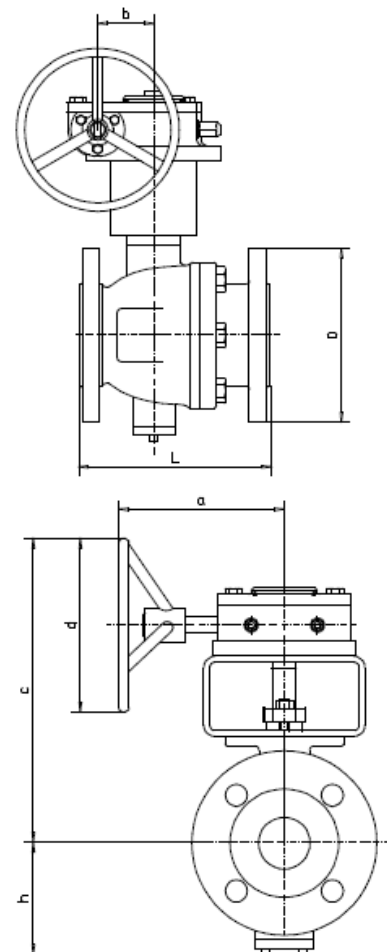


## Manual gear

Opening and closing of the valves from the handwheel.

The position of the ball can be seen on a position indicator on top of the gear.

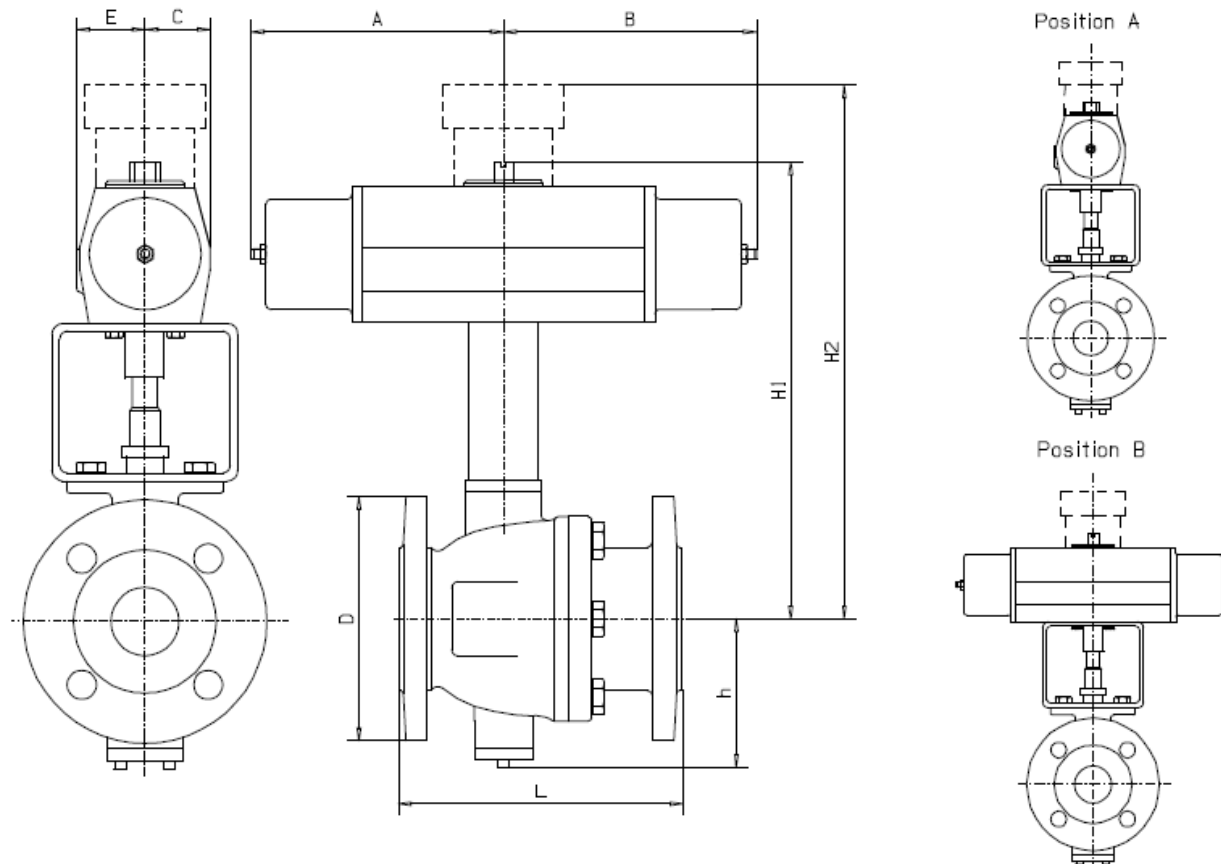
DN	Pro-Gear model	a	b	c	d	L	D	h
25	Q400	198	52.5	252	200	127	115	68
32	Q400	198	52.5	264	200	140	140	79
40	Q400	198	52.5	268	200	165	150	83
50	Q400	198	52.5	289	200	178	165	91
65	Q400	198	52.5	297	200	190	185	99
80	Q800	293	68.75	381	300	203	200	126
100	Q800	293	68.75	391	300	229	220	136
125	Q800	293	68.75	470	300	356	250	185
150	Q800	293	68.75	484	300	394	285	199
200	Q4000	406	137.5	639	500	457	340	248
250	Q4000	406	137.5	674	500	533	405	283
300	Q4000	406	137.5	730	500	610	460	337



## Pneumatic actuator.

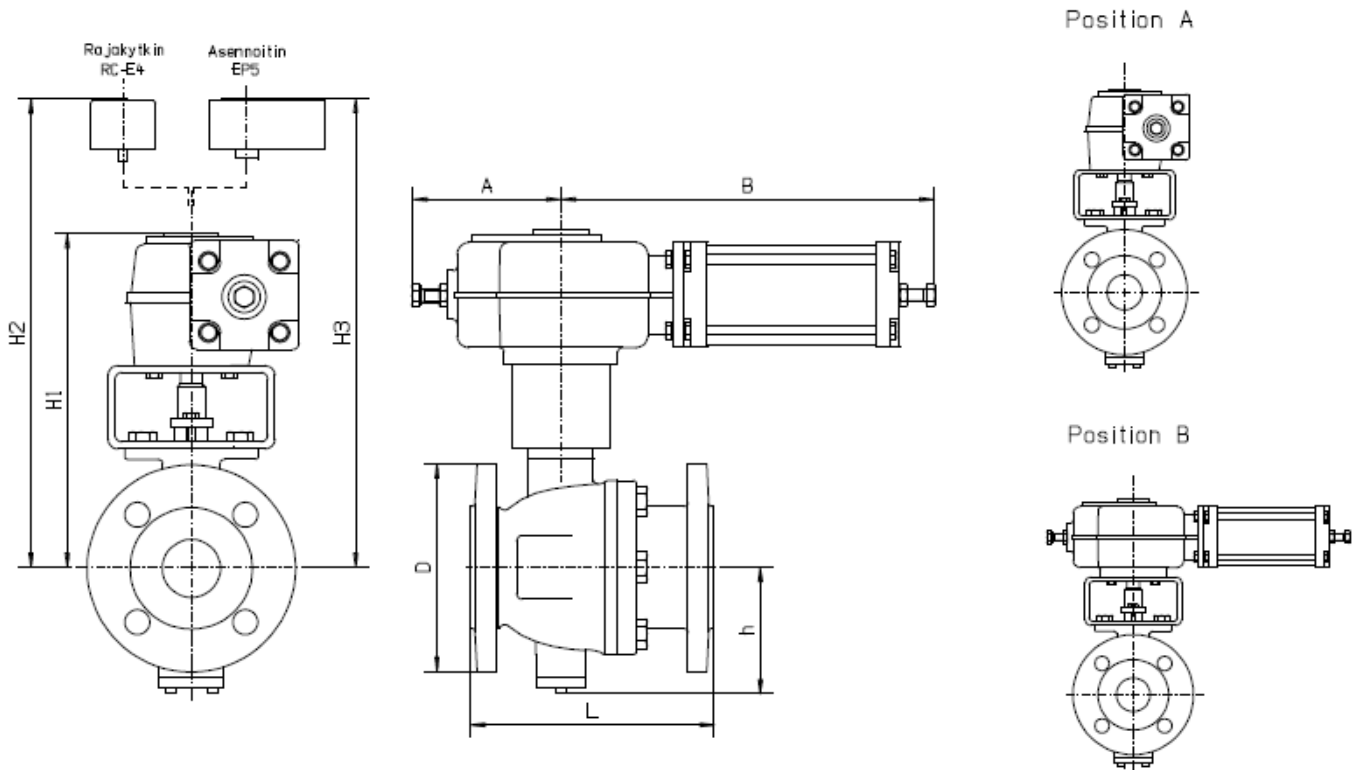
This valve can be equipped with pneumatic actuator of any known brand. Valve 455 series + **Remote Control** spring return actuator is the common combination. However **pneumatic actuator** is used for most demanding control applications as far as it has more accurate and precise control characteristics than former.

### Valve 455 series + Remote Control spring return actuator.



DN	RC model	ØD	L	E	C	h	H1	H2	A	B
25	RC220-SR	115	127	41	32	68	253	-	150	150
32	RC230-SR	140	140	41	32	79	285	-	150	150
40	RC230-SR	150	165	55	49	83	-	-	65	200
50	RC240-SR	165	178	55	49	91	365	-	65	200
65	RC240-SR	185	190	55	49	99	-	-	200	200
80	RC250-SR	200	203	55	49	126	398	-	200	200
100	RC260-SR	220	229	75	69	136	453	-	90	285
125	RC260-SR	250	356	75	69	185	-	-	285	285
150	RC265-SR	285	394	110	110	199	-	-	145	510
200	RC270-SR	340	457	110	110	248	-	-	510	510
250	RC280-SR	405	533	110	110	283	-	-	510	510
300	RC280-SR	460	610	-	-	337	-	-	-	-

Valve 455 series with pneumatic actuator .



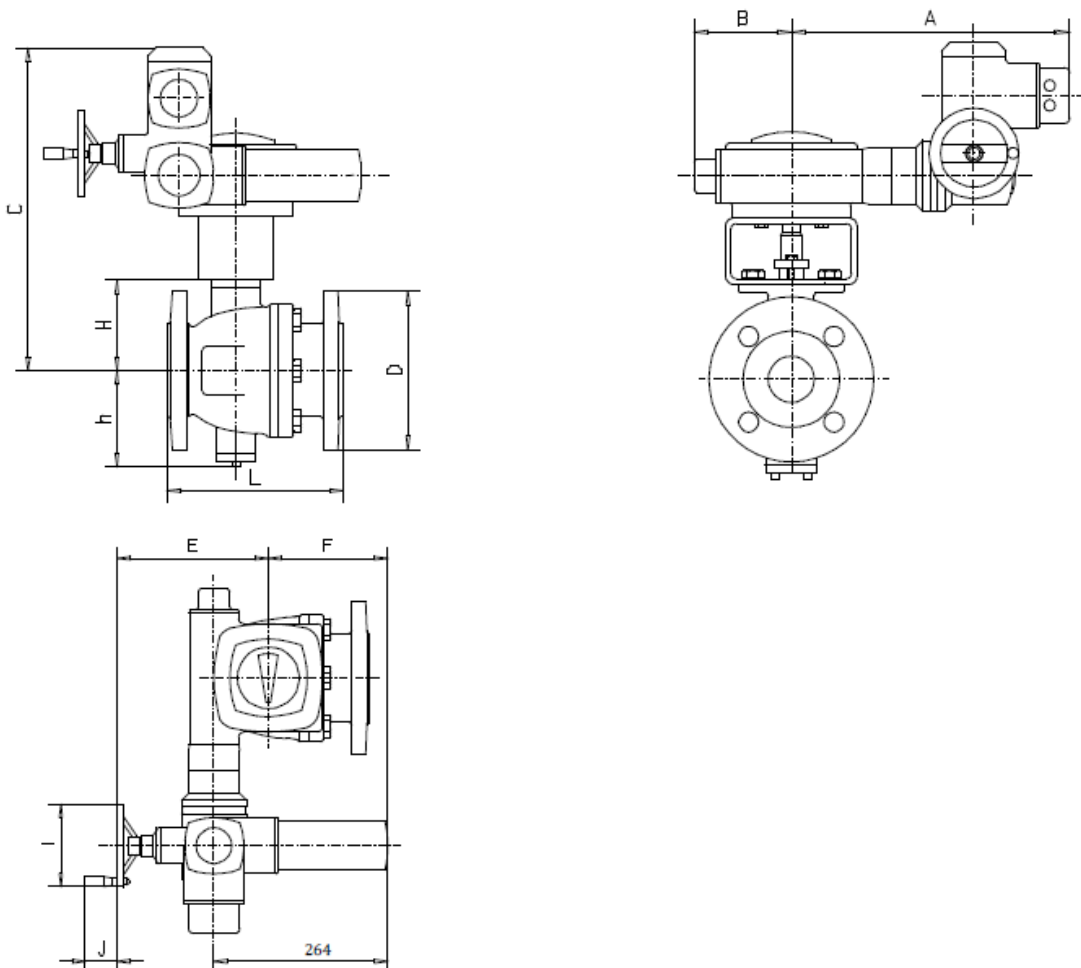
DN	ØD	L	h	H1	H2	H3	Double action actuator			Spring return actuator		
							Type	A	B	Type	A	B
25	115	127	68	248	328	345	DA1	145	340	SR1	145	430
32	140	140	79	260	340	357	DA1	145	340	SR1	145	430
40	150	165	83	264	344	361	DA1	145	340	SR1	145	430
50	165	178	91	285	365	382	DA1	145	340	SR1	145	430
65	185	190	99	293	373	390	DA1	145	340	SR1	145	430
80	200	203	126	323	403	420	DA2	155	380	SR2	155	560
100	220	229	136	333	413	430	DA2	155	380	SR2	155	560
125	250	356	185	452	529	546	DA3	200	470	SR3	200	750
150	285	394	199	466	543	560	DA3	200	470	SR3	200	750
200	340	457	248	579	650	667	DA5	280	670	SR5	280	1000
250	405	533	283	614	685	702	DA5	280	670	SR5	280	1000

## Electrical actuator.

This valve can be equipped with the electrical actuator of any known brand.

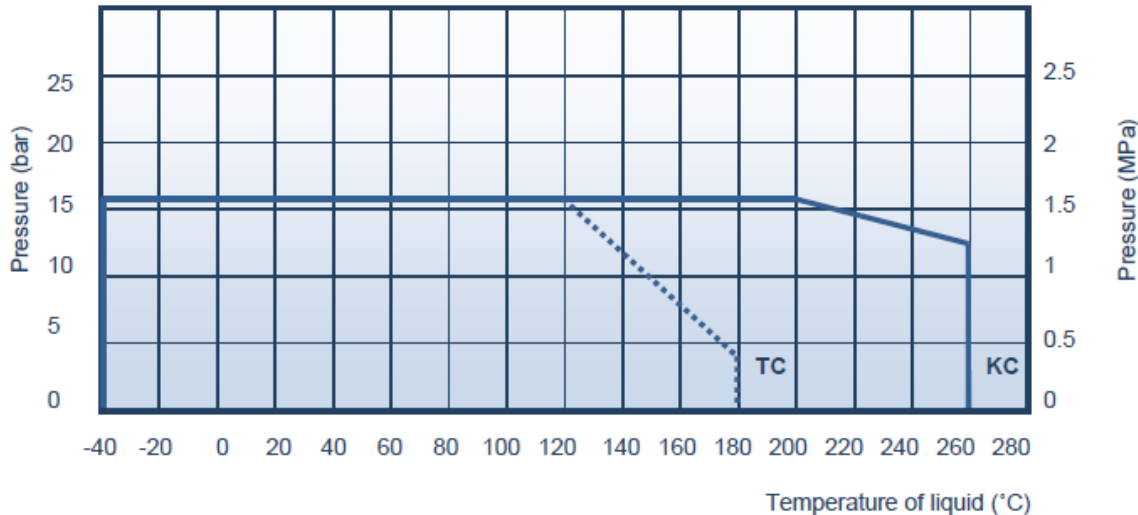
The typical solution is 455 series valve with AUMA Norm actuator.

DN	AUMA type	D	L	H	h	A	B	C	E	F	I	J
25	GSM 40.3	115	127	58	68	348	96	387	227	224	140	47
32	GSM 40.3	140	140	70	79	348	96	399	227	224	140	47
40	GSM 40.3	150	165	74	83	348	96	403	227	224	140	47
50	GSM 40.3	165	178	85	91	348	96	424	227	224	140	47
65	GSM 40.3	185	190	93	99	348	96	432	227	224	140	47
80	GSM 50.3	200	203	118	126	348	96	465	237	214	140	47
100	GSM 50.3	220	229	128	136	348	96	475	237	214	140	47
125	GSM 63.3	250	356	177	185	373	127	559	250	201	160	63
150	GSM 63.3	285	394	191	199	373	127	573	250	201	160	63
200	GSM 80.3	340	457	234	248	378	132	618	267	184	160	63
250	GSM 100.3/ VZ4.3	405	533	269	283	497	182	681	287	164	160	63
300	GSM 125.3/ VZ4.3	460	610	325	337	502	187	737	312	139	160	63



## Pressure / Temperature Rating.

The max pressure difference depends on the working temperature of liquid media.



## Product codes

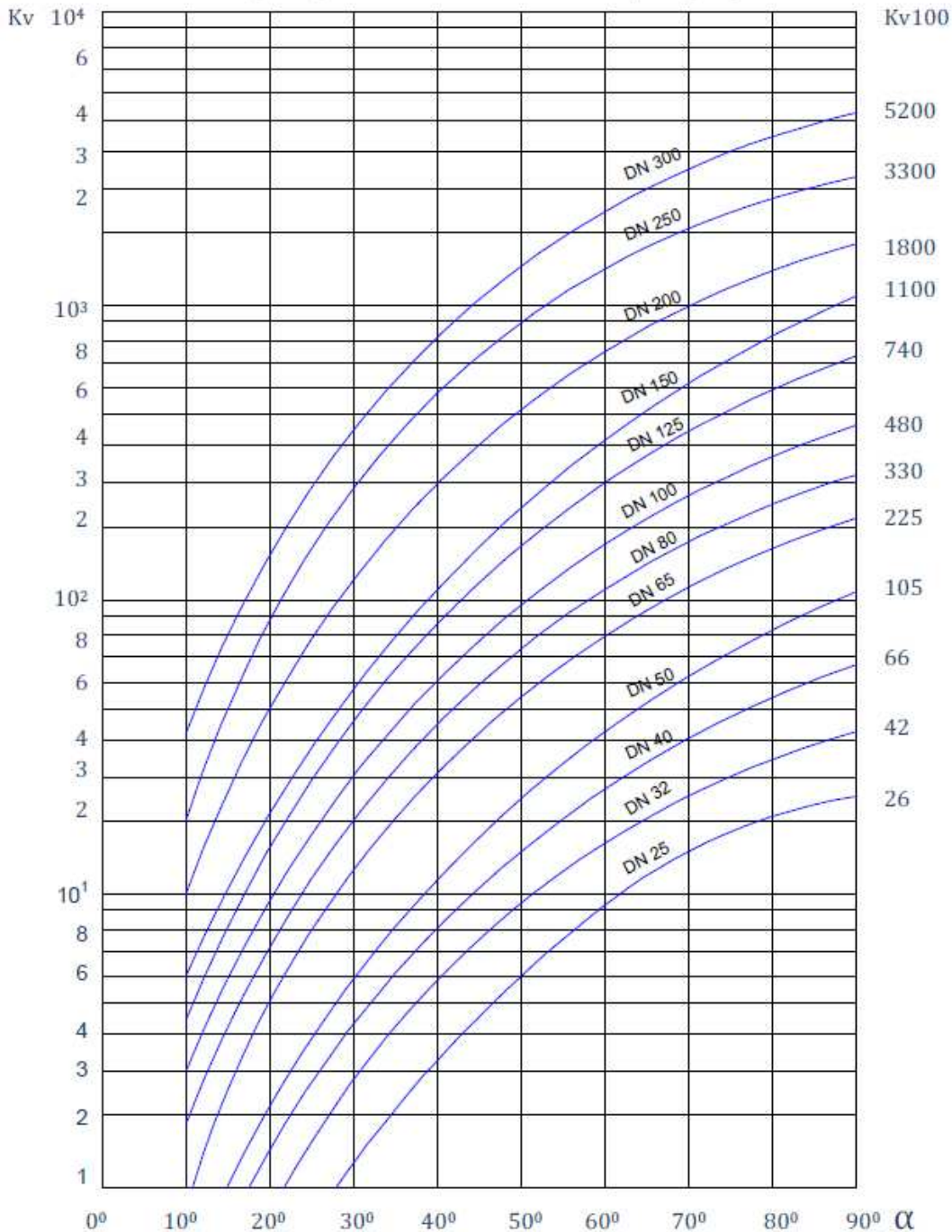
	Ball sector valve		Tank outlet valve	
Seat	PTFE	Stellite	PTFE	Stellite
handlever up to DN150	455TC__	455KC__	459TC__	459KC__
bare shaft	455TC__Z	455KC__Z	459TC__Z	459KC__Z
manual gear	455TC__M	455KC__M	459TC__M	459TC__M
Steam version on special order	-	45501KC__	-	-

## How to order

		4	55	01	K	C	200	M
Body material:	4 – Stainless steel							
Valve type:	55 – ball sector valve with flanges 59 – ball sector valve for tank outlet							
Special options:	__ – standard, 01 - For steam							
Ball seal	(K) - Stellite, (T) - PTFE							
Ball surface treatment	C – hard chrome							
Size DN								
Actuation:	( ) - handlever, (Z) - bare shaft, (M) - manual gear							

## The control curves

The curves indicate the regulating values of the valve at different opening angles.



**WATER:**

$$\text{Volume flow: } Q = K_V \sqrt{\frac{\Delta p}{\rho}}$$

$$\text{Flow velocity: } V = 354 \frac{Q}{DN^2}$$

$K_V$  = KVvalue – Capacity factor

DN = nominal valve size (mm)

$\alpha$  – disc opening angle

$\Delta p$  = pressure difference, bar

$\rho$  – density of liquid kg/dm<sup>3</sup>

V – flow velocity m/s

Q – volume flow m<sup>3</sup>/h